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Agriculture

Forest Service

Lolo National Forest



Draft Wild and Scenic Rivers Suitability Study and Environmental Impact Statement for Eight Rivers on the Lolo National Forest

June 1995



Cover: North Fork Blackfoot River from Falls Point Lookout Mountain

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Lolo National Forest
Wild and Scenic River Study Report
and
Draft Legislative Environmental Impact Statement

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ABSTRACT

This Draft Environmental Impact Statement and Wild and Scenic Rivers Study documents the analysis of eight river segments under six alternatives. The analysis determined that the eligible segments are suitable for inclusion in the National Wild and Scenic Rivers System. The alternatives provide different views on which rivers should be recommended to Congress for classification under the Wild and Scenic River Act.

The rivers are located in six Montana counties: Lewis & Clark, Mineral, Missoula, Powell, Ravalli, and Sanders; and all segments are within or immediately adjacent to the Lolo National Forest. The rivers include segments of the Clearwater River, Morrell Creek, North Fork Blackfoot River, Rattlesnake Creek, South Fork Lolo Creek, Cache Creek, West Fork Fish Creek, and the Clark Fork of the Columbia River.

Four of the six alternatives provide a recommendation for classification under the Wild and Scenic Rivers Act; two alternatives recommend no such action, where one provides for management reversion to the Forest Plan standards, and the other provides that more stringent river protection standards be incorporated into the Forest Plan.

The alternatives are:

Alternative 1 - No Action. Recommend no rivers for classification; management reverts to Forest Plan standards.

Alternative 2 - Nondesignation with Protection. Recommend no rivers for classification; incorporate river protection standards similar to those necessary for classified rivers into the Forest Plan.

Alternative 3 - Designation of "At Risk" Rivers. Only those rivers that are prone to have a water resource-related development are recommended for classification.

Alternative 4 - Designation of "Low Risk" Rivers. Provides protection for rivers unlikely to be impacted with water-related development. Rivers suitable for development remain available for such use.

Alternative 5 - Designation of All Eligible Rivers. The assessment found the eligible rivers to be suitable and all are recommended for classification.

Alternative 6 - Classifications different from the Eligibility Study. A change from the eligibility classifications or an addition of major tributaries to a river is made from Alternative 5.

Alternative 6 is the preferred alternative. It proposes designation of all the eligible rivers and the addition of tributaries that are complementary to or an enhancement of the main river's outstandingly remarkable value(s). It also changes the potential designation of two segments from Scenic to Wild because they qualify for the more restrictive designation.

Reviewers should provide the Forest Service with their comments during the review period of the draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decisionmaking process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. *City of Angoon v. Hodel* (9th Circuit, 1986) and *Wisconsin Heritages, Inc. v. Harris*, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

Comments to be received by:

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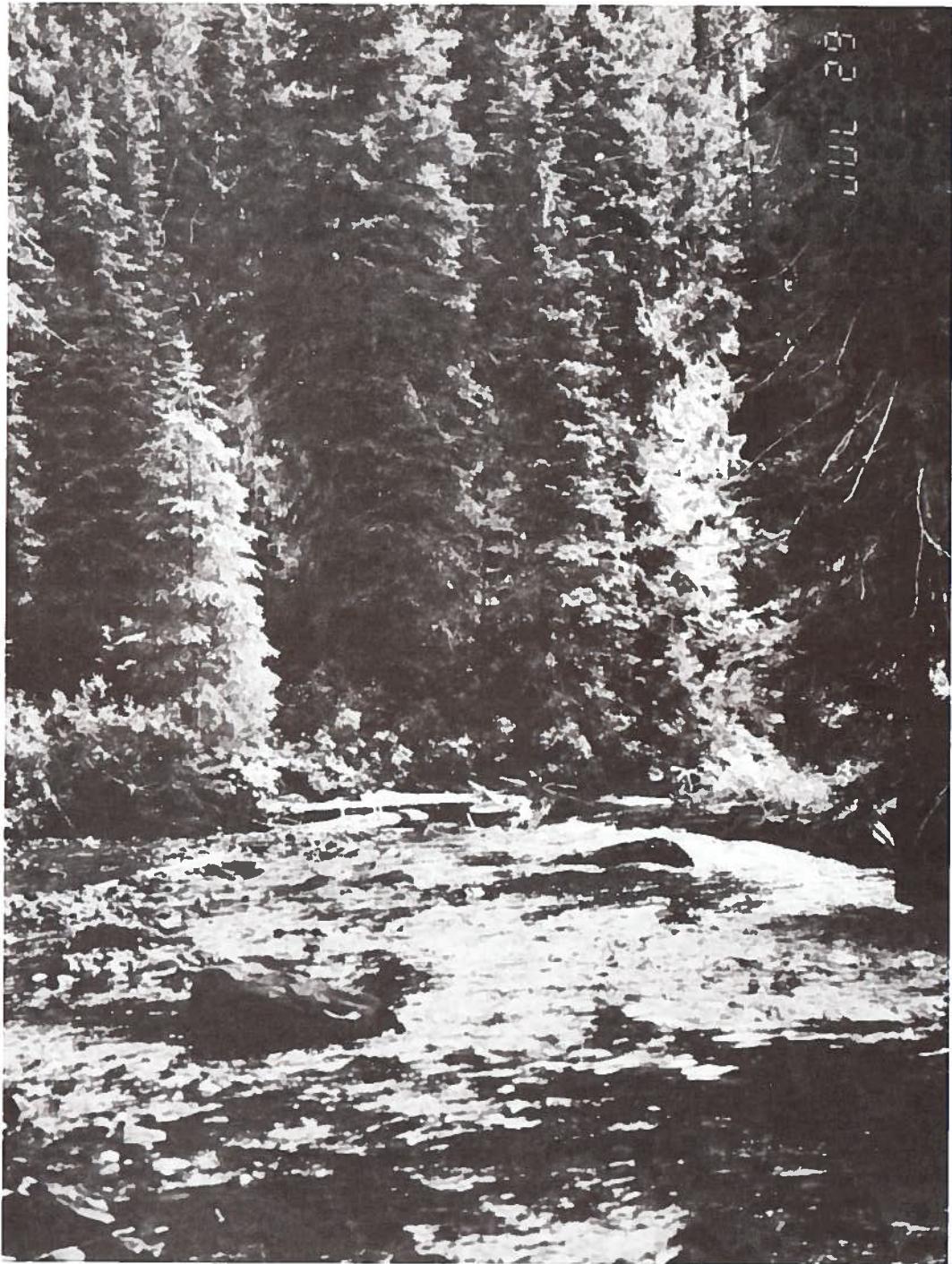
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Abbreviations Used Often in this Environmental Impact Statement

CFR	Code of Federal Regulations
FERC	Federal Energy Regulatory Commission
FR	Federal Register
FS	Forest Service (also USFS)
LAC	Limits of Acceptable Change
NRA	National Recreation Area
ORV	Outstandingly Remarkable Value
RNRAW	Rattlesnake National Recreation Area and Wilderness
USFWS	U.S. Fish and Wildlife Service
VQO	Visual Quality Objective
WSRA	Wild and Scenic Rivers Act

PROJECT FILE

The project file for this Draft Wild and Scenic Rivers Suitability Study and Environmental Impact Statement is maintained on the Lolo National Forest, Missoula, Montana. The project file contains background information collected to produce the suitability study and environmental impact statement. Detailed specialist reports, river descriptions, communication, and other logistical information pertinent to the study are kept as a reference and is available for review by the public at the Lolo National Forest, Building 24, Fort Missoula, Missoula, Montana.



West Fork Fish Creek, 1½ miles above Indian Lodge

Summary

The Lolo National Forest lies in a crescent shape in the center of western Montana with the city and valley of Missoula in the middle. Eight rivers on the Lolo National Forest, ranging from the broad Clark Fork of the Columbia to the narrow, high elevation South Fork of Lolo Creek, were found to be eligible for a suitability study for designation under the Wild and Scenic Rivers Act. This Wild and Scenic River study is the final agency step in the process to keep these eight rivers free flowing and under protective management.

Chapter 1 - Purpose and Need

The Wild and Scenic Rivers Act was passed in 1968 to balance river development with river protection. To accomplish this goal, Congress created the National Wild and Scenic Rivers system. The Wild and Scenic Rivers Act protects free-flowing rivers with outstanding features by prohibiting Federal projects which may have a negative impact on these rivers. The Wild and Scenic Rivers System presently protects 152 rivers totaling 10,516 miles; more than 700 rivers are now being considered for protection.

The 1992 policy on ecosystem management announced by the Chief of the Forest Service is compatible with designation of rivers under the Act. Both protect environmental values that the American people have, through Congress, expressed a desire to maintain.

The history of this study process on the Lolo National Forest is as follows:

The eligibility study was completed in August 1991. This process consisted of three steps:(1) Identify which rivers were eligible for protection on the forest, (2) Assign each river a potential classification, and (3) Develop management standards to protect the identified rivers until a suitability study could be completed and Congress could act.

The completion of the eligiblty study resulted in Amendment 12 to the Forest Plan which put management standards in place to protect the rivers.

In April 1993, an interdisciplinary team was assigned the task of completing a suitability study and Environmental Impact Statement (EIS) for eight of the nine rivers identified. The ninth river, Rock Creek, will be studied in conjunction with the Deerlodge National Forest at a later time.

The interdisciplinary team completed a field study of the rivers in September of 1993 and has done the analysis for the EIS. The draft EIS was completed in May of 1994.

Since the decision making role is reserved to Congress, the time required to complete a legislative (LEIS) and receive the decision from Congress is uncertain.

Public scoping for the suitability study identified issues in the following four areas.

Figure 1. Issue Summary

Resources Includes issues on the use of natural resources and the effects of Wild and Scenic River classification.
Property Rights Includes the economic, social, and regulatory implications of classification and the effects on existing rights.
Government Intervention Closely related to property rights; also includes the question of adding more regulation on top of existing federal, state, and local controls.
Alternatives Includes suggestions for additional rivers and changing the recommended classifications.

These issues were instrumental in developing the six alternatives discussed in chapter 4.

Chapter 2 - Affected Environment

The eight study rivers are all part of the Columbia River Drainage, on the west side of the Continental Divide. They range from a popular floatable broad river with considerable private ownership to pristine, high elevation streams totally in National Forest System lands. The area is largely mountainous and has been inhabited for at least 10,000 years. Euro-Americans started settling in the region in the mid-1800's and have had a dramatic effect on the landscape. Three of the rivers have significant development, and five are relatively undisturbed.

Table 1. River Segments

RIVER	STUDY LENGTH	REACH	LENGTH	BEGINNING POINT	ENDING POINT
Clearwater River	19.9 miles	Mainstem	19.9 miles	NE 1/4 Sect. 17, T19N, R15W	SE 1/4 Sect. 20, T19N, R15W
Morrell Creek	5.8 miles	Above Falls	2.8 miles	NW 1/4 Sect. 7, T18N, R14W	SW 1/4 Sect. 24, T18N, R15W
		Below Falls	3.0 miles	SW 1/4 Sect. 24, T18N, R15W	SW 1/4 Sect. 36, T18N, R15W
North Fork Blackfoot	63.9	Mainstem	20.0 miles	NE 1/4 Sect. 34, T18N, R9W	NE 1/4 Sect. 27, T16N, R11W
		Dry Fork	16.8 miles	SE 1/4 Sect. 6, T18N, R10W	SE 1/4 Sect. 30, T17N, R10W
		Cabin Creek	8.4 miles	NE 1/4 Sect. 16, T18N, R10W	NW 1/4 Sect. 13, T17N, R11W
		Cooney Creek	5.0 miles	NW 1/4 Sect. 17, T19N, R9W	NE 1/4 Sect. 1, T17N, R10W
		Dobrota Creek	3.3 miles	SW 1/4 Sect. 23, T18N, R10W	SE 1/4 Sect. 31, T18N, R9W
		Dwight Creek	5.0 miles	SE 1/4 Sect. 12, T17N, R12W	NW 1/4 Sect. 3, T17N, R11W
		Canyon Creek	5.3 miles	SW 1/4 Sect. 28, T17N, R11W	SW 1/4 Sect. 11, T17N, R11W
Rattlesnake Creek	37.9 miles	Mainstem	19.2 miles	SW 1/4 Sect. 4, T15N, R18W	NE 1/4 Sect. 2, T13N, R19W
		East Fork	4.2 miles	NE 1/4 Sect. 8, T14N, R17W	NE 1/4 Sect. 14, T14N, R18W
		Wrangle Creek	3.7 miles	NW 1/4 Sect. 18, T15N, R18W	C Sect. 21, T15N, R18W
		Lake Creek	2.3 miles	SE 1/4 Sect. 30, T15N, R18W	SE 1/4 Sect. 21, T15N, R18W
		Spring Gulch	4.5 miles	SE 1/4 Sect. 12, T14N, R19W	NE 1/4 Sect. 35, T14N, R19W
		High Falls Creek	4.0 miles	C Sect. 5, T14N, R18W	C Sect. 2, T14N, R18W
South Fork Lolo Creek	12.6 miles	Mainstem	11.4 miles	NW 1/4 Sect. 35, T10N, R22W	NE 1/4 Sect. 12, T11N, R22W
		No Name Creek	1.1 miles	NW 1/4 Sect. 30, T10N, R22W	C Sect. 24, T10N, R22W

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RIVER	STUDY LENGTH	REACH	LENGTH	BEGINNING POINT	ENDING POINT
Cache Creek	21.8 miles	Above Montana Creek Below Montana Creek Irish Creek White Creek Pebble Creek	10.2 miles 1.3 miles 2.5 miles 4.6 miles 3.3 miles	NW $\frac{1}{4}$ Sect. 21, T11N, R25W NE $\frac{1}{4}$ Sect. 18, T11N, R24W SW $\frac{1}{4}$ Sect. 20, T12N, R25W SW $\frac{1}{4}$ Sect. 33, T12N, R24W SW $\frac{1}{4}$ Sect. 10, T11N, R25W	NE $\frac{1}{4}$ Sect. 18, T12N, R24W NE $\frac{1}{4}$ Sect. 8, T12N, R24W SW $\frac{1}{4}$ Sect. 22, T12N, R25W SE $\frac{1}{4}$ Sect. 18, T12N, R24W SE $\frac{1}{4}$ Sect. 28, T12N, R25W
West Fork Fish Creek	20.4 miles	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.4 miles 7.6 miles 3.5 miles	NE $\frac{1}{4}$ Sect. 6, T13N, R26W C Sect. 14, T12N, R26W NW $\frac{1}{4}$ Sect. 14, T12N, R26W	SE $\frac{1}{4}$ Sect. 6, T13N, R25W SW $\frac{1}{4}$ Sect. 19, T13N, R25W SW $\frac{1}{4}$ Sect. 25, T12N, R26W
Clark Fork River	27.9 miles	Slowey Segment Cutoff Segment	7.0 miles 20.9 miles	NE $\frac{1}{4}$ Sect. 15, T17N, R27W SW $\frac{1}{4}$ Sect. 9, T18N, R27W	NW $\frac{1}{4}$ Sect. 31, T18N, R28W NW $\frac{1}{4}$ Sect. 34, T19N, R25W

One of the rivers is heavily used for recreation by Missoula residents and visitors and is within 2 miles of the city limits. Montana is still a largely rural state and has very limited zoning or land use regulations except in the case of water and air quality. The watersheds of these rivers are home to a variety of endangered, threatened and sensitive plant and animal species. The scenery is spectacular, and in some instances, easily accessible. The geology of the Lolo National Forest is widely marked by the footsteps of repeated glaciation, with moraines and hanging valleys a feature of the study rivers. The water quality of the rivers ranges from pristine to threatened by development. Most of the streams represent prime habitat for diminishing populations of bull trout and west slope cutthroat.

Clearwater River

The Clearwater River is located in Missoula County, Montana, near the community of Seeley Lake. It meanders 43 miles from headwaters to the mainstem of the Blackfoot River through a glacially carved valley between two mountain ranges. It is naturally impounded by five lakes in a "Chain of Lakes" formed by glaciation. The scenery and recreation opportunities are outstanding and attract thousands of visitors from Montana and adjacent states.

Morrell Creek

Morrell Creek flows for 16 miles from its headwaters in a long glacial cirque basin to the Clearwater River. It leaves the high altitude basin in a series of remarkable falls that receive the highest visitor use of any site on the Seeley Lake Ranger District. The trail to the falls is as easily accessible as the upper basin is strenuous.

North Fork of Blackfoot

The North Fork of the Blackfoot is contained primarily in the Scapegoat Wilderness and has hiking or horseback access. The natural and scenic values are enhanced by evidence of the Canyon Creek Fire which burned most of the drainage in 1988. Recovering plant communities and geological features previously obscured by tree cover are unique to this region. The river provides excellent fish habitat to native species, and a significant population of elk occupy the drainage.

Rattlesnake Creek

Rattlesnake Creek flows into the Clark Fork in Missoula, and from the city limits to the high country, is Missoula's largest recreation site. Hanging valleys, moraines, sphagnum bogs, and water chutes are just some of the scenic and natural characteristics of the Rattlesnake drainage. The water quality supports native species of fish, as well as being part of the municipal water system.

South Fork of Lolo Creek

The South Fork of Lolo Creek is a part of the Clark Fork system, via Lolo Creek and the Bitterroot River. It begins in the high elevation country of the Selway Bitterroot Wilderness and alternately rushes and wanders through spectacular viewsheds providing habitat for diminishing native species of fish. It has prehistoric and historic values dating from many thousands of years ago to more recent trappers' cabins.

Cache Creek

Cache Creek flows through the proposed Great Burn Wilderness west of Missoula, from spectacular headwater origins to the South Fork of Fish Creek. It experiences low to moderate visitor use and is home to moose, elk, and an occasional gray wolf. The water quality and fish habitat is important to bull trout and westslope cutthroat.

West Fork of Fish Creek

The neighboring drainage to Cache Creek is the West Fork Fish Creek, which is also in the proposed Great Burn Wilderness. The West Fork did not burn as completely in 1910 as adjoining drainages and therefore contains some ancient cedar groves throughout its upper reaches. A large population of moose occupies the drainage, and the clean water and pools are important habitat to native fishes.

Clark Fork

The Clark Fork flows 315 miles from headwaters near Butte, Montana, to Lake Pend Oreille in Idaho, and all the other eligible rivers eventually flow into the Clark Fork. Many Western Montana communities are located on the river, and it provides extensive recreation opportunities to residents and visitors alike. The river segments being considered are in some of the lesser-developed stretches of the river corridor.

Chapter 3 - Eligibility Study

The eligibility study was completed in August of 1991 and identified nine rivers that meet the criteria for designation. The outstandingly remarkable values that make up the criteria are:

Scenic - visual settings that are diverse or exceptional

Recreation - highly valued or unique recreation opportunities

Geologic - unusual or unique geologic features or formations

Fishery - exceptionally high quality or critical habitat; presence of endangered species

Wildlife - critical habitat for unique or threatened species and exceptional opportunities for wildlife viewing

Cultural - sites on, or eligible for, the National Register of Historic Places

Natural - threatened, endangered or sensitive plants; natural features proposed or designated as national monuments or landmarks; or the collective effects of multiple values

The following rivers have been identified as having one or more of the outstandingly remarkable values and as being worthy of addition to the national system.

Table 2. River Study Summary

RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
North Fork Blackfoot River	63.9	Mainstem	20.0	Wild	Fisheries, Recreation, Scenery & Natural, all reaches	6,349		
		Dry Fork	16.8	Wild		5,009		
		Cabin Creek	8.4	Wild		2,709		
		Cooney Creek	5.0	Wild		1,646		
		Dobrota Creek	3.3	Wild		1,091		
		Dwight Creek	5.1	Wild		1,449		
		Canyon Creek	5.3	Wild		1,524		
Morrell Creek	5.8	Trailhead to falls	3.0	Scenic	Scenery & Recreation	992		
		Falls to headwaters	2.8	Wild		927		
Clearwater River	19.9	Seeley Lake inlet to headwaters	19.9	Recreation	Recreation, Wildlife & Scenery	5,077	1396	
							772(lakes)	
Rattlesnake Creek	37.9	Mainstem	19.2	Scenic	Recreation & Fishery, all reaches	4,920		177
		Wrangle Creek	3.7	Wild		1,313		
		Lake Creek	2.3	Scenic		885		
		Spring Gulch	4.5	Scenic		1,370		
		High Falls Creek	4.0	Wild		1,096		86
		East Fork Rattlesnake	4.2	Wild		1,301		
South Fork Lolo Creek	12.5	NE $\frac{1}{4}$ Sec 12 to headwaters	11.4	Wild	Recreation & Scenery	3,642		
		No Name Creek	1.1	Wild		311		
Cache Creek	21.9	Mainstem above Montana Creek	10.2	Wild	Geologic, Fishery, & Natural, all reaches	3,577		
		Mainstem below Montana Creek	1.4	Scenic		560		65
		Irish Creek	2.4	Wild		964		
		Pebble Creek	3.3	Wild		1,140		
		White Creek	4.6	Wild		1,295		

RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
West Fork Fish Creek	20.4	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.3 7.6 3.5	Wild Wild Wild	Natural, all reaches	3,583 2,501 1,290		
Clark Fork	27.9	Slowey Cutoff	7.0 20.9	Recreation Recreation	Recreation & Scenery	849 163 (river) 4,503 792 (river)	271 868	1,057 1,335

Chapter 4 - Alternatives

The eleven issues that helped form the alternatives are as follows:

Will development and management of recreation facilities in a corridor be affected by classification?

What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?

Will Wild and Scenic River classification provide protection for threatened, endangered and sensitive species?

How will Wild and Scenic River classification affect management of wildlife and fish habitat?

Would Wild and Scenic River classification affect potential relocation of Missoula's water system intake in Rattlesnake Creek?

How will classification affect timber cutting, mining, outfitting, special use permits, and future development on National Forest System lands?

Does designation allow federal control over private land? Will designation affect resource development or building?

If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?

Why aren't Lake, Wrangle, and Rattlesnake Creeks above the confluence with Wrangle being considered for "Wild" classification?

Shouldn't "Wild" designation (or the most restrictive) be used wherever possible?

Would you consider including the private land at the mouth of Cache Creek in the proposed classification?

The alternatives do not quote the issue(s) directly but the issues provide the philosophy, direction, or "flavor" of each alternative. The alternatives also fulfill the Council on Environmental Quality regulations and the guidelines established in the USDI/USDA Final Revised Guidelines for Eligibility, Classification and Management of River Areas (September 7, 1982) and the Forest Service Handbook 1909.12, Chapter 8.

Alternative 1

This Alternative is the No Action alternative and would return the management status of the river corridors to that described in the Forest Plan before Amendment 12.

Alternative 2

Alternative 2 would not recommend rivers for designation, but would put management standards similar to Amendment 12 of the Lolo National Forest Plan in place to protect the values of the rivers where they flow through National Forest System lands.

Alternative 3

Alternative 3 proposes the designation of those rivers that are considered to be "at risk" because of water-related development, specifically the Clark Fork and Clearwater Rivers.

Alternative 4

Alternative 4 proposes the designation of "low risk" rivers: Morrell Creek, North Fork of the Blackfoot, Rattlesnake Creek, South Fork of Lolo Creek, Cache Creek, and the West Fork of Fish Creek. There is low probability that these rivers would ever be needed for water related development.

Alternative 5

Alternative 5 proposes the designation of all the rivers found eligible and suitable through the wild and scenic rivers studies.

Alternative 6

Alternative 6 is the preferred alternative. It proposes designation of all the eligible rivers and the addition of tributaries that are complementary to or an enhancement of the main river's outstandingly remarkable value(s). It also changes the potential designation of two segments from Scenic to Wild because they qualify for the more restrictive designation.

Table 3. Rivers Suitable for Recommendation By Alternative

RIVER	ELIGIBILITY STUDY RIVER MILES	ALTERNATIVE					
		1	2	3	4	5	6
Clearwater River	19.9			x		x	x
Morrell Creek	5.8				x	x	x
North Fork Blackfoot River	53.5				x	x	x
Rattlesnake Creek	25.2			x		x	x
South Fork Lolo Creek	11.4				x	x	x
Cache Creek	17.2				x	x	x
West Fork Fish Creek	20.4				x	x	x
Clark Fork	27.9			x		x	x
Total River Miles	181.3	0	0	73.0	108.3	181.3	210.2

Table 4. Summary Comparison of Alternatives

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Intent</u></p> <p>Maintain the existing level of resource protection, allowing land uses and river management practices to continue without the protection of Forest Plan Amendment 12. No special designation for the rivers and no new mechanisms to provide additional resource protection; no special river management coordination.</p>	<p>Provide classification protection, without congressional action through the Forest Plan. This protection would apply to Federal land; private and state land opportunities, limitations and coordination would not change from existing situation.</p>	<p>Classification is recommended only for those rivers that are prone to have a water resource-related development. This determination is made from historic requests, proposals, inventories, or approved projects.</p>	<p>Classification is recommended for those rivers unlikely to be impacted with water-related development projects. Rivers suitable for hydropower or other water-related projects would remain available for development.</p>	<p>Classification is recommended for all the rivers found suitable under the W&SR Act criteria; applies to all eight rivers determined eligible in Amend 12 to the Forest Plan.</p>	<p>Classification is recommended for all eligible rivers, plus significant tributaries that contribute to the outstandingly remarkable values and a stretch of private land are added. Segments of two rivers are recommended for a more primitive class than recommended in the eligibility study.</p>

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Boundaries</u> No formal definition of a river corridor management area.</p>	A 1/4-mile corridor on each side of the river would be defined on National Forest System land. There would be no definition on other ownerships.	A 1/4-mile corridor on each side of the river would be defined across all ownerships.	Same as Alt. 3	Same as Alt. 3	Same as Alt. 3
<p><u>Visuals</u> Visual quality objective will vary from Partial Retention to Retention, depending on the river and existing amount of development. Constraints on private land will be up to the owner.</p>	Same as Alt. 1, except activities on National Forest land will be better screened from the river. Constraints on private land will be up to the owner.	<p>Clearwater, Clark Fork: Retention and Partial Retention visual quality objectives (VQO). Alteration permissible but appearance is essentially undisturbed from watercourse.</p> <p>Rattlesnake: Preservation and Retention VQO's; protect primitive, natural, esthetic character.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Preservation, Retention and Partial Retention VQO's; protect primitive, natural, esthetic character.</p> <p>Morrell, lower Cache: Preservation, Retention and Partial Retention VQO's. Alteration permissible but appearance is essentially undisturbed from watercourse.</p>	<p>Clearwater, Clark Fork, Morrell, lower Cache: Retention and Partial Retention VQO's. Alteration permissible but appearance is essentially undisturbed from watercourse.</p> <p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish, Rattlesnake: Preservation, Retention and Partial Retention VQO's; protect primitive, natural, esthetic character.</p>	Same as Alt. 5

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Vegetation</u></p> <p>Use and extraction activities acceptable except in existing and proposed Wilderness and the National Recreation Area. Other constraints would reduce the visual effects of activities.</p>	<p>Use and extraction activities acceptable except in the existing and proposed Wilderness and National Recreation Area. Values identified as outstandingly remarkable would be protected.</p>	<p>Clearwater, Clark Fork: Manage for healthy communities, but prescriptions visually subordinate on the landscape. Noxious weed control proactive.</p> <p>Rattlesnake: Allow natural forces to dominate in vegetative development except as provided in the management direction for the Rattlesnake National Recreation Area and Wilderness.</p>	<p>All Recommended Rivers: Allow natural forces to dominate in vegetative development. Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety.</p>	<p>Clearwater, Clark Fork: Manage for healthy communities, but prescription visually subordinate on the landscape. Noxious weed control proactive.</p> <p>Morrell, N.F.Blackfoot, Rattlesnake, S.F.Lolo, Cache, W.F.Fish: Allow natural forces to dominate in vegetative development. Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety.</p>	<p>Same as Alt. 5</p>

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Fish & Wildlife</u></p> <p>There is no particular protection afforded the fish except for the State's water quality rules. In addition to wildlife protection afforded by Wilderness, there are about 4500 acres of big game winter range and 3000 acres of grizzly bear habitat that could be featured in management of the National Forest System land.</p>	<p>Similar to Alt. 1, except that constraints on other activities, such as water-related development, would provide additional protection to fish and wildlife habitat.</p>	<p>Clearwater, Clark Fork: Fish and wildlife habitat maintenance and improvement (including recovery) are featured, especially bird habitat.</p> <p>Rattlesnake: less management activity is permissible than on the other two rivers because of the recently completed management direction developed under the Limits of Acceptable Change process. Bird habitat is featured.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Very little in the way of direct management is available due to the existing and proposed Wilderness classification on these rivers.</p> <p>Morrell, lower Cache: Fish and animal habitat (emphasis on bird) maintenance and improvement are featured; however, there are only about 1000 acres available because of the proposed Wilderness areas.</p>	<p>Clearwater, Clark Fork, Morrell, Rattlesnake, upper Cache: Fish and wildlife habitat maintenance and improvement is featured, especially bird habitat. See Alt. 3 for constraints in the Rattlesnake.</p> <p>Morrell, lower Cache: Fish and wildlife habitat (emphasis on bird) maintenance and improvement are featured; however, there are only about 1000 acres available because of the proposed Wilderness areas.</p>	<p>Same as Alt. 5</p>
<p><u>Soil & Water</u></p> <p>With no prohibition on development (except in existing and proposed Wilderness) there could be short-term soil and water degradation. Sites selected for development would be completely removed from functioning naturally. State laws would be heavily relied upon for protection.</p>	<p>Constraints vary from development prohibited to allowing minor structures for hydroelectric, water supply, flood control, and utilities, depending on whether located in a primitive or developed setting.</p>	<p>Clearwater, Clark Fork, Rattlesnake: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course.</p> <p>Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p> <p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course.</p>	<p>Same as Alt. 5</p>

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Recreation</u></p> <p>Recreation opportunities and public access are provided on Federal land and by counties/state where need has prompted such development. As in all alternatives, hunting and fishing is regulated by the State.</p>	<p>Development is modest and simple, unobtrusive. Private land development is encouraged to follow same pattern.</p>	<p>Clearwater, Clark Fork, Rattlesnake: Campgrounds, picnic area and other facilities necessary to guide public use may be established within the corridor.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Campgrounds, interpretive centers, administrative buildings will be located outside the wild river corridor. Trailheads and simple comfort facilities may be provided within the corridor. Morrell, lower Cache: Campgrounds, picnic areas, and other facilities necessary to guide public use may be established within the corridor.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: Campgrounds, picnic areas, and other facilities necessary to guide public use may be established within the corridor. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Campgrounds, interpretive centers, administrative buildings will be located outside of the corridor. Trailheads and simple comfort facilities may be provided within the corridor.</p>	<p>Same as Alt. 5</p>

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Minerals</u></p> <p>Mining and minerals development are regulated by existing rules. There are no lands withdrawn from mineral entry except for developed sites and Wilderness areas. Operating plans that contain procedures to protect other resources are required.</p>	<p>Existing operations allowed to continue and new claims/leases allowable. Mineral activity must minimize surface disturbance, sedimentation, pollution, and visual effects in or outside the corridor. Option available to withdraw Federal lands for protection of outstandingly remarkable values.</p>	<p>Clearwater, Clark Fork, Rattlesnake: New mining claims and mineral leases are allowed and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operation plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Existing valid claims will not be abrogated but occupancy may be restricted. The minerals in Federal lands within the corridor are withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws. Morrell, lower Cache: New mining claims and mineral leases are allowed and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operating plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: New mining claims and mineral leases are allowed and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operation plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Existing valid claims will not be abrogated, but occupancy may be restricted. The minerals in Federal lands within the corridor are withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws.</p> <p>Same as Alt. 5</p>

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Private Land Uses</u></p> <p>All private land uses are under local and State controls. The coordination of management activities and uses occur in ad hoc fashion. The State's various riparian area, water quality, and subdivision laws have the most influence on development.</p>	Same as Alt. 1	<p>Clearwater, Clark Fork, Rattlesnake: Existing uses continue at owner's discretion. The Forest Service will work with land owners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements is a possibility. Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	<p>Lower Cache: Existing uses continue at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements is a possibility. Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	<p>Clearwater, Clark Fork, Rattlesnake, lower Cache: Existing uses continue at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements is a possibility. Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	Same as Alt. 5
<p><u>Public Use and Access</u></p> <p>Application of public use and access rules would be implemented as problems arose on National Forest System land. Private landowners would have control of public use and access on their lands.</p>	Same as Alt. 1, except that use and access restrictions would be anticipated ahead of the problem.	<p>Clearwater, Clark Fork, Rattlesnake: When necessary, public use will be distributed to protect or enhance the resource values of the river area. Use may be controlled by limiting access to the river, issuing permits, or other statutory authority. Access and public use of private property is at the discretion of the landowner.</p>	<p>N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish, Morrell: When necessary, public use will be distributed to protect or enhance the resource values of the river area. Use may be controlled by limiting access to the river, issuing permits, or other statutory authority. Access and public use of private property is at the discretion of the landowner.</p>	<p>All Rivers: When necessary, public use will be distributed to protect or enhance the resource values of the river area. Use may be controlled by limiting access to the river, issuing permits, or other statutory authority. Access and public use of private property is at the discretion of the landowner.</p>	Same as Alt. 5

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<u>Motorized Travel</u> Travel restrictions usually made as independent action by landowner/manager. Normal travel plan procedures on National Forest.	May be permitted, but not compatible with primitive setting. Not allowed in Wilderness. Controls would be coordinated with other managers.	Clearwater, Clark Fork: Generally permitted, but will be restricted on land or water to protect the values for which the river was designated. Private land restrictions up to owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992.	N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Prohibited in designated and proposed Wilderness. Morrell, lower Cache: May be permitted or restricted to protect river values. Private land controlled by owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992.	Clearwater, Clark Fork, Morrell, lower Cache: May be permitted or restricted to protect river values. Private land controlled by owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Prohibited in designated and proposed Wilderness.	Same as Alt. 5
<u>Water Related Projects</u> Project proposals would stand on their own. Coordination with other agencies may or may not be necessary.	Will not be permitted in primitive settings; minor structures permitted in developed settings.	Clearwater, Clark Fork: Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves. Rattlesnake: Same as above.	N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Not allowed. Morrell, lower Cache: Not allowed unless in the public interest.	Clearwater, Clark Fork: Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves. Rattlesnake, Morrell, lower Cache: Same as above. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Not allowed.	Same as Alt. 5

Chapter 5 - Environmental Consequences

This chapter describes the impacts of each alternative on the affected environment and the issues.

Some increased use resulting in user impacts could occur as a result of designation. Individual river management plans will address and mitigate environmental consequences on each river corridor specific to the demands on each river. Rivers not designated would continue to be managed under the standards of the Lolo National Forest Plan before Amendment 12. Implementation of any of the alternatives may create social conflicts between various groups because action and lack of action are not acceptable solutions to all people.

Implementation of any alternative would continue to provide opportunities for short-term resource yields. The standards and guidelines contained in the Lolo National Forest Plan ensure that short-term resource yields do not significantly impair the long-term productivity of the land. Congressional designation of any alternative except Alternative 1 would protect some or all of the long-term free-flowing river recreational opportunities and outstandingly remarkable values on these rivers.

None of the alternatives result in uses or modification of resources that are considered irreversible, such as metal ore or natural gas. Designation would protect threatened, endangered and sensitive plants and animals, and cultural resources from being lost due to inundation from dam construction.

All of the alternatives reduce the management of some resources and emphasize the management of other resources. Those that feel commodity production is the most important aspect of National Forest management will feel that classification will be an irretrievable commitment to not produce extractive commodities on all National Forest System lands.

Table 5. Summary of Effects on River Resources and Issues by Alternative

(R) River Resource

(I) Issue

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
(R) Land Use & Controls and (I) Effects on USFS Management					
Return to Forest Plan standards prior to Amendment 12.	Range of activities on Federal lands more restricted than under Forest Plan without Amendment 12. Private lands unaffected.	No water-related development on Clark Fork, Rattlesnake or Clearwater. No effect on other rivers.	No water-related development on N.F. Blackfoot, S.F.Lolo, Cache, W.F.Fish, Morrell. No effect for Clark Fork, Rattlesnake and Clearwater.	No water-related development on any of classified rivers.	Same as Alt. 5 except extended to other tributaries and stretch of private land.

(R) Land Ownership and (R) Geology, Minerals and Soils

No direct effects.					
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(I) Private Property Rights

Unaffected.	Same as Alt. 1	<p>Clearwater, Clark Fork, Rattlesnake: Existing uses owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements is a possibility. Housing set-back from the river is desired.</p>	<p>Lower Cache: Existing uses at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements possible. Housing set-back from the river is desired.</p>	<p>Clearwater, Clark Fork, Rattlesnake, lower Cache: Existing uses at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects. Acquisition of conservation easements is a possibility. Housing set-back from the river is desired.</p>	Same as Alt. 5
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(R&I) Public Use and Access, Recreation

Unaffected on National Forest System and private land.	Same as Alt. 1, except that use and access restrictions would be anticipated ahead of the problem. Development modest and simple; unobtrusive. Private land management is encouraged to follow same pattern.	Clearwater, Clark Fork, Rattlesnake: When necessary, public use distributed to protect resource values of the river area. Use may be controlled by limiting access to the river, issuing permits, or other statutory authority. Access and public use of private property at landowner discretion. Campgrounds, picnic area and other facilities necessary to guide public use may be established within the corridor.	N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish, Morrell: When necessary, public use distributed to protect resource values of the river area. Use may be controlled by limiting access to the river, issuing permits, or other statutory authority. Access and public use of private property at landowner discretion. Campgrounds, interpretive centers, administrative buildings will be located outside the wild river corridor. Trailheads and simple comfort facilities may be provided within the corridor.	Clearwater, Clark Fork, Rattlesnake: same as Alt.3. N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish, Morrell: Same as Alt.4.	Same as Alt. 5
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(R) Visuals and (I) Aesthetics

Unaffected.	Same as Alt. 1, except activities on National Forest land will be better screened from the river. Private land unaffected.	Clearwater, Clark Fork, Rattlesnake: On National Forest lands, alteration permissible but appearance is essentially undisturbed from watercourse.	N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Unaffected from present. Morrell, lower Cache: Alteration permissible but appearance is essentially undisturbed from watercourse.	Clearwater, Clark Fork, Rattlesnake: same as Alt.3. Morrell, N.F.Blackfoot, S.F.Lolo, W.F.Fish, Cache: Same as Alt. 4.	Same as Alt. 5
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(I) Change Classification

Unaffected.	Unaffected.	Unaffected.	Unaffected.	Unaffected.	Includes Wrangle Creek as "Wild". The upper stretch of Morrell as "Wild". Private land at mouth of Cache Creek included in the "Scenic" segment.
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(R) Cultural Resources and (I) Contemporary Native American Rights and Traditional Land Use

Unaffected.	Some additional protection.	Clearwater, Clark Fork, Rattlesnake: Additional protection including no inundation.	N.F.Blackfoot, S.F.Lolo, Morrell, Cache, W.F.Fish: Additional protection including no inundation.	Additional protection including no inundation.	Same as Alt. 5
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(I) T&E Species

Less protection than other alternatives, and vulnerable to water and shoreline development.	T&E species afforded some protection by the management of other resources such as water-related developments not allowed or minor in nature.	Clearwater, Clark Fork: Wetlands in the Clearwater would be protected from water projects, including nesting sites for bald eagles. Habitat for Coeur d'Alene salamanders in Clark Fork would be protected, as well as wintering grounds for bald eagles. Rattlesnake: No effect.	Morrell, N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish: Unaffected because corridor in wilderness or proposed wilderness.	Clearwater, Clark Fork Rattlesnake: Same as Alt.3. Morrell, N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish: Same as Alt. 4.	Same as Alt. 5
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(R) Socio-Economics

No direct effect except for people who value designation.	Offers some protection for resources without concerning people who are against further legislative regulation.	Clearwater, Clark Fork, Rattlesnake: Reassures people who are concerned about pressure on river resources on three most vulnerable rivers. Costs 0.3 jobs in extractive resource-related employment.	Offers resource protection to rivers that already have some measure of protection. Pleases those who have interest in national W&S system. Leaves more developed rivers open to future development effects. Represents the loss of 2.6 jobs.	Clearwater, Clark Fork, Rattlesnake: Same as Alt. 3. Morrell, Cache, N.F.Blackfoot, S.F.Lolo, W.F.Fish: same as Alt.4.	Same as Alt. 5
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(R&I) Wildlife and Fish & Plants

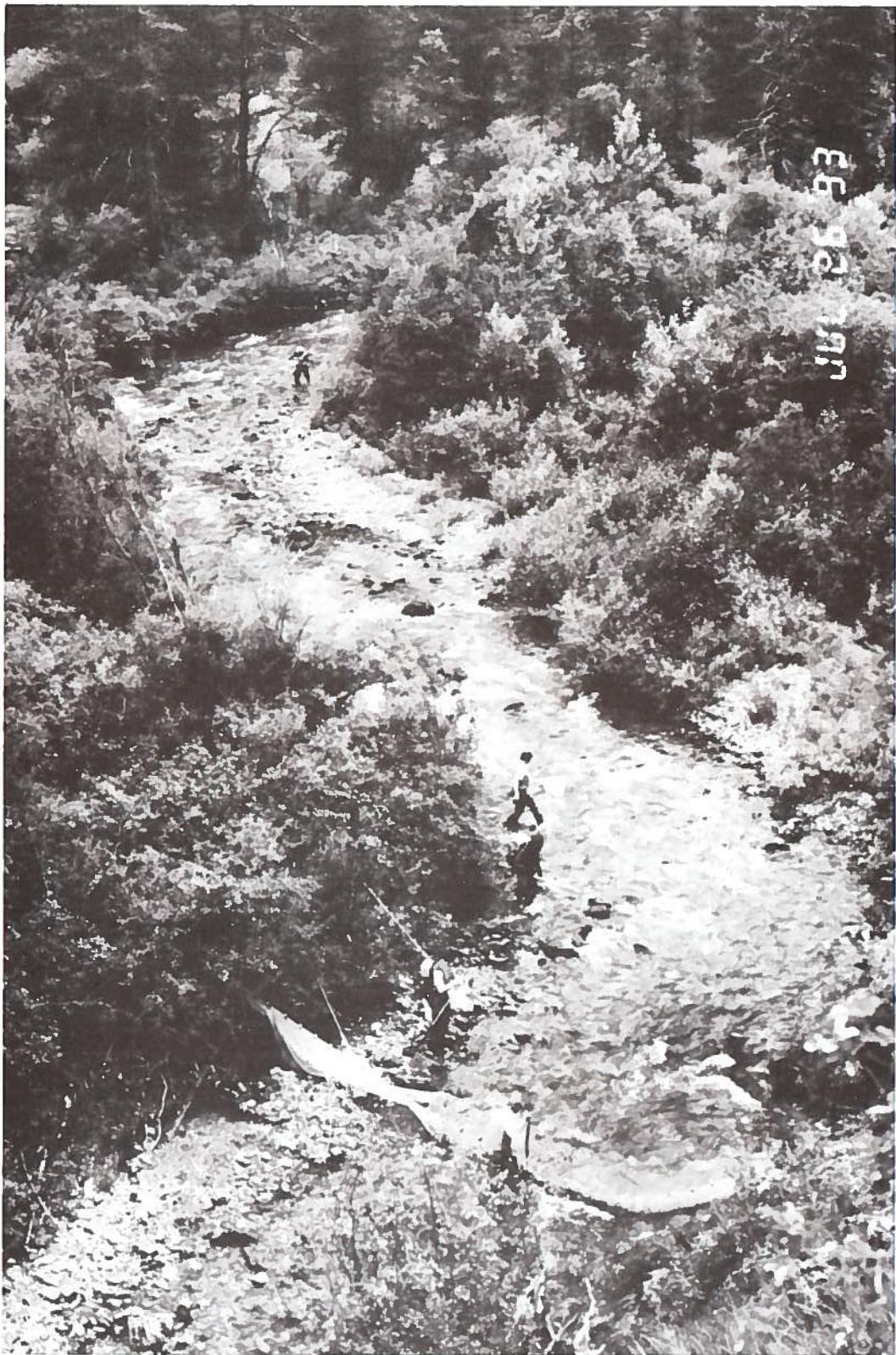
Unaffected.	<p>Similar to Alt. 1, except that constraints on other activities, such as water-related development, would provide additional protection to fish and wildlife habitat. Values identified as outstandingly remarkable targeted for protection.</p>	<p>Clearwater, Clark Fork: Fish and wildlife habitat maintenance and improvement (including recovery) are featured, especially bird habitat. Manage for healthy communities, but prescriptions visually subordinate on the landscape. Noxious weed control proactive. Rattlesnake: Fish and wildlife habitat maintenance and improvement (including recovery) are featured, especially bird habitat. Allow natural forces to dominate in vegetative development.</p>	<p>All Recommended Rivers: Allow natural forces to dominate in vegetative development. Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety. Otherwise similar to Alt. 2.</p>	<p>Clearwater, Clark Fork: Manage for healthy communities, but prescription visually subordinate on the landscape. Noxious weed control proactive. Morrell, N.F.Blackfoot, Rattlesnake, S.F.Lolo, Cache, W.F.Fish: Allow natural forces to dominate in vegetative development. Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety.</p>	Same as Alt. 5
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(I) Added Costs

No effect.	Minimal effect.	<p>Clearwater, Clark Fork: Designation will increase administrative costs \$200/mile/year. Rattlesnake: Designation will increase administrative costs \$100/mile/year.</p>	<p>Designation would increase administrative costs \$100/mile/year.</p>	<p>Clearwater, Clark Fork: same as Alt.3. Rattlesnake, Morrell, Cache, N.F.Blackfoot, S.F.Lolo, W.F.Fish: same as Alt.4.</p>	Same as Alt. 5
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(I) Water Use and Quality

<p>Project proposals would stand on their own. Coordination with other agencies may or may not be necessary. With no prohibition on development (except in existing and proposed Wilderness), there could be short-term water degradation. State laws relied upon for protection.</p>	<p>Effects vary from development prohibited to allowing minor structures for hydroelectric, water supply, flood control, and utilities, depending on whether located in a primitive or developed setting.</p>	<p>Clearwater, Clark Fork, Rattlesnake: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution. Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course. Water projects not allowed. Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution. Water projects not allowed unless in the public interest.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution. Clearwater, Clark Fork, Rattlesnake,: Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves. Morrell, lower Cache: Same as above. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course. Water projects not allowed.</p>	<p>Same as Alt. 5</p>
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West Fork Fish Creek. Fish shocking to learn species and population.

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Purpose and Need

■ 1.0 Purpose

The purpose of this document is to provide a basis for Congress to determine whether eight rivers on the Lolo National Forest in western Montana should be added to the National Wild and Scenic Rivers System.

This study and environmental impact statement (EIS) presents the findings and recommendation of the Chief of the Forest Service concerning the potential classification of the eight rivers to the Congress of the United States. The analysis of the rivers is documented in the project file maintained on the Lolo National Forest, Missoula, Montana. This suitability study is required by law and is the agency's final step in determining the suitability or unsuitability of the eligible rivers.

Public interest in the health of Montana's rivers has been on a gradual increase within the past decade. The desire to protect the natural characteristics of the State's rivers has spurred various public forums, interest groups, and legal actions. Several State laws have been passed to protect their quality including the Montana Stream Protection Act. The level of concern has also prompted the Forest Service, State of Montana, and several of the larger private timber corporations to agree to enforce better management practices alongside the State's waterways.

In January 1992, a Clark Fork River Conference was held to determine the extent of interest in

protecting the river and its environs. Approximately 50 individuals, interest group leaders, local, county, state, and tribal representatives and federal land managers identified 6 major areas of concern containing 35 issues. These ranged from water quality to subdivision to protection of cultural values. One of the most significant outcomes was the concurrence that the public needed to press for river management.

This Wild and Scenic River study is one step that will ensure that at least two segments of the Clark Fork River and several other rivers and creeks in Montana will remain free flowing and come under protective management.

■ 1.1 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act was passed in 1968 to balance river development with river protection.

"The Congress declares that the established national policy of dam and other construction...needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other national conservation purposes".



To accomplish this goal, Congress created the National Wild and Scenic Rivers system:

"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and... shall be protected for the benefit and enjoyment of present and future generations".

The Wild and Scenic Rivers Act protects free-flowing rivers with outstanding features by prohibiting Federal projects which may have a negative impact on these rivers. The Wild and Scenic Rivers System presently protects 152 rivers totaling 10,516 miles; more than 700 rivers are now being considered for this protection.

■ 1.2 Ecosystem Management

In 1992 the Chief of the Forest Service announced "Ecosystem Management" as a policy for the management of National Forest System lands. The essence of the policy is the "use of an ecological approach to achieve multiple use management of National Forests and Grasslands by blending the needs of people and environmental values in such a way that National Forests and Grasslands represent diverse, healthy, productive and sustainable ecosystems."

The policy on ecosystem management and the designation of Wild and Scenic Rivers are compatible. Both protect environmental values that people have expressed (through Congress) a desire to maintain. Designation does not stop natural processes. An exception to this would be weed control, where the Forest Service will take an aggressive position in trying to control the spread of noxious weeds. The greatest change brought about by ecosystem management and river designation

will likely be the types of practices used to achieve desired conditions.

■ 1.3 Study Process

In April 1993, the Lolo Forest Supervisor assigned an interdisciplinary team the task of completing a suitability study and EIS that evaluates and develops alternative actions for eight river segments on the Forest. Rock Creek, the ninth river identified in the eligibility study, is not included because it will be studied at a later date in cooperation with the Deerlodge National Forest. The study considers the following:

the characteristics which do or do not make the rivers worthy additions to the national system;

the current status of land ownership and use in the area;

the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the rivers were included in the national system;

public, state, and local government interest in designation of the rivers, including the extent to which the administration and costs may be shared by state and local agencies; and

the estimated cost to the Lolo National Forest of administering the rivers, if added to the system.

The scope of this study and EIS is affected by the Lolo National Forest Plan and, in particular, Amendment 12: Wild and Scenic Rivers Eligibility Study.

Amendment 12 (August 15, 1991) to the Lolo Forest Plan describes nine river segments on the Lolo National Forest eligible for inclusion in the Wild and Scenic Rivers system. It also identifies their outstanding values and assigns potential classifications for each of the segments. Interim



management standards stated within Amendment 12 protect the values and classification potential associated with each of the segments until Congress has an opportunity to act on the recommendation contained in this EIS.

A significant departure from Amendment 12 is being made in this suitability study and EIS. In Amendment 12 it is stated several times that only the National Forest System lands would be subject to evaluation and classification under the Wild and Scenic Rivers Act. However, direction provided in the USDI/USDA National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas, September 7, 1982; and in FS Handbook 1909.12, Chapter 8, does not make allowance for omitting non-federal ownerships located between the termini on a study river. Therefore, the entire segment is to be evaluated and the recommendation made for the whole corridor, generally defined as 1/4 mile in width from each bank of the river. The suitability study includes these non-Federal lands in the analysis and recommendation.

The suitability study, presented in this Legislative Environmental Impact Statement, will be submitted to Congress. The EIS contains recommendations; the decision making role is reserved to Congress. The length of time necessary to complete the EIS, submit it to Congress, and receive a decision is uncertain at this time. However, many congressional decisions on the recommendations made in a legislative EIS for Wild and Scenic Rivers designation have taken two to three years.

■ 1.4 Issue Identification

Through the distribution of information packets, open houses, meetings, and media coverage, several issues came to light. The detailed list of issues is found in Appendix A, with a summary below (see *Figure 1.4.1*). Scoping and issue identification continued from April through October 1993. A summary of the public involvement is included as Appendix B.

Figure 1.4.1 Issue Summary

Resources:

Includes issues on the use of natural resources and the effects of Wild and Scenic River classification.

Property Rights:

Includes the economic, social, and regulatory implications of classification and the effects on existing rights.

Government Intervention:

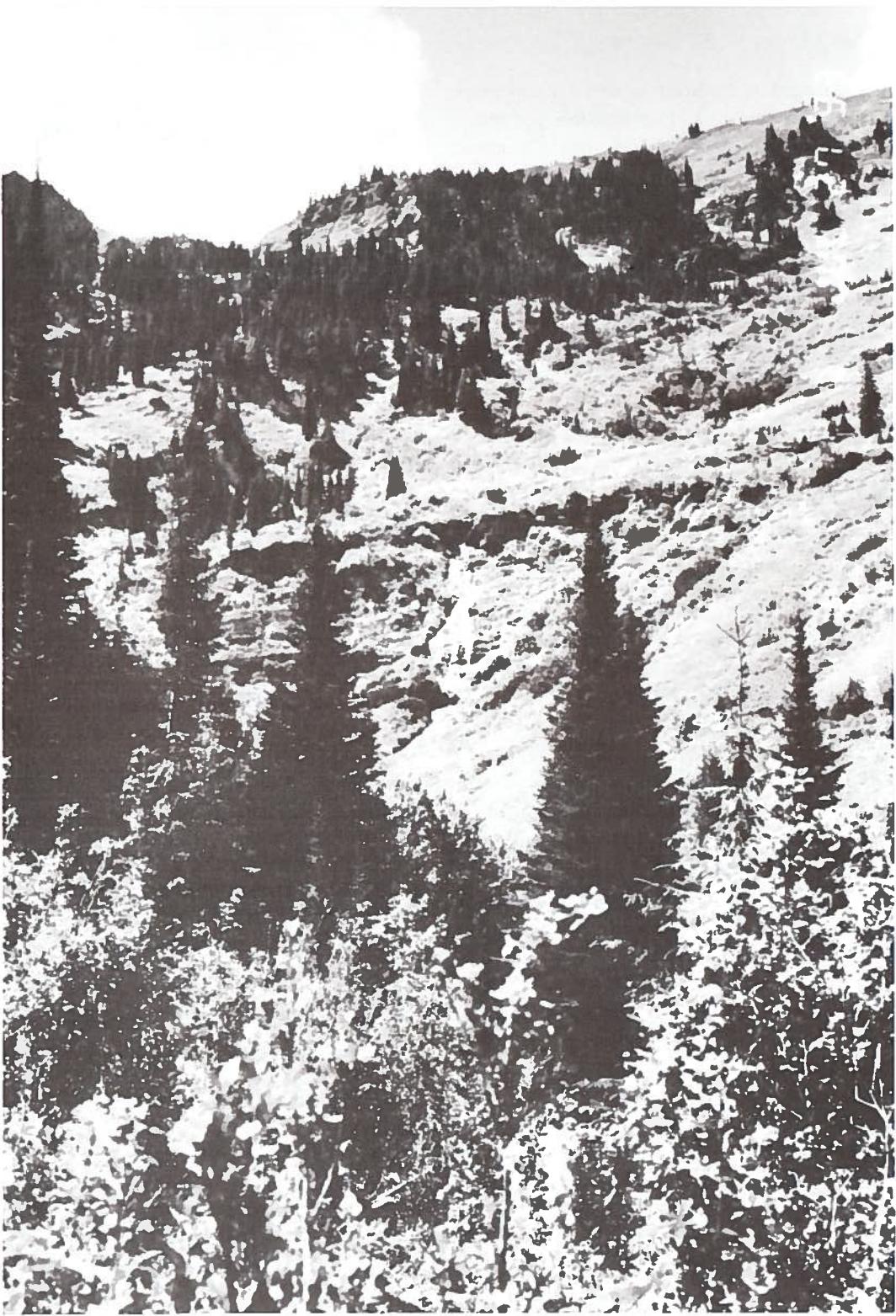
Closely related to property rights; also includes the question of adding more regulation on top of existing Federal, State and local controls.

Alternatives:

Includes suggestions for additional rivers and changing the recommended classifications.

Issues identified by the public and the Forest Service are instrumental in the development of the six alternatives analyzed in this study. Determination of suitability involved the analysis of these alternatives as prescribed in Forest Service Handbook 1909.12, Chapter 8, and in USDA/USDI jointly issued Final Revised Guidelines for Eligibility, Classification and Management of River Area(Federal Register, Vol. 47, No. 173, at page 39454, September 7, 1982.)





Headwall, Middle Fork Indian Creek (West Fork Fish Creek drainage)



2

Affected

Environment

■ 2.0 Introduction

This chapter describes the character and resources of the 1/2-mile-wide reach (1/4 mile on each side of the river) of the eight rivers under study. It provides current environmental, social, and economic conditions, as well as existing trends, and the reasonably foreseeable potential uses of the land and water in each study river. This information is portrayed as a basis from which to assess the consequences of the various designations and management alternatives presented in chapter 4.

Although this chapter examines all of the natural features associated with the eligible rivers, it specifically focuses on the resources which make the rivers suitable for inclusion into the Wild and Scenic Rivers program. Features which are considered "Outstandingly Remarkable" are highlighted within each resource heading.

■ 2.1 Regional Setting

All eight rivers being considered within this suitability study are located on the Lolo National Forest in west central Montana. The rivers constitute a portion of the Clark Fork of the Columbia River, the easternmost segment of the largest river system west of the Continental Divide.

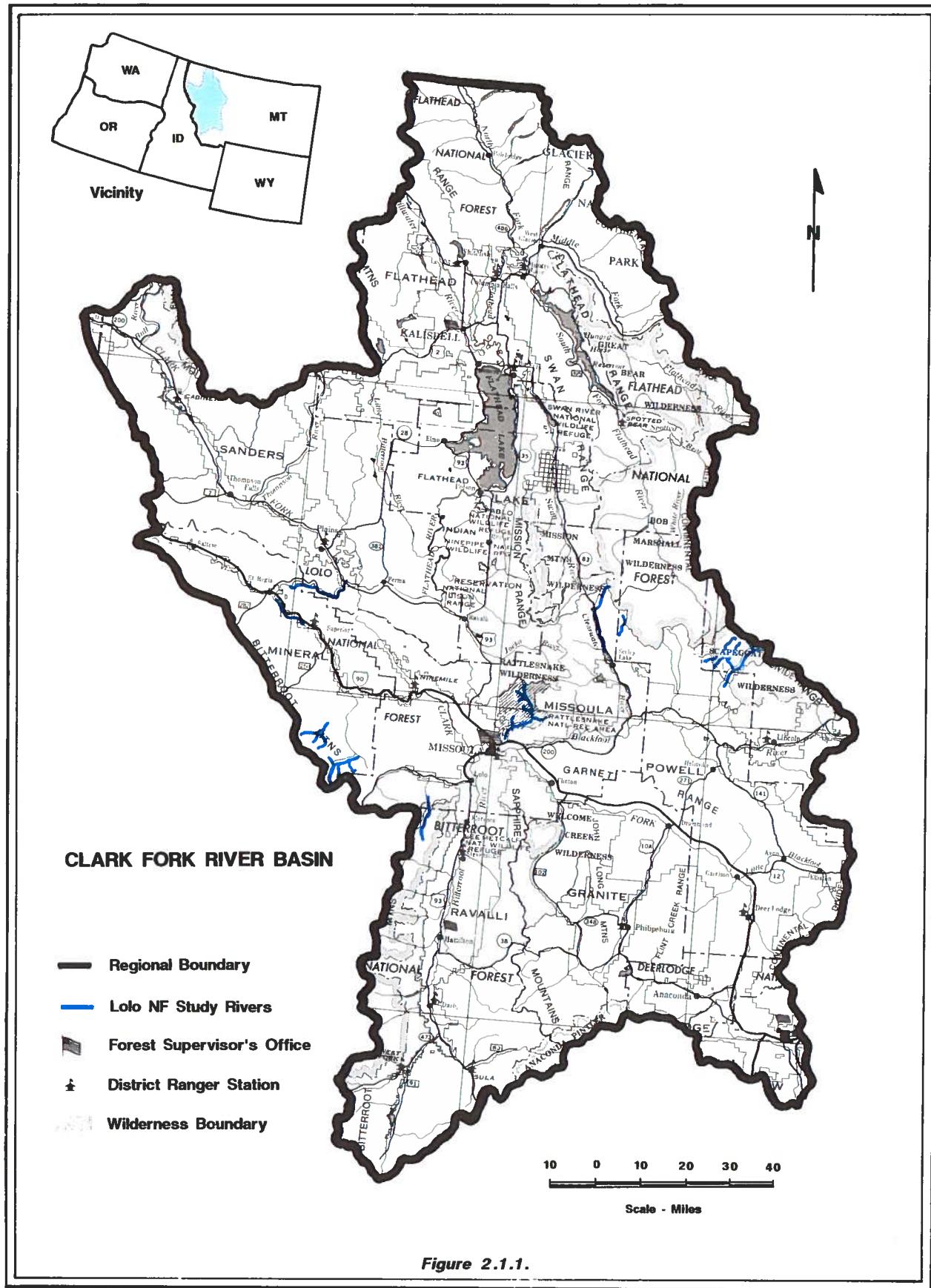
The Columbia Basin is one of the highest water-yielding river basins and is the major snow-fed river of the contiguous United States. The Columbia River drains nearly 275 thousand square miles of land (excluding Canadian lands) and yields an annual average of slightly more than 224 million acre-feet of runoff from the U.S. portion of the basin. The Lolo National Forest comprises 1.2 percent of the U.S. portion of the basin and contributes a calculated 1.4 percent of the average annual flow of the Columbia River.

The Clark Fork River and its tributaries drain the majority of western Montana from the Continental Divide to Lake Pend Oreille in northern Idaho. The Clark Fork rises south of Butte, Montana, and flows northwestward to join the Pend Oreille River at Lake Pend Oreille in northern Idaho. The Pend Oreille River flows into the Columbia River which eventually drains into the Pacific Ocean north of Portland, Oregon.

The Clark Fork drainage encompasses nearly 22,000 square miles and drains land in Montana and a small portion of eastern Idaho. From Lake Pend Oreille the drainage boundary follows the geographical divide between the Kootenai River and the Clark Fork River north to the Canada-U.S. border. From the Canadian border it follows the Continental Divide south to the Idaho-Montana border and then northwest along the Bitterroot Mountain Range to where the Clark Fork flows into Lake Pend Oreille (see *Figure 2.1.1*). The Clark Fork drainage produces an annual average flow of 16 million acre-feet of water.



Affected Environment - Regional Setting



Although in Montana alone there are more than 150 tributary streams to the Clark Fork, only a few are called rivers. Of these, the three major rivers are the Blackfoot, Bitterroot, and Flathead. The Flathead River is the largest tributary, providing about half of the average annual runoff of the Clark Fork Basin.

All or parts of several ranges of the Rocky Mountains are within the basin: the Cabinets, Missions, Swans, Sapphires, and Bitterroots. Some of the higher peaks within these mountain ranges exceed 10,000 feet elevation. All of them receive heavy winter snowfall.

The region's climate is affected by both Pacific Maritime (warm and moist) and Continental (cool and dry) weather systems. Local climatic zones range from the semiarid and relatively warm valley bottoms, through a broad range of cool, moist conifer forests, to the cold, moist subalpine and alpine mountaintops. Atmospheric conditions are controlled by aspect and slope, and become progressively cooler and more moist as elevation increases. The average annual precipitation for the Lolo National Forest is 42 inches, two-thirds of which falls as snow. In the valley bottoms, such as along the Clark Fork River, average annual precipitation is closer to 14 inches.

Settlement within the region is clustered for the most part within the valley bottoms and along riparian corridors. Steeper mountainous slopes still remain relatively undeveloped except near community centers. Seven communities lie near the study rivers: Seeley Lake, Missoula, Lolo, Superior, St. Regis, Paradise and Plains. Missoula is the largest of these, supporting a university, residential development, and commercial and industrial economies. It is characterized as a regional trade center. The remaining six are more rural in character, supporting retail trade, basic industry, and agricultural economies. All of them are heavily reliant upon the harvesting and processing of timber.

■ 2.2 Adjacent Wild and Scenic Rivers

Although at present only one other river within the Clark Fork River Basin has received classification as a Wild and Scenic River (the North Fork, Middle Fork and South Fork of the Flathead River), eighteen other rivers within a 250 mile radius of the Lolo National Forest are classified under the National Wild and Scenic Rivers program *see Figure 2.2.1*). One of these eighteen, the Missouri River, lies within the state of Montana but is outside the Clark Fork Basin.

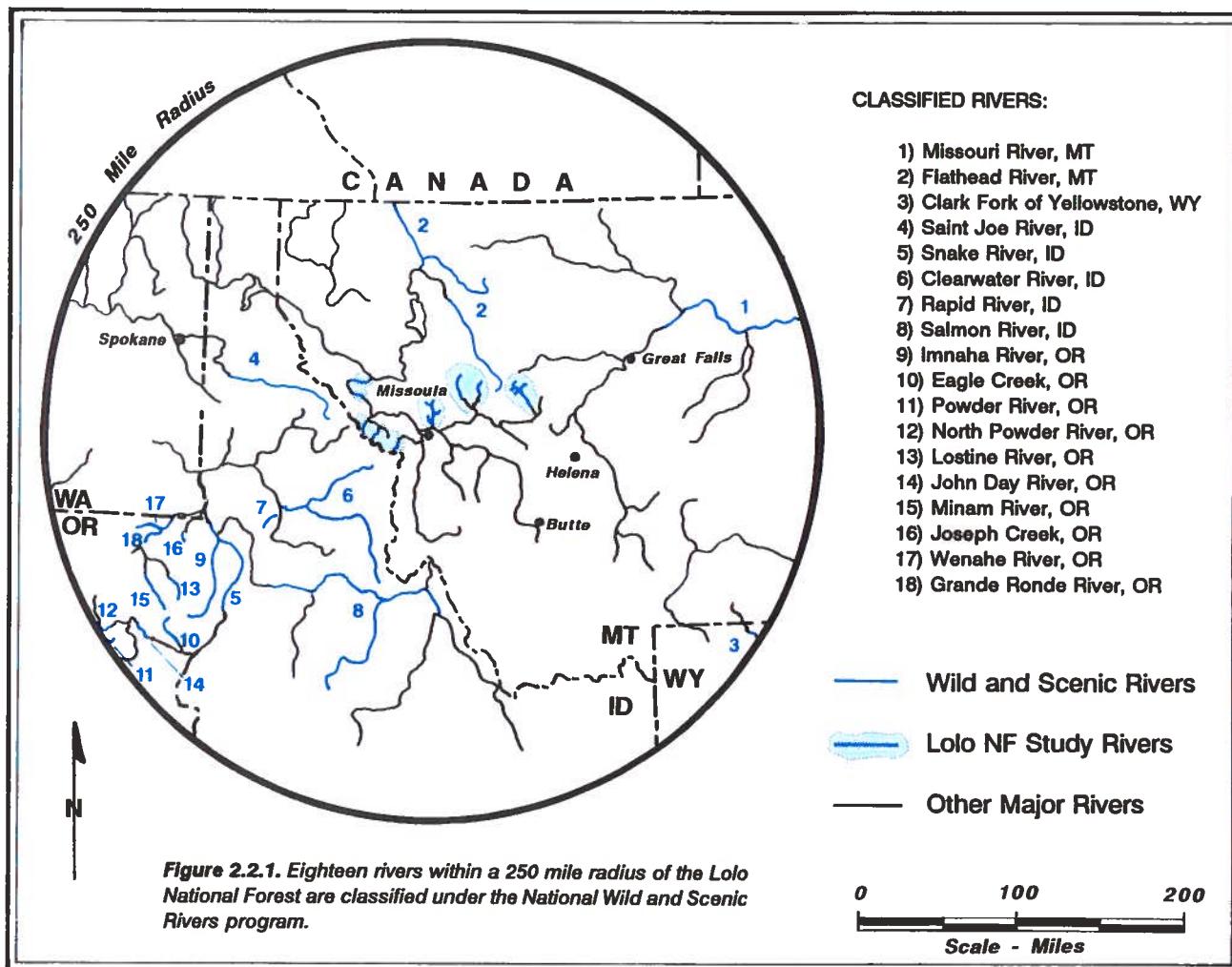
The eighteen classified rivers portray a wide range of values which make them worthy of their designations, including: diverse flora and fauna, archeological, cultural and historical sites, significant geological formations, spectacular recreation, whitewater, local wildlife populations, and blue ribbon fisheries. While most of these features can be found in rivers throughout the Northwest, many of them are unique to the classified rivers and set them apart from others in the region and across the United States.

■ 2.3 Regional History

Western Montana has a relatively recent, yet colorful, history associated with its settlement and development by Euro-Americans. Prior to contact with Europeans, the area maintained a long-standing population of indigenous people dating back at least 10,000 years and perhaps longer.

The river corridors played an important historical role in shaping use and settlement patterns. The rivers provided a natural transportation route for both foot and water travel. The broader valleys and benchlands associated with the riparian areas also provided ideal locations for habitation. Early people, like those of later times, tended to concentrate their use in areas with suitable terrain and access. During exploration and settlement by Euro-Americans, the rivers provided abundant resources readily available for exploitation (beaver trapping, gold panning). Collection and trade of these resources eventually defined the location of population centers (i.e., the City of Missoula was first established as a trading post).





The patterns of early development remain on the landscape as modern highways, railways, and urban centers. As with the indigenous inhabitants, the rivers maintain their importance for society's psychological well-being. This level of importance is displayed by the large number of individuals who recreate on the rivers and support protection of the riparian areas.

Prehistoric Settlement

Prior to European contact (1805), indigenous people inhabited or travelled through the eight river drainages at some time or another. Although artifacts have been found on the Forest which date as far back as 10,000 years, the time period between 1,500 and 7,500 years ago (The Middle Period) is the best-represented by the wide range of artifacts

found across the Forest. The Middle Period is typified by a drying trend which probably forced people from the drier plains into the cooler, more moist mountainous areas. There is some evidence that there was an increase in use of high altitude areas across the Forest during this time.

Introduction of the horse, approximately 250 years ago, radically altered aboriginal life. The horse increased mobility and opened the plains for bison hunting to tribes living west of the Divide. The river systems, especially the Clark Fork, possibly played a role as major transportation routes to and from the plains. By the 1790's, European trade goods began arriving in western Montana. These were introduced through trade with neighboring tribes or were passed along prehistoric trade and travel routes.



Historical Settlement

Contact between Europeans and Native Americans first occurred with explorers and fur traders, second with missionaries, and third with settlers and the military. Prior to the well-documented Lewis and Clark Expedition of 1803-06, there are rumored contacts with fur traders which may have taken place as early as 1780.

During the early 1800's, northwestern Montana was claimed by both British and American interests. British fur trading companies established the first permanent posts in the area, the majority of them located at or near the confluence of major rivers. David Thompson, an employee of the British-based Northwest Company, first entered Montana in 1808 in the Kootenai River country near present-day Libby. In 1809, Thompson constructed "Salish House" approximately 2 miles east of present-day Thompson Falls at the confluence of the Clark Fork and Thompson Rivers. Thompson explored much of northwestern Montana as well as a large part of the Pacific Northwest between 1808 and 1812. Americans had a limited presence during the fur trade period (1800-1840). However, well-known mountain men such as Jedediah Smith, David Jackson, and Joshua Pilcher were known to have entered the region as early as the 1820's.

Missionaries of both the Catholic and Protestant sectors began coming west in the late-1830's and early-1840's. Throughout western Montana the early missionaries had an enormous effect on the indigenous Native American groups. For the most part, relations were amiable, and the missionaries played a major role in the early settlement of the area.

By the early 1850's, Euro-American settlement was still almost nonexistent in western Montana and northern Idaho, except for Hudson's Bay trading posts and a scattering of missions. Elsewhere in the American west, tremendous changes were occurring: the United States had fought a war with Mexico and had acquired Texas, California, and other lands in the southwest; settlers were traveling overland along the Oregon Trail to the Pacific Coast; and gold was discovered in California in 1847, initiating a major influx of people to the gold fields.

In July 1855, Governor Isaac Stevens of the Washington Territory arrived in the Clark Fork Valley, near Missoula, to negotiate a treaty with the Flathead, Pend-d'Oreille, and Kootenai tribes. The resulting Hellgate Treaty of 1855 effectively opened western Montana to Euro-American settlement by establishing a reservation for Salish and Kootenai Indians and ensuring certain rights to the tribes. In a few short years, settlers began moving into the Bitterroot Valley. Gold was discovered in northern Idaho and western Montana, and the stage was set for a rapid influx of Euro-Americans into the area.

Mining played the greatest role in developing the rivers of the Clark Fork Basin. Between 1858, when the first recorded discovery of gold occurred in western Montana, to the end of the early gold strikes in 1869, a great number of people migrated into the region. With the mining stampedes of the 1860's came the development of transportation routes linking mining camps to each other and the outside world. The first of Montana's improved routes, the Mullan Road actually predated all but the earliest of Montana's gold camps. Conceived during the 1850's as a means of connecting Missouri River trade with that of the Columbia River, the road was designed to join Fort Benton, Montana, with Walla Walla, Washington. Beginning in 1859, a military road-building expedition under the command of Lt. John Mullan constructed the rugged road along the Clark Fork, Little Blackfoot, and Missouri Rivers, completing it in 1860. The route of the historical Mullan Road now serves as the location of Interstate 90 in many places.

Intertwined with the territory's placer mining boom and the improvement of early roads and trails was the growth of agriculture in western Montana. As early as 1841, Jesuit missionaries cultivated wheat, potatoes, and oats in the Bitterroot Valley. During the 1850's, several traders wintered small herds of cattle on the nutritious grasses of the Big Hole, Beaverhead, and Deer Lodge Valleys, driving the stock south in the spring to Ft. Hall, Idaho, for sale to emigrants on the Oregon Trail. By the 1870's, thriving agricultural districts had grown up in the Gallatin, Deer Lodge, Bitterroot, and Missoula valleys, with markets expanding beyond mining camps to include growing urban centers, military garrisons, Indian agencies, and railroad



construction camps throughout the Northern Plains and Rockies.

In 1861 Congress authorized construction of the nation's first transcontinental railroad, the Union Pacific, across the Central Plains and Rockies. A second transcontinental rail route, the Northern Pacific Railroad, was completed across Montana and the northern tier states in September 1883. Another transcontinental line, the Great Northern, was constructed through northern Montana in 1889-1890, reaching the Pacific in 1893. Fifteen years later, a fourth railroad, the Chicago, Milwaukee, St. Paul and Pacific Railroad, also spanned the state. The railroads followed the easiest grades available; the river systems of western Montana.

Almost from the earliest days of Montana's gold boom, miners were aware that not all of the region's mineral wealth lay in easily mined placer deposits. Vast quantities of gold, silver, copper, and other ores remained locked in hardrock deposits beyond the reach of the gold pan and pickaxe. Hardrock mining further developed the need for railroads across the region to assist in the transportation of mining ores and heavy machinery required in the mining processes. Within a few years, hardrock mining and mineral processing were underway in districts throughout western Montana.

From the earliest days of Montana's settlement, timber was needed for fuel and building materials. These needs were met by localized logging and whipsaw operations or small sawmills. With the onset of industrial mining and railroad construction in the 1880's, there rose a demand for timber that could only be satisfied by logging operations on a massive scale. Hundreds of miles of mine shafts, railbeds, and fuel-hungry reduction plants quickly consumed timber stands in the vicinity of these operations. The rivers and streams provided a natural means of efficiently transporting logs from the forest to the mill sites. This use is still evidenced by log-barge moorings and mill wastes along several of the rivers. The majority of the damage done to the riparian areas themselves, however, is no longer evident.

Today, despite 150 years of resource exploitation, the rivers of western Montana appear much as they did to early Native Americans, trappers, and settlers. Although most of the major transportation

routes follow the dominant drainages, the riverbeds have not been impacted to a large degree by highways and railroads. The smaller tributary drainages, in many cases, display little evidence of industrial activities. These areas essentially appear as they did prior to Euro-American establishment.

■ 2.4 River Segment Locations

The eight rivers which were examined for their attributes and suitability for designation as Wild and Scenic include:

Clearwater River	S. Fk. Lolo Creek
Morrell Creek	N. Fk. Blackfoot River
Cache Creek	W. Fk. Fish Creek
Rattlesnake Creek	Clark Fork River

These rivers are located on all five districts of the Lolo National Forest: Seeley, Missoula, Ninemile, Superior, and Plains Ranger Districts. The eight rivers flow within six counties of the State of Montana: Missoula, Powell, Lewis & Clark, Ravalli, Mineral, and Sanders. As a whole, the segments comprise 210.2 miles of perennial streams, lakes, and rivers. The total acreage of all eight study rivers is 69,855 acres. This is approximately one-half of one percent of the Clark Fork Drainage.

Clearwater River

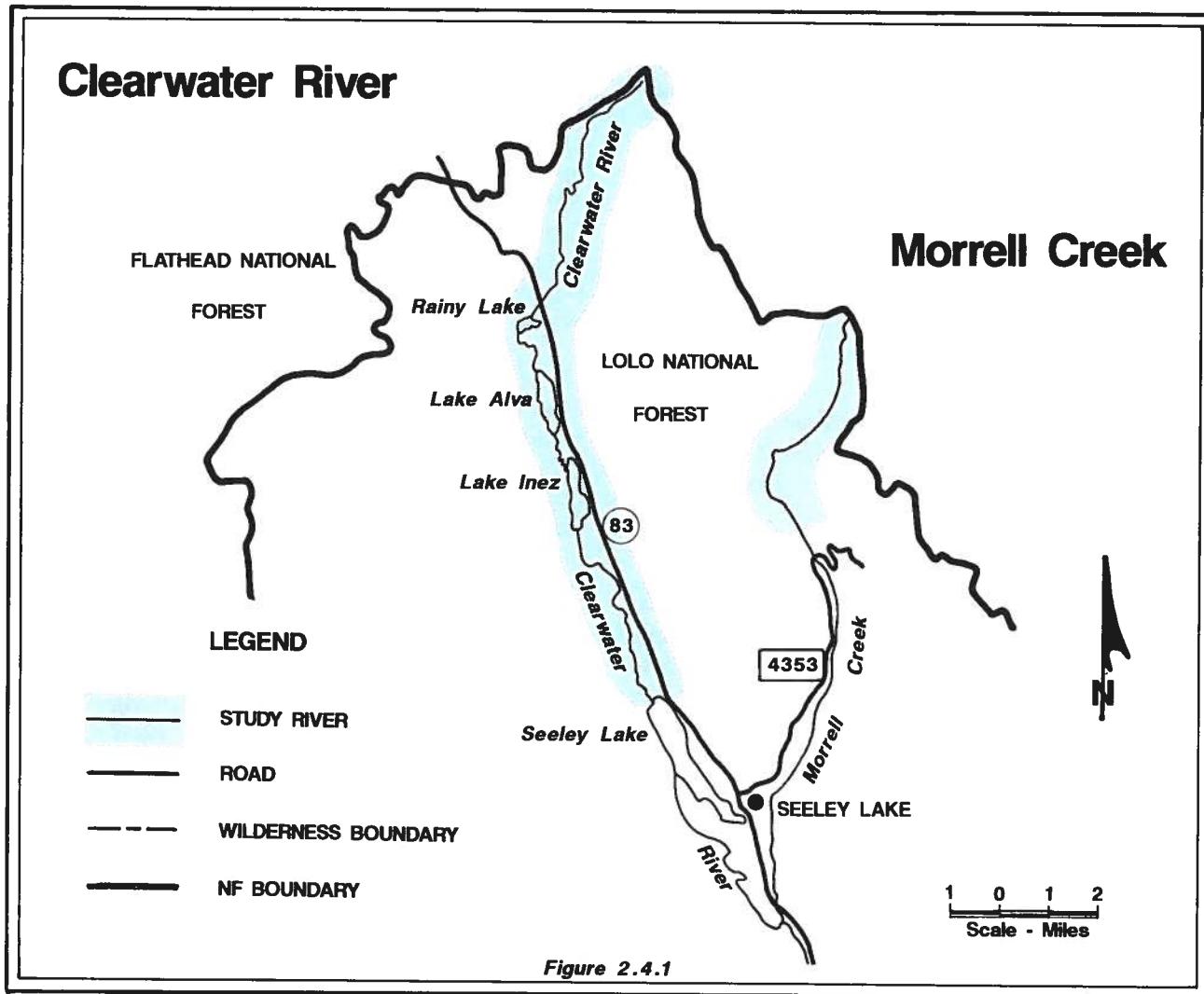
The Clearwater River is located in Missoula County, Montana, near the community of Seeley Lake. From its headwaters it meanders south for approximately 43 miles to where it converges with the main stem of the Blackfoot River. The Clearwater is uniquely positioned within a broad, U-Shaped, glacially carved valley between the Mission and Swan Mountain Ranges. Its pathway is naturally impounded by five glacially carved lakes known as the "Chain of Lakes." These lakes provide a spectacular recreational setting and attract visitors from around Montana and adjacent states.

The segment under consideration for classification is from the Clearwater's headwaters to where it flows into Seeley Lake (see *Figure 2.4.1*). Within this 20-mile segment, the Clearwater portrays its range of character from a swift-flowing, incised mountain stream to a meandering, braided river.



The segment encompasses three lakes of the "Chain of Lakes," including, Rainy, Alva, and Inez. Clearwater Lake lies near the headwaters of the river but is not considered part of "the Chain." The surface area of all four lakes makes up

approximately 772 acres, or 4 miles of the length. The $\frac{1}{2}$ -mile-wide strip (including $\frac{1}{4}$ mile on each side



of the river and perimeter of lakes) takes in 7,245 acres. This segment is approximately 50% of the total length of the Clearwater River.

Morrell Creek

Morrell Creek is located in Missoula County, Montana, seven miles north of the community of Seeley Lake. From its headwaters on the western face of the Swan Range it flows south for approximately 16 miles, where it converges with the Clearwater River. Morrell Creek occupies two

elevational ranges within the Swan Valley. Its headwaters lie within a broad glacial cirque basin approximately 1,600 feet above the valley floor. The main body of the creek flows within the lower U-shaped glacial valley which lies between the Mission and Swan Ranges. The break between these two elevations is defined by spectacular waterfalls and a natural impoundment known as Morrell Lake. Morrell Falls offers a very unique visual setting which attracts hikers and sightseers from around the state.



Two segments of Morrell Creek are being considered for classification (see *Figure 2.4.1*). The first segment includes the upper elevational range of the creek from its headwaters to where it reaches the splash pool of Lower Morrell Falls. Within this 2 ¼-mile segment, Morrell Creek spills quickly out of a broad glacial cirque, known as Grizzly Basin, through a deep rocky gorge, over the precipice of the Upper Falls and down to where it loses its energy at the base of the Lower Falls. The second segment includes the lower elevational range of the creek from Lower Morrell Falls to a point near the beginning of the trail which leads to the falls. This second 3-mile segment meanders more lazily through a broad valley of forested slopes. The one-half mile strip of these two segments contains 1,919 acres, approximately 35% of the total length of Morrell Creek.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork of the Blackfoot River is located in Powell and Lewis and Clark Counties, Montana, 26 miles east of the community of Seeley Lake. From the reaches of its headwaters in the Scapegoat Wilderness, it flows south for approximately 40 miles to where it converges with the main stem of the Blackfoot River. The North Fork and its tributaries flow off the high elevation cirque basins of the Continental Divide at a relatively low gradient, carving their way through glacial gravels and fault incisions within sedimentary bedrock. The North Fork and its tributaries display a unique variety of channel types ranging from deeply incised gorges to shallow, meandering, braided channels with beaver ponds. The array of channel types is influenced by the distribution of glacially deposited and scoured base materials.

The segment of the North Fork under consideration flows from its headwaters on the continental divide to a location near the North Fork Trailhead (see *Figure 2.4.2*). Within this 20-mile segment, the North Fork flows between the high cliffs of a narrow canyon and over waterfalls ranging from several inches to 80 feet. The ½-mile wide strip (¼-mile each side of the river) takes in 6,349 acres. This segment is approximately 50% of the total length of the North Fork.

Six tributaries of the North Fork are included within the portion of the river being considered for classification. These tributaries include the Dry Fork of the North Fork from its headwaters to its confluence with the North Fork; Cabin Creek from its headwaters to its confluence with the Dry Fork; Dobrota Creek from its headwaters to its confluence with the North Fork of the Blackfoot; Cooney Creek from its headwaters to its confluence with the North Fork; Canyon Creek from the mouth of Canyon Lake to its confluence with the Dry Fork; and Dwight Creek from its headwaters to its confluence with the Dry Fork. These tributaries total 43.9 miles of stream and 13,428 acres. Combined with the North Fork itself, all seven segments make up a total of 63.9 miles and 19,777 acres.

Unlike the North Fork, the lower end of the Dry Fork is characterized by braided channels and wide meadows flooded by beaver dams. The upper end of the Dry Fork, similar to the other tributaries, contains a relatively steep gradient with a more defined, narrow channel that tumbles off the higher elevation cirque basins. Small waterfalls which drop over fallen debris give the tributary creeks a terraced appearance.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

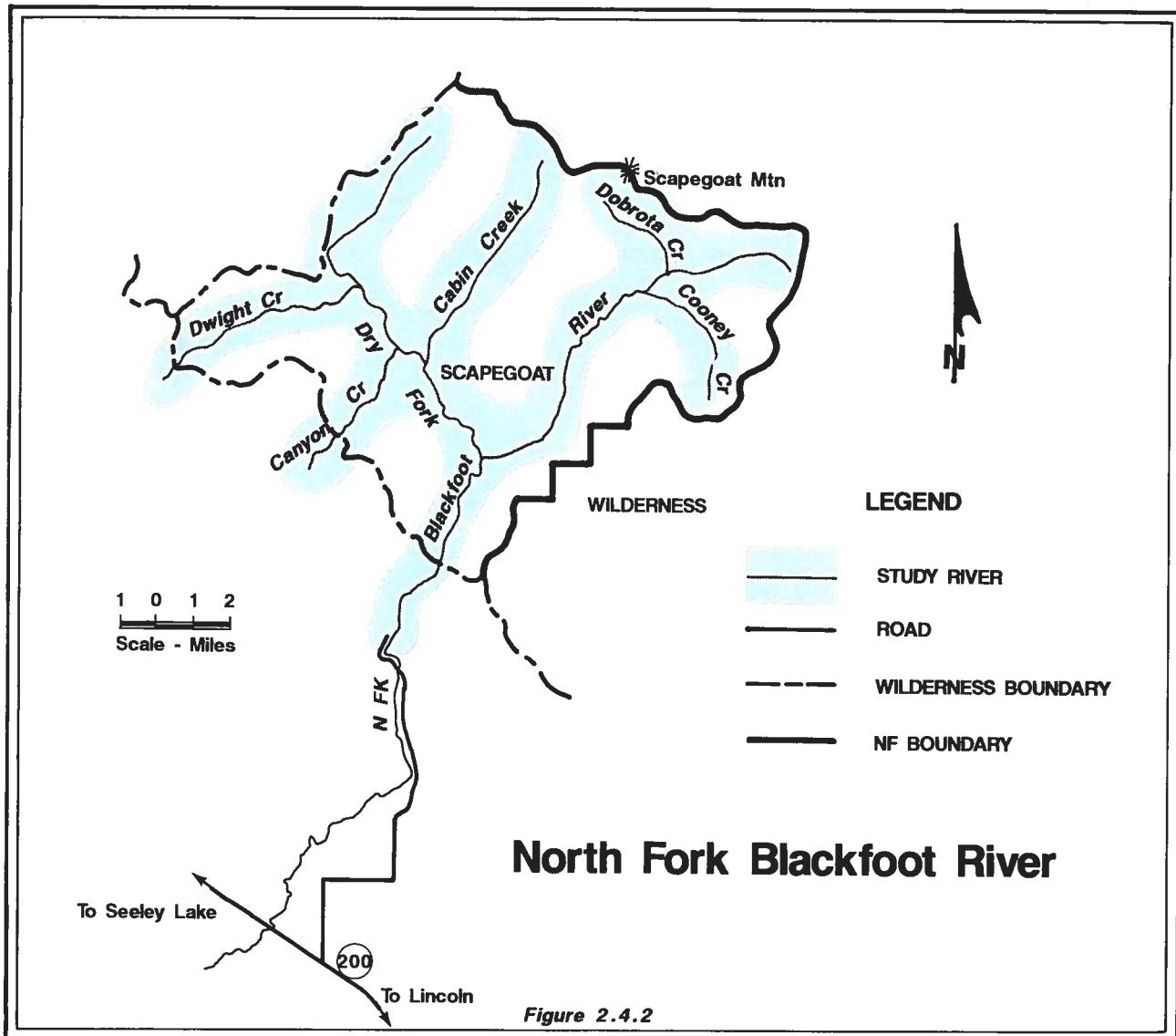
Rattlesnake Creek is located in Missoula County, Montana, directly north of the City of Missoula. From the reaches of its headwaters on the south end of the Mission Mountain Range, it flows south for approximately 24 miles through the Rattlesnake National Recreation Area and Wilderness (RNRAW), and the urban reaches of Missoula, to where it drains into the Clark Fork River. Some of the tributaries of the Rattlesnake, including Lake, High Falls, and Wrangle Creeks, provide pristine water from snow-fed alpine lakes lying within glacially carved cirque basins. The other tributaries including the East Fork and Spring Gulch, are fed by artesian springs. The Rattlesnake and its tributaries characterize the mosaic of stream types found in western Montana. The headwaters display fast, high-gradient streams which tumble through narrow, rock-filled channels. The lower mainstem displays slower, low-gradient channels which meander through beaver ponds. The mainstem lies

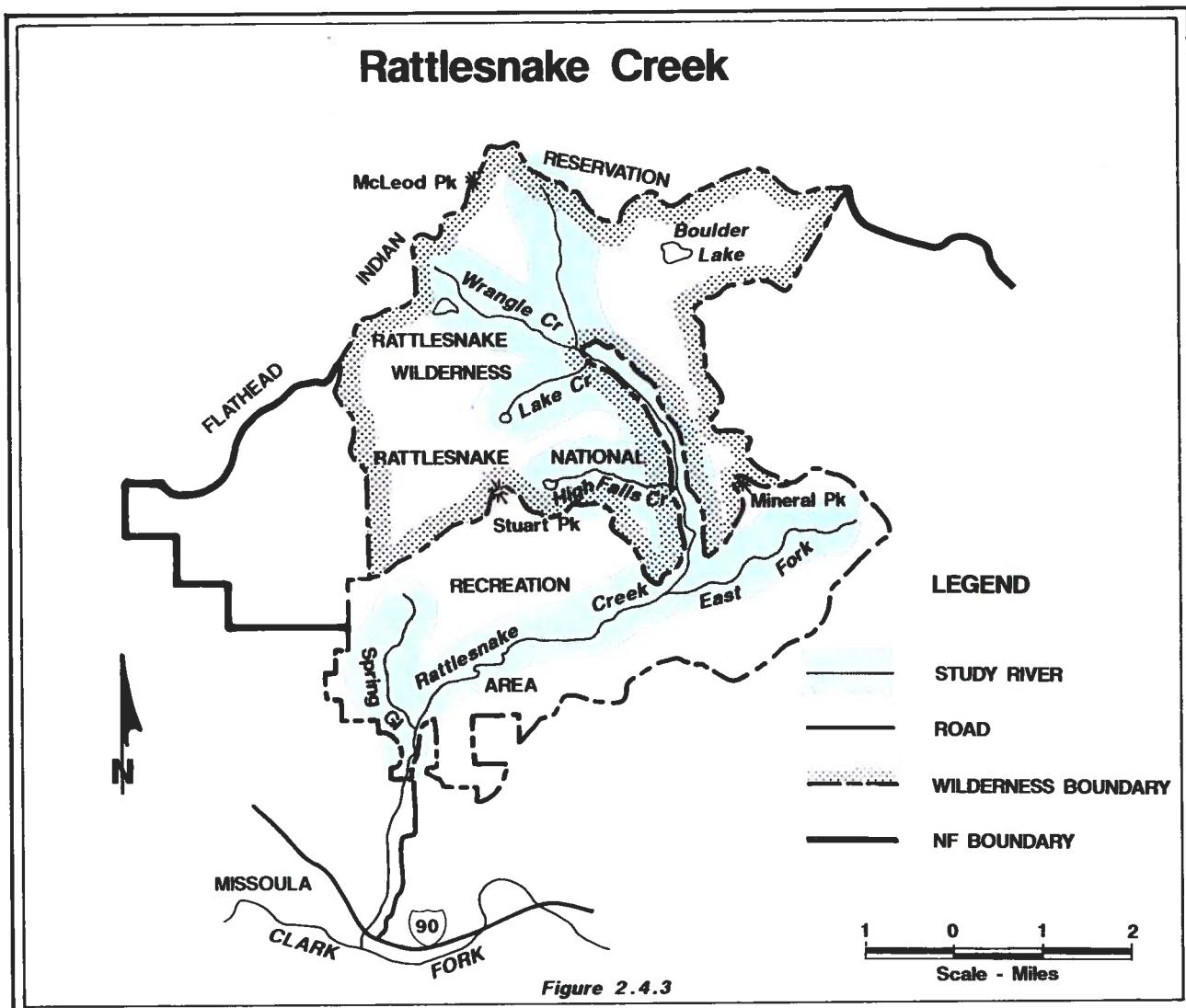


within a setting of high rock cliffs and steep mountain slopes.

The segment of the Rattlesnake being considered for classification flows from its headwaters to a

location where Federal land interfaces with the urban environment of Missoula (see Figure 2.4.3). Within this 19.2 mile segment, the Rattlesnake flows off the steep, mountain slopes of the Mission Range, through steep, bouldered channels, and then





across gentle slopes of glacially deposited gravels. The $\frac{1}{2}$ -mile wide strip takes in 6,097 acres. This segment is approximately 80% of the total length of the Rattlesnake.

Five tributaries of the Rattlesnake are included within the portion of the creek being considered for classification. The East Fork of the Rattlesnake, Spring Gulch, and High Falls, Lake, and Wrangle Creeks. The East Fork originates at a series of springs and swampy meadows known as Shoo Fly Meadows. From this point it flows southwest for 4.2 miles to its confluence with the mainstem of the Rattlesnake. Spring Gulch originates at a series of springs on the west side of the RNRAW and flows

south for 4.5 miles to its confluence with Rattlesnake Creek. High Falls Creek originates at the southern pool of Farmers Lakes and flows east for 4.0 miles to its confluence with the Rattlesnake. Lake Creek originates at Carter Lake and flows northeast for 2.3 miles to its confluence with Rattlesnake Creek. Wrangle Creek flows southeast for 3.7 miles from its headwaters to its confluence with the Rattlesnake. The $\frac{1}{2}$ -mile-wide strip of these tributaries takes in 6,051 acres. These tributaries contain relatively steep gradients with defined, narrow channels that rush water over small log jams and boulders. Fishing and hiking opportunities, along with spectacular vistas from



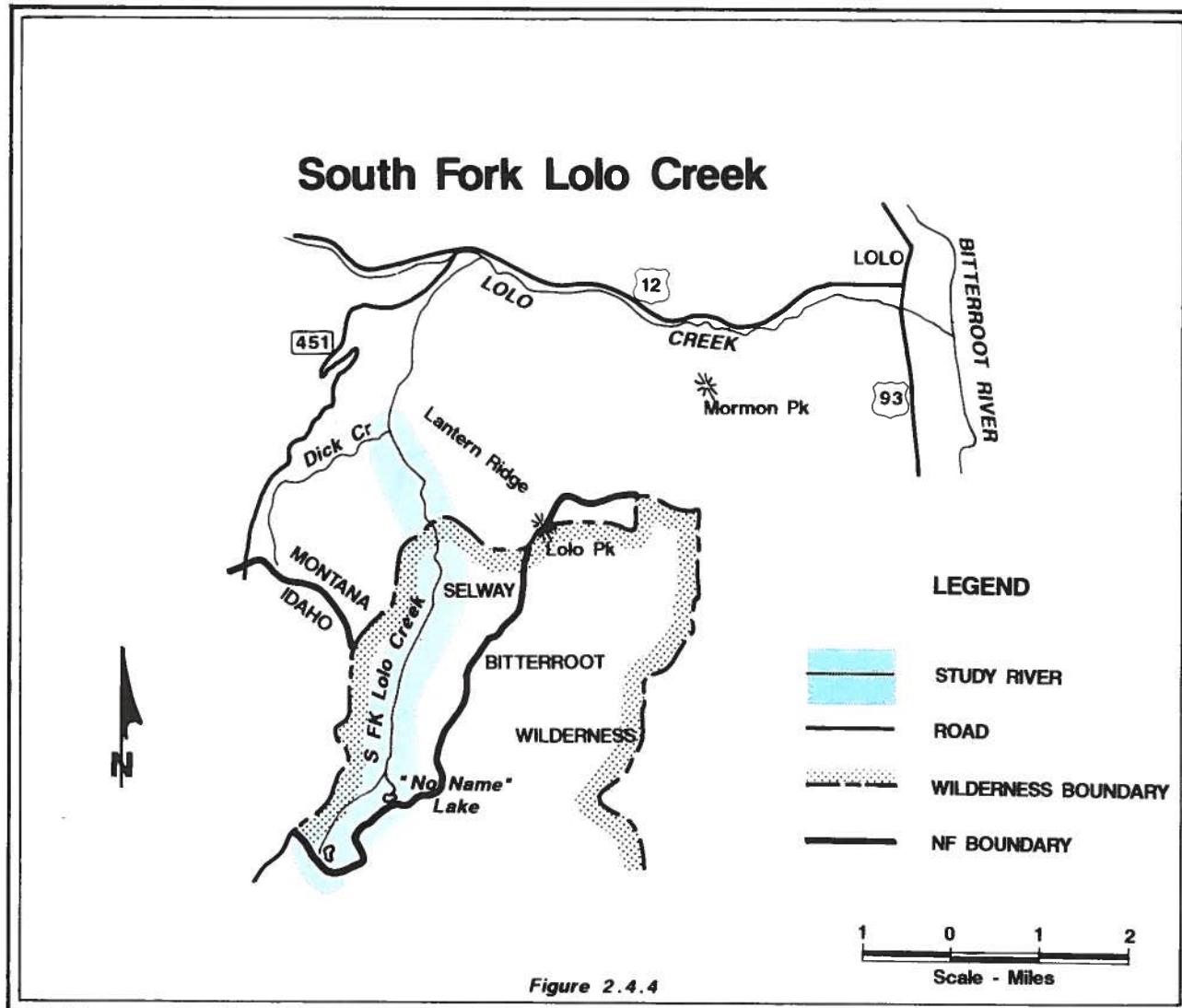


Figure 2.4.4

the headwaters of these drainages, make the Rattlesnake a recreationist's paradise. Combined with the mainstem, all six segments make up a total of 37.9 miles and 12,148 acres.

South Fork Lolo Creek (includes: mainstem, and No Name Creek)

The South Fork of Lolo Creek is located in Missoula and Ravalli Counties, Montana. From its headwaters on the eastern face of the Bitterroot Mountain Range, it flows north for approximately 15 miles to its confluence with Lolo Creek. Lolo Creek flows east to where it converges with the Bitterroot River six miles south of the city of Missoula. The Bitterroot River, in turn, joins the Clark Fork River on the outskirts of Missoula. The

South Fork flows out of the Selway Bitterroot Wilderness within a relatively narrow valley. Small meadows, boulder-strewn runs, and headwater vistas make this a popular fishing and hiking area for local residents.

The segment under consideration for classification is from the South Fork's headwaters to the point where the creek leaves National Forest lands (see Figure 2.4.4). Within this 12.6-mile segment, the South Fork flows in a relatively straight path from its cirque basin headwaters to narrow valley bottom meadows. The study segment includes a short unnamed tributary referred to hereinafter as "No Name Creek" which originates at an unnamed lake referred to as "No Name Lake" and flows northwest for 1.1 miles to its confluence with the South Fork.

West Fork Fish Creek

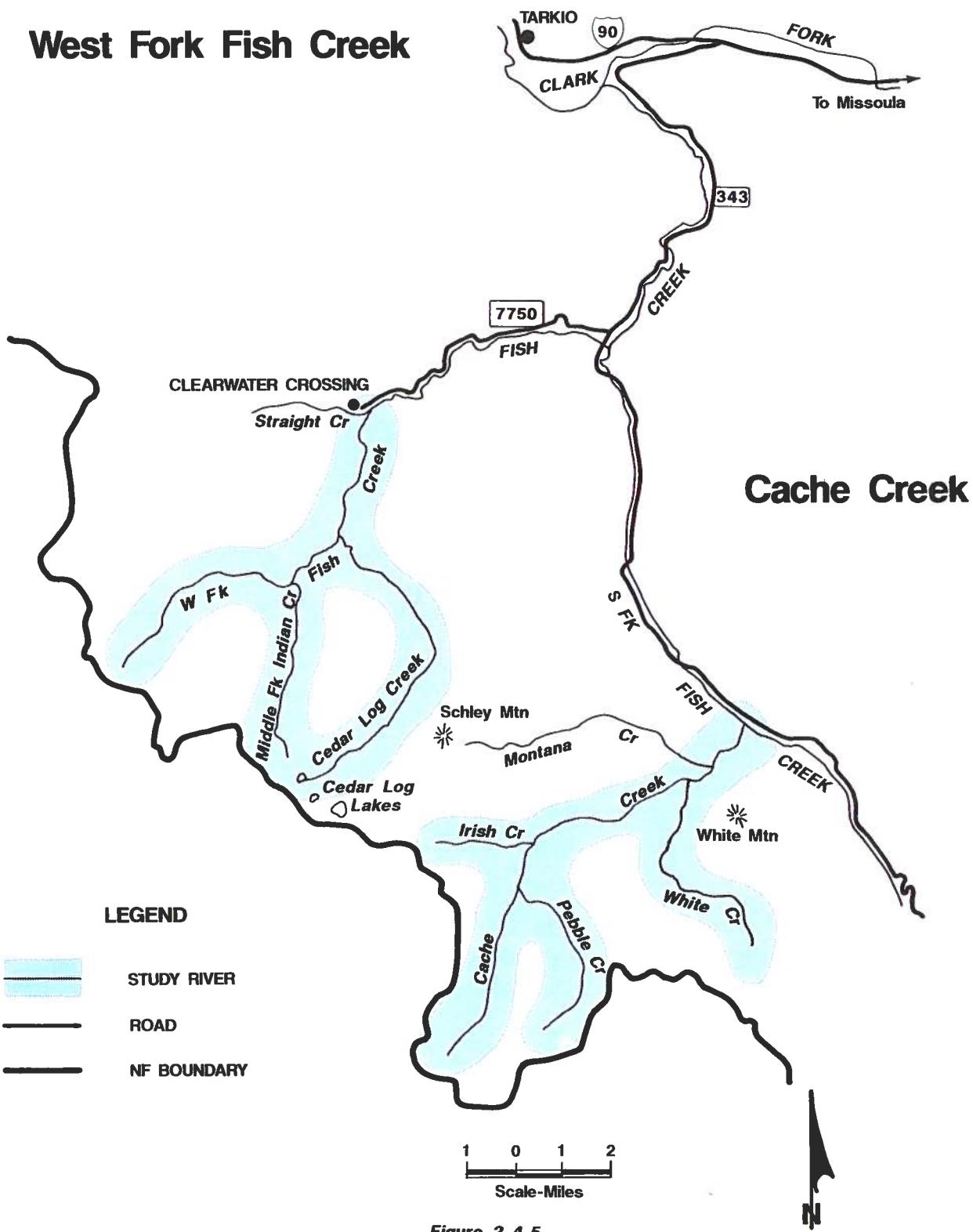


Figure 2.4.5



The $\frac{1}{2}$ -mile-wide strip of these two segments takes in 3,953 acres. The study segment is approximately 85% of the total length of the South Fork.

Cache Creek (includes: mainstem, Montana Creek, Irish Creek, White Creek, and Pebble Creek)

Cache Creek is located in Mineral County, Montana, approximately 30 miles west of the city of Missoula. From its headwaters on the Montana-Idaho state line, it flows northeast off the Bitterroot Mountain Range for approximately 12 miles to where it converges with the South Fork of Fish Creek. Cache Creek is positioned within a glacially carved valley representative of streams flowing off the face of the Bitterroot Mountains. The upper reaches of this valley, however, contain unusually rugged topography with interesting rock formations. These geological features provide excellent viewing opportunities for the hiker.

The segments under consideration include the entire length of Cache Creek and its tributaries of Irish, White, and Pebble Creeks (see Figure 2.4.5). Cache Creek is divided into two segments. The first segment is a 10.2-mile run from its headwaters at Cache Saddle to where Montana Creek flows into Cache. The second segment continues for an additional 1.4 miles from Montana Creek to where it enters the South Fork of Fish Creek. White Creek runs from its headwaters for 4.6 miles to its confluence with Cache Creek. Pebble Creek flows from its headwaters for 3.3 miles to where it converges with Cache Creek. Irish Creek flows from its headwaters for 2.4 miles to its confluence with Cache Creek. The $\frac{1}{2}$ -mile-wide strip of the four streams takes in 7,536 acres. Together they make up a total length of 21.8 miles.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork of Fish Creek is located in the next drainage west of Cache Creek. From its

headwaters, it flows east and then north for approximately nine miles to where it intersects with the North Fork to form the mainstem of Fish Creek. Fish Creek flows into the Clark Fork River. As with Cache Creek, the West Fork and its tributaries flow off the Bitterroot Divide between the State of Montana and Idaho. In addition to the excellent grouse hunting offered by the wide brush fields of its lower reaches, the West Fork offers exceptional recreation and big game hunting opportunities.

The entire lengths of the West Fork, Cedar Log Creek, and the Middle Fork of Indian Creek make up the segments under consideration for inclusion in the Wild and Scenic River system (see Figure 2.4.5). The West Fork's headwaters lie within a basin carved out by alpine glaciers. It flows eastward for approximately 5 miles and then north for its remaining length to where it intersects the mainstem of Fish Creek near Clearwater Crossing. The Middle Fork of Indian Creek flows north for 3.5 miles from its headwaters to its confluence with the West Fork. Cedar Log Creek flows from Cedar Log Lake northeast for approximately 5 miles and then northwest for 2.6 miles to its confluence with the West Fork. The $\frac{1}{2}$ -mile strip of these three systems takes in 7,374 acres. Together they make up a total length of 20.4 miles.

Clark Fork River

The Clark Fork River originates south of Butte, Montana, and flows northwestward 315 miles to join the Pend Oreille River at Lake Pend Oreille in northern Idaho. On the Lolo National Forest it flows through Missoula, Mineral, and Sanders Counties.

The Clark Fork was historically used for transportation, industry, and agriculture. It presently plays a major role in western Montana for agriculture, industry, and recreation. Despite the continual use of this river for industrial purposes, the Clark Fork still maintains its natural beauty and flows clear for most of the year.



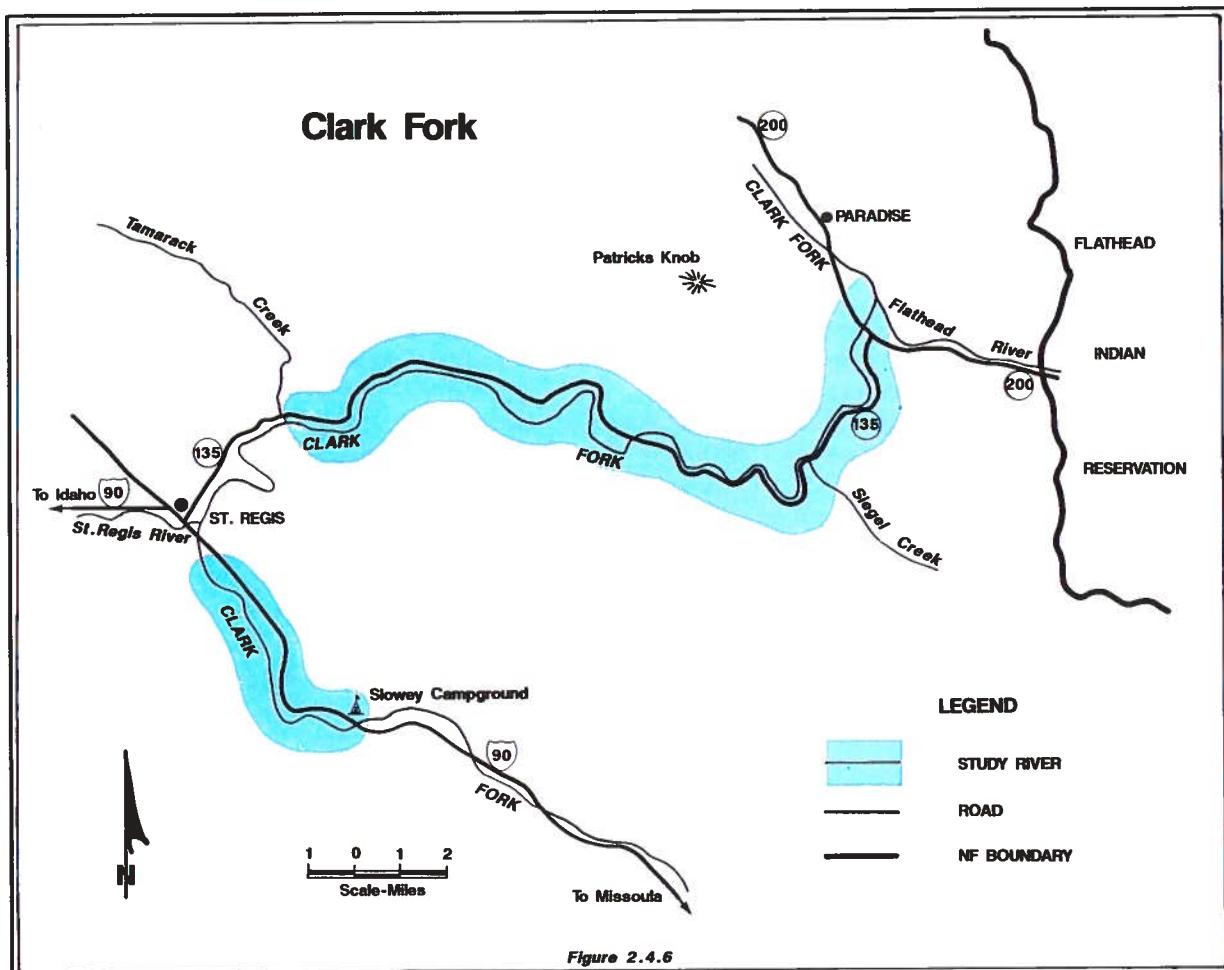


Figure 2.4.6

The segments of the Clark Fork being considered for classification are located in Mineral and Sanders Counties, Montana. The first segment, the Slowey Segment, flows 7 miles northwestward from the Slowey Campground to a point approximately 1 mile south of the community of St. Regis (see Figure 2.4.6). The second segment, the Cutoff Segment, meanders for 20.9 miles in an easterly direction from a location where Tamarack Creek enters the

Clark Fork River, northeast of St. Regis, to the confluence of the Flathead and Clark Fork Rivers (see Figure 2.4.6). The ½-mile-wide strips of the Slowey and Cutoff segments include 2,340 acres and 7,498 acres, respectively.

These two segments combined are 27.9 miles, approximately 9% of the entire Clark Fork River reach.

Table 2.4.7. River Segments

RIVER	STUDY LENGTH	REACH	LENGTH	BEGINNING POINT	ENDING POINT
Clearwater River	19.9 miles	Mainstem	19.9 miles	NE ¼ Sect. 17, T19N, R15W	SE ¼ Sect. 20, T19N, R15W



RIVER	STUDY LENGTH	REACH	LENGTH	BEGINNING POINT	ENDING POINT
Morrell Creek	5.8 miles	Above Falls Below Falls	2.8 miles 3.0 miles	NW ¼ Sect. 7, T18N, R14W SW ¼ Sect. 24, T18N, R15W	SW ¼ Sect. 24, T18N, R15W SW ¼ Sect. 36, T18N, R15W
North Fork Blackfoot	63.8 miles	Mainstem Dry Fork Cabin Creek Cooney Creek Dobrota Creek Dwight Creek Canyon Creek	20.0 miles 16.8 miles 8.4 miles 5.0 miles 3.3 miles 5.0 miles 5.3 miles	NE ¼ Sect. 34, T18N, R9W SE ¼ Sect. 6, T18N, R10W NE ¼ Sect. 16, T18N, R10W NW ¼ Sect. 17, T18N, R9W SW ¼ Sect. 23, T18N, R10W SE ¼ Sect. 12, T17N, R12W SW ¼ Sect. 28, T17N, R11W	NE ¼ Sect. 27, T16N, R11W SE ¼ Sect. 30, T17N, R10W NW ¼ Sect. 13, T17N, R11W NE ¼ Sect. 1, T17N, R10W SE ¼ Sect. 31, T18N, R9W NW ¼ Sect. 3, T17N, R11W SW ¼ Sect. 11, T17N, R11W
Rattlesnake Creek	37.9 miles	Mainstem East Fork Wrangie Creek Lake Creek Spring Gulch High Falls Creek	19.2 miles 4.2 miles 3.7 miles 2.3 miles 4.5 miles 4.0 miles	SW ¼ Sect. 4, T15N, R18W NE ¼ Sect. 8, T14N, R17W NW ¼ Sect. 18, T15N, R18W SE ¼ Sect. 30, T15N, R18W SE ¼ Sect. 12, T14N, R19W C Sect. 5, T14N, R18W	NE ¼ Sect. 2, T13N, R19W NE ¼ Sect. 14, T14N, R18W C Sect. 21, T15N, R18W SE ¼ Sect. 21, T15N, R18W NE ¼ Sect. 35, T14N, R19W C Sect. 2, T14N, R18W
South Fork Lolo Creek	12.5 miles	Mainstem No Name Creek	11.4 miles 1.1 miles	NW ¼ Sect. 35, T10N, R22W NW ¼ Sect. 30, T10N, R22W	NE ¼ Sect. 12, T11N, R22W C Sect. 24, T10N, R22W
Cache Creek	21.9 miles	Above Montana Creek Below Montana Creek Irish Creek White Creek Pebble Creek	10.2 miles 1.3 miles 2.5 miles 4.6 miles 3.3 miles	NW ¼ Sect. 21, T11N, R25W NE ¼ Sect. 18, T11N, R24W SW ¼ Sect. 20, T12N, R25W SW ¼ Sect. 33, T12N, R24W SW ¼ Sect. 10, T11N, R25W	NE ¼ Sect. 18, T12N, R24W NE ¼ Sect. 8, T12N, R24W SW ¼ Sect. 22, T12N, R25W SE ¼ Sect. 18, T12N, R24W SE ¼ Sect. 28, T12N, R25W
West Fork Fish Creek	20.5 miles	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.4 miles 7.6 miles 3.5 miles	NE ¼ Sect. 6, T13N, R26W C Sect. 14, T12N, R26W NW ¼ Sect. 14, T12N, R26W	SE ¼ Sect. 6, T13N, R25W SW ¼ Sect. 19, T13N, R25W SW ¼ Sect. 25, T12N, R26W
Clark Fork River	27.9 miles	Slowey Segment Cutoff Segment	7.0 miles 20.9 miles	NE ¼ Sect. 15, T17N, R27W SW ¼ Sect. 9, T18N, R27W	NW ¼ Sect. 31, T18N, R28W NW ¼ Sect. 34, T19N, R25W

2.5 Land Ownership

The majority (90%) of the land within the ½-mile-wide corridor of the eight rivers and tributaries being studied is in Federal ownership. Two of the rivers have significant private and other government (State) ownership: the Clark Fork and Clearwater Rivers.

Land ownership can play a significant role in the development or protection of shorelines, water quality, and general character of the study rivers. The level of government's role in land management may also govern the degree of protection offered to the rivers. On rivers where land ownership is primarily public, management may be influenced by existing public land management policies (i.e., Forest Plans). Where land ownership is private, protection may be influenced by the degree of self governance or acceptance of local government intervention on private land development rights (i.e., Comprehensive Plans and Zoning). As discussed in Section 2.7, the willingness of Montanans to accept additional government control has been somewhat limited. This may be a

result of the already extensive amount of public land ownership across western Montana.

Clearwater River

Land ownership along the Clearwater River consists of National Forest System, State of Montana, private industrial owned by the Plum Creek Timber Company, L.P., and small private lands owned as both recreational and primary residences (see Appendix I). The headwaters and approximately first seven miles of the river flow through National Forest System lands. Both Clearwater Lake and Rainy Lake are completely surrounded by National Forest System lands. Approximately ½ of the shorelines of Lakes Alva and Inez adjoin private industrial lands. The remainder of the shoreline of Lake Alva is National Forest. Lake Inez contains both National Forest and small private ownership, with the private lands supporting several primary homes and summer cabins. From the mouth of Lake Inez, the Clearwater flows through approximately ½ mile of National Forest System land, then 1½ miles of small private, and then another 1½ miles of National Forest System land before it drains into Seeley Lake.



There are approximately 100 private landowners within the $\frac{1}{2}$ -mile river corridor whose parcels vary from a lake lot of approximately 1 acre to a quarter section of 160 acres. Plum Creek Timber Company, L.P. is the only corporate owner. The State of Montana has one section near the river corridor.

Morrell Creek

The portion of Morrell Creek that is under consideration runs entirely through National Forest System lands (*see Appendix I*).

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The portion of the North Fork and its tributaries that are under consideration run entirely through National Forest System lands (*see Appendix I*). One section (Section 29), at the confluence of the Dry Fork and North Fork was recently exchanged from private industrial ownership into the National Forest System.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake drainage has been witness to a unique change in land ownership over the past 70 years. Historically, portions of the Rattlesnake were homesteaded and developed for agricultural purposes. In the 1930's Montana Power Company purchased the homesteads to secure a municipal water source for the city of Missoula. The majority of the homesteads and structures were then razed to prevent squatting. From that time on, the Rattlesnake remained in intermingled ownership. A checkerboard pattern along the perimeter of the drainage was under the ownership of the Plum Creek Timber Company, L.P., Champion International Corporation, and Federal ownership. In the early 1980's, almost all of the private industrial land holdings within the drainage were exchanged into National Forest ownership to secure the drainage as a National Recreation Area and Wilderness and to indefinitely protect the municipal water source.

Presently, almost all of the Rattlesnake drainage is National Forest System lands. One section (Section 14) at the head end of Spring Gulch is State owned and managed for timber and recreation. Earthen impoundments can be found on the two lakes within this section; however, these dams have not been maintained since the early 1950's. The Forest Service has held an interest in purchasing this parcel to consolidate ownership within the Rattlesnake Wilderness.

Small private residential holdings surround the lower $1\frac{1}{4}$ miles of the segment of the Rattlesnake being considered for classification. Within this last section, the creek itself is buffered by a $\frac{1}{4}$ -mile-wide strip of National Forest System lands. The two primary trailheads for the Rattlesnake are located within this public parcel.

South Fork Lolo Creek (includes mainstem and No Name Creek)

The portion of the South Fork that is under consideration runs entirely through National Forest System lands (*see Appendix I*). A parcel of private industrial land owned by the Plum Creek Timber Company, L.P., borders the end of the segment under consideration and falls within the $\frac{1}{4}$ -mile wide influence zone. This parcel has had its timber harvested in the recent past.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

The entire Cache Creek corridor and drainage, is within National Forest management except for one small, non-industrial private landowner at the mouth of Cache Creek and 80 acres of industrial private ownership below White Mountain (*see Appendix I*). The eighty-acre parcel is presently being acquired as part of the "Gallatin National Forest, Porcupine Area Land Exchange." This exchange is expected to be completed within two years. The small private ownership near the mouth of the creek affects less than $\frac{1}{4}$ mile of the creek and is used primarily for recreational purposes. The owner of this parcel has asked that it be included within the Wild and Scenic River corridor.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)



The entire West Fork and its tributaries under consideration are within National Forest management (*see Appendix I*). No small private or private industrial lands exist near these river courses or within the entire West Fork drainage.

Clark Fork River

The Federal Government is the dominant land owner along the Cutoff segment of the Clark Fork River (*see Figures in Appendix I*). Fifty-five percent or 2,800 acres are in National Forest management within the $\frac{1}{4}$ -mile zone on each side of the river. These National Forest System lands are administered by the Lolo National Forest. The Montana Department of State Lands owns 6% or 868 acres, and Burlington Northern Railroad owns 11% or 547 acres along its railroad right-of-way. Montana Department of Transportation owns or has easements on 330 acres or 7% of the corridor area. The remaining acres are in small private ownership. Three subdivisions, Green Mountain, Paradise Ranchettes and Frontier Enterprises are included in the small private ownership. There are approximately 105 different owners of this private land. Within $\frac{1}{4}$ mile of the river 1,052 acres or 21% is in small private ownership.

Along the Cutoff segment approximately 1,400 acres of private commercial timber lands were recently exchanged from the Plum Creek Timber Company to the Forest Service. This transition was completed as part of the "Cutoff Land Exchange" as an ongoing effort to consolidate National Forest System land ownership.

Small private ownership, comprising 1,057 acres (49%), is the largest group of landowners on the Slowey segment of the Clark Fork (*see Appendix I*). There are 849 acres (39%) of National Forest land, administered by the Lolo National Forest; and 271 acres (12%) of State lands, administered by the Montana Department of State Lands along this segment. The river surface itself makes up approximately 163 acres. Of the small private ownership, the size of the tracts vary from less than one acre up to over 100 acres. A portion of the Trestle Creek golf course and some of the lots associated with phase 1 of the Trestle Creek subdivision are located in section 31 at the north end of this river segment. The remainder of the golf course and residential lots are adjacent and to the north of this river segment. Within the $\frac{1}{2}$ -mile

corridor ($\frac{1}{4}$ mile either side of river) there are currently approximately 40-50 separate property owners (excluding State and Federal lands) as well as any lots that may have been sold in the Trestle Creek subdivision.

There have been no recent exchanges of National Forest System lands within the Slowey Segment.

■ 2.6 Land Use

Past, present, and proposed land use probably has the greatest impact upon the suitability of the eight rivers for designation as wild and scenic. Past and present uses (i.e., log floating, water diversion, shoreline construction, impoundment) which have changed the natural appearance of the rivers may or may not play a role in the rivers' quality and character (suitability). Proposed uses (i.e., hydropower development, special use permits, watershed agreements, residential construction) could be precluded, and thus impacted, by alternatives to classify the rivers as wild and scenic.

Because most of the land along the eight rivers lies within existing or proposed wilderness, the majority of land use is recreational in character.



Morrell Falls Trail

Only two rivers, the Clearwater and Clark Fork, have industrial, residential, or agricultural use. On these two rivers the greatest demand for use is for scenic residential lots. Recreational use on all of the rivers is displaying a gradual increase, mostly



associated with publicity for tourism in the State of Montana.

Clearwater River

The uses of land along the Clearwater River include commercial timber management, recreation, residential, and transportation. There are no range allotments on Federal, State or private industrial land. However, some intermittent grazing of cattle and horses occurs on the private lands between Lake Inez and Seeley Lake.

Recreational use of the Clearwater is predominant on and along the shores of the five lakes which lie within the reach of the segment under consideration. Seeley Lake receives the highest and most diverse use levels, including motorboating, water skiing, canoeing, fishing, camping, picnicking, waterfowl watching, and residences. The other lakes receive similar uses, but at a lesser scale. The river itself receives the highest use within the lower two-mile segment which is designated as a National Recreation Trail. This canoe trail includes a put-in location and take-out location and a walking trail, which allows users to float the river and return to their car within a day. The low difficulty level allows users of all ages and skill levels to enjoy the scenery, abundant wildlife, and recreational experience of the Clearwater River. A handicapped-accessible trail at the site of the Seeley Lake Ranger Station allows the public access to a wildlife viewing blind which overlooks the wetlands of the Clearwater.

There are over 45 land owners along the Clearwater. Many of the homes of these owners are on the shores of Lake Inez. Most landowners are year-round residents. As with most of western Montana, home construction on private lands along the Clearwater has been on a steady increase for the past decade. Many of these homes are being constructed as year-round residences, yet are being used seasonally until the homeowners can retire or relocate to the Swan Valley. Because no sewer systems are in place, these homes are constructed with individual wells and septic systems. As seasonal use declines and permanent dwelling increases, the impacts of the increasing number of drainfields may be detrimental to water quality. Because of the braided nature of the river channel and the abundant wetlands which border the riparian area, most homes have been constructed

out of sight distance of the main channel. As pressure increases for recreation home sites, it is likely that structures will be constructed closer to the river edge.

Montana State Highway 83 follows the east side of the Clearwater River up the river valley for 10 miles from Seeley Lake. From this point the river flows away from the road and is not accessible by road or trail until near Clearwater Lake, approximately 4 miles farther. Two Forest Service and one county road cross the river west of Highway 83.

The Clearwater plays an important function to the community of Seeley Lake in that it serves as the water source for the community. The town of Seeley Lake supplies water to approximately 350 users. Because of recent growth trends, plans have been considered for expanding the water supply network. The intake for the water system is located 90 feet below the surface of Seeley Lake near the north end of the lake. The segment of the Clearwater under consideration for designation is directly upstream from this intake. Presently, the town only needs to chlorinate the water because of its high quality.

Although the Clearwater River has not been legally recognized as a municipal watershed, the community would like to maintain its use as a water supply. Communication between the Seeley Lake Water Board and the private and public owners along the Clearwater indicates that these other owners would also like to protect the watershed. The community is presently attempting to qualify for an exemption to the filtration requirements set by the Environmental Protection Agency (EPA) for public water supplies.

No large-scale water impoundments for hydroelectric generation have been proposed upon the Clearwater. Because of the geologic structure and topography of the segment of the Clearwater under consideration, there is low potential for development of large impoundments. One small-scale hydroelectric license was issued to the Emily A Bed and Breakfast for installation of a 160-kW hydropower plant with four generators. This plant was to be installed upon an existing 15 foot high dam. The license for this plant was granted in 1989 but because of lack of construction in the time allotted, the Federal Energy Regulatory Commission (FERC) issued an Order Conditionally Terminating License on August 25, 1993.



Morrell Creek

Human use of the Morrell Creek drainage is almost entirely recreational. The upper portion of the drainage, above the falls, is managed as proposed wilderness and is important for recreation and wildlife habitat (especially grizzly bear). The lower portion of the drainage is managed as grizzly habitat. Timber harvest may occur within the lower portion only if it improves or maintains this habitat.

Morrell Falls is the largest trail destination site on the Seeley Lake Ranger District. The falls and lake are used by approximately 2,500 people per year. The primary use of the drainage, hiking, begins as soon as the snow melts, around May 15, and lasts until the access road is snowed shut in November or December. Hunters ride stock up the trail and into Grizzly Basin September through November. Snowmobilers enjoy riding to the falls all winter. Once the falls freeze, ice climbers occasionally try them as a challenge. Most visitors come for the short, relatively flat walk that all ages can enjoy and for the view of the falls. There is only one dispersed campsite on the edge of Morrell Lake. The creek is not navigable so there is no boat use.

There are no grazing allotments or other special uses permitted within the drainage.

No water impoundments for hydroelectric generation have been proposed for Morrell Creek. Because of the natural head formed by the two falls, there is a potential for development of small-scale hydroelectric plants. The distance required for transmission, however, limits the likelihood of this occurring in the near future. Designation of Grizzly Basin as wilderness would not preclude hydroelectric development of Morrell Creek. It would, however, significantly decrease the potential for this to occur.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The primary use of the Blackfoot drainage is recreation. The majority of the North Fork and its tributaries are located within the Scapegoat Wilderness. Approximately 2 miles of the river lies outside the wilderness and is managed as grizzly

habitat. Timber harvest may occur within this area if it improves or maintains this habitat.

Administrative use of the drainage is associated with management of recreational use. There are two wilderness work stations along the North Fork. Carmichael Cabin is located at the confluence of Tobacco Valley and Cooney Creek. The North Fork cabin is at the confluence of the North Fork and Dry Fork. Both are historic sites that are used intermittently by Forest Service personnel June through September, but seldom the rest of the year.

Recreational use of the drainages begins as soon as the snow melts off the trails in May or June. Because access into the drainages is so long, most recreational use includes extended overnight trips with stock (horses, mules, or llamas) used to transport equipment. Much of this use occurs as outfitted or guided trips.

In association with the outfitting and guiding that occurs in the North Fork, there are seven grazing allotments. Two of these are associated with outfitter/guide special use permits, and five are incidental. The five incidental allotments are natural grazing areas used occasionally by the public and outfitters at spike camps. They are on Cabin Creek, Dobrota Creek, the lower Dry Fork, the North Fork, and in Tobacco Valley.

The North Fork of the Blackfoot and its tributaries do not have any impoundments on them, nor have they received any proposals for development of hydroelectric facilities. The North Fork itself could provide several adequate sites for medium-level hydroelectric facilities, either impoundment or diversion. The distance for transmission to the grid would probably be cost prohibitive in the immediate future. Although wilderness designation does not preclude hydroelectric development, the likelihood of its occurrence is very low.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake drainage has often been called the "backyard playground" of Missoula. Use of the drainage warrants this title because it includes several recreational activities including hiking, walking, jogging, skiing, mountain biking,



horseback riding, and fishing. Historical uses include homesteading, water diversion for irrigation, a municipal water supply, and timber harvest. These uses, except for the municipal water supply, are still evident but no longer play a dominant role in the drainage. There are regulations and potential uses for the municipal water supply that are still a factor in the future of the Rattlesnake.

Walking is the most common activity and usually occurs in the lower 3 miles of the drainage on the old road system and trails. Mountain biking, hiking, and horseback riding extend beyond the area popular for walking, into the National Recreation Area and to the edge of the designated wilderness. These activities depend upon the time of week and season, with summer weekends focusing higher use levels further into the drainage. Skiing in the winter months reflects similar use patterns.

The Rattlesnake receives moderate levels of fishing on the creek itself and higher use levels within the alpine lakes of the headwaters. Fishing restrictions apply in the first 6 ½ miles of the creek. Catch and release with artificial lures is allowed beyond that point. A limit of 10 fish or 10 pounds is applied to the lakes of the Rattlesnake.

Although hunting use is light, wildlife watching, (often associated with walking and hiking), is a popular use of the entire drainage. Recreational use has increased over the past decade and will probably continue to increase as the population of Missoula grows.

The Rattlesnake and its tributaries contain several small man-made impoundments constructed in the 1930's for control of the water supply for domestic and agricultural purposes. These dams are earthen in nature and are located at the mouths of the alpine lakes found on the west side of the drainage. They are minimal in size and do not detract from the natural character of the streams. One modern impoundment is located on private land outside the segment of the mainstem. This impoundment is maintained by the Mountain Water Company as a municipal water supply intake. The Mountain Water Company has maintained an interest in relocating this intake upstream on National Forest System lands to avoid impacts from adjacent residential development. No hydroelectric facilities lie within the Rattlesnake. Due to its hydrologic and

geologic nature, Rattlesnake Creek does offer opportunities for small- to medium-scale hydroelectric development. The likelihood of this occurring is low because of the wilderness and NRA status of the drainage.

South Fork Lolo Creek (includes: mainstem and No Name Creek)

Use of the South Fork drainage is almost entirely recreational in nature. Because the majority of this drainage lies within the Selway-Bitterroot Wilderness, and the remaining portion is managed as potential wilderness, development activities such as timber harvest do not occur.

Despite close proximity to the communities of Lolo and Missoula, the South Fork does not receive high recreational use levels. The trailhead has limited facilities with parking for 20 vehicles. No toilet or water facilities are provided here or along the trail corridor. From the trailhead the drainage receives hikers, horseback riders, and fishermen. Camping normally occurs within the moist meadows along the middle reaches of the drainage and near the alpine lakes.

The South Fork of Lolo Creek does not have any impoundments on it, nor have there been proposals for development of hydroelectric facilities. The South Fork could provide an opportunity for small-scale diversion or impoundment. Wilderness designation probably deters development of this nature.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

The primary use of Cache Creek is recreation. Since the majority of the Cache Creek drainage is not accessible by motorized vehicles, the trails are the primary means of travel. All of these recreational activities take place in a primitive or semi-primitive non-motorized setting. The number of users is moderate to low and there is almost no winter use of the drainage.

The trails in Irish, Pebble, and White Creeks receive little use throughout the year. Except for the lower one or two miles, these trails are not recommended for stock use. The Cache Creek trail is more accessible and receives moderate use during the late summer months and the first week of big game rifle



season. Uses include fishing, hunting, wildlife viewing, hiking, horseback riding, camping, and rock climbing. There are approximately six campsites that have been established through public use along the Cache Creek trail.

Use patterns over the years have remained stable in Cache Creek, with a slight increase in summer hiking use and a slight decrease in fall hunting use. It is somewhat unique in its ability to provide an enduring primitive setting with few encounters or conflicts between users.

Cache Creek and its tributaries have no impoundments. Although there are opportunities for small-scale hydroelectric development, the likelihood of this occurring is very low due because of the distance to transmission. Proposed wilderness designation would discourage development in the future.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

Use of the West Fork is recreational in character. The drainage receives low to moderate use in the summer months with a slight increase during the fall big game hunting season. Hunting and fishing, both lake and stream, are the primary recreational pursuits. Other uses include hiking, camping, horseback riding, wildlife viewing, and mineral collecting. There are approximately a dozen campsites that have been established through public use in the West Fork and Indian Creek.

Since the majority of the West Fork is not accessible by motorized vehicles, the trails are the primary means of travel. All of the recreational activities take place in a primitive or semi-primitive non-motorized setting. The number of users is moderate to low, and there is very little winter use of the drainage. Throughout the entire year, except for big game hunting season, users have a very high probability of having an undisturbed experience. Although users may come in contact with others on the trail, these contacts are isolated and brief.

Use patterns over the years have remained stable in the West Fork of Fish Creek, with a slight increase in summer use.

The West Fork and its tributaries have no impoundments within the study reaches. There is, however, a small-scale hydroelectric plant on a side tributary of the West Fork outside of the study area and near the Hole-in-the-Wall Ranch. Because the segment proposed for classification as "wild" is also in a proposed wilderness area, further hydroelectric development seems unlikely.

Clark Fork River

The Cutoff segment of the Clark Fork provides opportunities for scenic driving, streamside and float fishing, general float boating, some motorized boating, and both dispersed and developed camping. A trail on the south side of the river offers hiking, horseback riding and mountain biking opportunities.

Highway and rail transportation is the dominant land use within the Cutoff corridor. Traffic count in 1989 on Highway 135, which parallels the river, was recorded at 967 vehicles per day of which 156 were commercial. The Burlington Northern railroad which also parallels the river handles 25 to 30 trains per day. Approximately 18% of the corridor area is devoted to transportation facilities. This route is also designated a Scenic Byway.

In addition to timber management, the land along the Cutoff segment is used for residential property and traditional farming (hay and grain production). Of the small private ownership, 56% is within $\frac{1}{4}$ mile of the river. Many of the homes overlook the river or are visible from the river.

Approximately 3 miles south of the confluence of the Clark Fork and Flathead Rivers, a private resort has been developed around a natural hot springs and provides a restaurant, swimming pool, hot tubs, bar, camping units, and motel accommodations to the public. Nearby, Camp Bighorn, a semipublic resort, caters to activities affiliated with the Baptist Conference. Two Forest Service campgrounds provide overnight camping to the public. Three ramps provide boat access to the water's edge. One of these, near Fourteen Mile Creek, is planned for expansion.

Commercial land uses along the Cutoff include timber harvest and building stone quarrying. Timber harvest on public lands has been limited and is almost unnoticeable within the $\frac{1}{4}$ -mile



viewing zone. More recent harvesting on private lands has been accomplished with the aid of helicopters and is unnoticeable to most travellers. Building stone removal is limited to four quarry sites, one of which is easily seen from the river. Although production varies with season by quarry, the four quarries combined produce approximately 700 tons of building stone per year, and employ up to 10 individuals. Evidence of this activity includes rock coloration differences, and narrow road cuts. These activities are not visually conspicuous at this time. A request for patent on the Muchwater Quarry was recently turned down by the Bureau of Land Management.

Land uses on the Slowey segment are similar to the Cutoff. As with the Cutoff, the dominant land use is dedicated to transportation, with Interstate 90 paralleling the river. This highway varies in distance from the river. Several frontage roads are located closer to the river banks.

The Burlington Northern railroad grade is located on the south side of the Clark Fork and traverses the full length of this segment. Except for a few areas the railroad grade is located within close proximity to the river.

Several utilities traverse the river corridor. These include both buried and overhead telephone lines and overhead power lines.

There are several residences within the corridor; the current estimate is nineteen. Some of these residences are associated with agriculture or other type of business enterprise. The Trestle Creek golf course and associated subdivision is located at the northern end of this segment.

There are some traditional farming operations. These include hay and grain production and livestock pasture. Some of the agricultural land is irrigated with pump systems which use the Clark Fork as a source of water. There is one commercial fur farm operation.

There has been some past timber harvest on private land, as well as some small woodlot operations. With the exception of right-of-way clearing for Interstate 90, there has been very little recent timber harvest on National Forest or state lands. Most of the timber removal on public lands is not visually distracting.

There is one small gravel site on National Forest lands within the corridor. These operations are not visible from the river.

One Forest Service campground is located at the beginning of this river segment. The Slowey Campground has 32 family camping units, a picnic area, and a light boat/raft launching ramp.

Both segments of the Clark Fork under consideration for classification contain no diversion or impoundments which affect the free-flowing nature of the river. The nearest large-scale impoundments are approximately 30 miles downstream at Thompson Falls and approximately 80 miles upstream at Missoula. Neither of these impoundments has any noticeable impact on the flow of the two study segments.

The study segments themselves could provide several adequate sites for medium- to large-scale hydroelectric development. A proposal was made in 1950 and later in 1967 to develop a large-scale generation plant just outside the Cutoff segment below the community of Paradise on the Clark Fork River. The proposal included an 864 M kV generation facility, which would have effectively inundated the Clark Fork River for 49 miles and the Flathead River for 72 miles.

Four Power Site withdrawals are positioned along the length of the Cutoff Segment (see Figure 2.5.9). Although these sites were never developed, they do testify to the interest of hydroelectric development along the Clark Fork.

Recently, a proposal has been made to relocate the Yellowstone Pipe, gas and oil transmission line from its location on the Flathead Indian Reservation to a route which traverses down Siegel Creek. If relocated, this facility would bisect the Cutoff segment of the Clark Fork and possibly cross the Cutoff Segment.

■ 2.7 Land Use Controls

Controls on land use activities in the State of Montana are limited to local, State, and Federal regulations which have been enacted to protect the health, welfare, and safety of the residents of the



state and the quality of the natural environment. These controls include subdivision development regulations, water and sanitation regulations, water quality standards, and management standards, all designed to preserve environmental quality and guide utilization practices.

Because of historically low population densities and the independent attitudes of most Montanans, strict enforcement of residential and commercial building practices has been somewhat limited and confined to municipalities. More rural areas, such as those where the river segments are located, have few development regulations on private lands to protect the character of the rivers which run through them. On Federal- and State-owned land, on the other hand, management plans and regulations have been adopted to control use and to protect invaluable resources. The public has been more ready to accept control of activities on public lands than on private lands, yet even this undergoes a high level of scrutiny by property rights activists.

National Forest Management

Land use on National Forest System lands adjacent to the eight river corridors is administered by the Lolo National Forest. Activities conducted on these public lands are directed by the management standards, practices, and monitoring requirements outlined by the Lolo National Forest Plan. The Plan identifies a total of 28 Management Areas (MA's), each with different goals, resource potentials, and limitations (e.g., timber harvest, recreation, visual quality, wildlife). Twenty-two of these are found within the ½ mile wide corridor of the study rivers (see Appendix C). Except for Congressionally established or special administrative boundaries (e.g., Wilderness, Research Natural Areas), the MA boundaries are not firm lines and do not always follow easily found topographic features such as major ridges. The boundaries represent a transition from one set of opportunities and constraints to another set with management direction established for each. The boundaries are flexible to assure that the values identified are protected and to incorporate additional information gained from further on-the-ground reconnaissance and project level planning.

Amendment 12 to the Lolo National Forest Plan (W&SR Eligibility Study) imposed additional standards to protect the eligible river segments

until a river suitability study is completed and the rivers are added to the National Wild and Scenic River system. The additional restrictions, designed to protect the "outstandingly remarkable" values identified in the eligibility study, include restrictions on timber harvest, road construction, and disruption of the visual character of the eight river corridors. Existing activities such as mining claims are allowed to continue as long as they are conducted in a manner that minimizes surface disturbance, sedimentation, and visual impairment. These standards are defined on pages 22-25 of Amendment 12 to the Lolo National Forest Plan.

Northwest Power Planning Council

The Northwest Power Planning Council has authority to identify river protection needs derived from the Northwest Power Act of 1980 (Public Law 96-501). The Act required the development of a program to "protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat" that has been affected by hydropower development in the Columbia Basin. This program was completed in 1988. While the Council does not regulate hydropower development, the Act directs Federal permitting agencies to take into account the Council's Power Plan and Fish and Wildlife Program when considering development permits.

Of the eight rivers under consideration for classification, one stretch of the North Fork of the Blackfoot has been identified by the Northwest Power Planning Council for protection. Approximately 5 miles of the North Fork of the Blackfoot from the Dry Fork tributary to the North Fork trailhead is identified as needing protection for habitat for grizzly bears, osprey, otter, and elk winter range. The identification of this stretch gives no hard and fast legal assurances to maintain free flow but makes these attributes of the river a factor in considering a permit for power development. The protection of law would be provided by designation under the Wild and Scenic River Act.

Subdivision and Zoning

Subdivision of private lands is controlled by the Montana Subdivision and Platting Act. This act regulates the frequency, size, and location of subdivisions and is administered by the State and local governments. Sanitation development is



normally coordinated with the subdivision platting process. Within the confines of the Lolo National Forest, only Missoula County has adopted local subdivision regulations which are equivalent to or stricter than those imposed by the State law.

The practice of zoning to define acceptable land uses, development densities, and open space requirements on private land has mostly been confined to the boundaries of urban areas in Montana because of public opposition and limited development pressures. None of the counties which the eight river segments flow through have adopted county-wide zoning regulations. Although not formally under way, several of the counties, including Missoula and Sanders, have recently proposed county-wide zoning to direct the more recent boom in residential and commercial development. If accepted, zoning could be used as a tool to control development on private lands along the rivers and thus to protect the character for which the rivers are identified.

Covenants, adopted at the time of subdivision platting and recording, are in existence for the Trestle Creek subdivision located along the Slowey Segment of the Clark Fork River. These covenants are enforced by the residents of the Trestle Creek subdivision. They include housing size, aesthetics, and land uses. They specify a setback requirement of 15 feet from the top bank of the river edge.

Building Codes

The enforcement of building codes on private land construction is limited to State-adopted standards for electrical and plumbing. Structural standards are limited to safe design and infrequently correlate with building location or aesthetics. Building completion (e.g., siding installation) is often enforced by private insurance carriers, but strictly as a factor of building preservation and fire protection, not aesthetics.

Sanitation

The discharge and disposal of effluents from residential and commercial development is administered by the Montana Department of Health and Environmental Sciences, which regulates the development of septic and water systems. Minimum requirements for the location of

septic tanks and drainfields include the setback of these facilities of at least 100 feet from live water bodies. A requirement for a minimum lot size of 1 acre for individual drainfields and wells, aids in controlling development densities. Both Mineral and Missoula counties have adopted their own sanitation regulations which are equivalent to or stricter than those imposed by the State.

All of the counties rely upon State Health Codes which are enforced by the Montana Department of Health and Environmental Sciences and local sanitarians.

Shoreline and Water Quality Protection

The water quality and shoreline stability of the study rivers receives the greatest level of protection under both State and Federal regulations. This protection is afforded to both private and public lands, yet is more readily observed on public and private industrial timber lands because of a Memorandum of Understanding reached between the Forest Service, State of Montana, and the Plum Creek Timber Company, L.P. Enforcement levels of the regulations administered by local governments varies tremendously because of limited budgets and manpower.

Nine regulations exist to protect water quality within the lakes and streams discussed within this study (see *Figure 2.7.3 and Appendix D*). These regulations are founded upon the following laws: 1) Montana Shoreline Protection Act; 2) Clean Water Act; 3) Federal Emergency Management Agency (FEMA) Floodplain Regulations; 4) Montana Streambed and Land Preservation Act; 5) Montana Stream Protection Act; 6) Montana Water Quality Act; 7) Montana General Mining Laws.

In addition to these laws, the Montana Department of State Lands has widely distributed information on the appropriate "Best Management Practices" (BMPs) for timber harvesting and road construction in or near riparian areas. These activities are monitored by the Montana Department of Lands on private and State parcels, and by the Forest Service on public parcels.

Figure 2.7.3. Nine permits are used to regulate activities near the lakes and streams which border the study rivers.



County Shoreline Construction Permit
404 "Dredge or Fill" Discharge Permit
Floodplain Development Permit
310 Streambed and Streambank Permit
"124" Stream Preservation Permit
"3-A" Authorization Permit
MPDES Discharge Permit
Small Miner's Exclusionary Certification
Stormwater Discharge Permit

■ 2.8 Socioeconomics

The eight study rivers play a variety of roles in the social and economic health of the communities of western Montana. Historically they have proved essential to the basic needs of indigenous peoples, meeting food, water, spiritual, and transportation requirements. As the needs of the people increased, so did the role which the rivers played in developing the economic and social setting (e.g., floating logs, irrigation, recreation).

Today, the rivers play no less of a role in setting the stage for community character and economic strength. In addition to providing a variety of recreation opportunities, they also serve several of the communities' needs for water, whether it be for drinking or for industry. For the most part, the rivers provide a social setting or lifestyle which is integral to Montana.

This lifestyle is currently undergoing noticeable change in western Montana. For different reasons in different counties, established residents are seeing the rate of change accelerate in their communities and institutions. Newcomers to the region, many of whom have settled here in order to effect change in their lifestyles, also bring change with them. Western Montana is experiencing a major transition in lifestyles and community values and attitudes and is feeling new economic pressures.

Social Setting

Of the counties through which the eight rivers flow, only Mineral, Sanders, and Missoula are directly influenced. Although portions of the candidate rivers are located in Ravalli, Lewis & Clark, and Powell counties, access to and influence on the rivers is from the other three counties.

Although the three counties under consideration are quite different from one another, the social environment for all three was relatively stable during the 1980's. Economic shifts in local industries affected the makeup of the population slightly, but for the most part, the situation was relatively constant. A more dramatic shift in local industries and an influx of people from out of the area has caused a recent (1990 - present) change in how resource management is perceived. The use of natural resources affects local extractive industries as well as tourism, recreation, and the setting for which people live in western Montana.

Population trends in the three counties between 1970 and 1992 varied significantly (*see Appendix J*). Mineral and Sanders counties had stable populations during that time and their populations were slightly less in 1992 than in 1985. Missoula County grew by 30% from 1970 to 1980, and then was relatively stable through the decade of the 80's. From 1990 to 1992 the county grew by almost 5%.

Mineral County is composed of 83% Federal- and State-owned land. This land ownership pattern makes local communities particularly sensitive to government decisions regarding land use. Not only is the tax base somewhat limited by the amount of privately owned land, but management and use decisions affect a large portion of the physical environment of the county. A high proportion of Mineral County residents have lived there for many years, some for multiple generations. Although there are some newcomers from out-of-state, the influx is potentially much less because of the low ratio of private land to public land. Thus the values, attitudes and beliefs of Mineral County residents are more likely to be affected by political and economic pressures than a significant change in the population.

Sanders County is composed of 52 % Federal- and State-owned land. Like Mineral County, many residents of Sanders County have been there for generations. In addition, a portion of the county is located on the Flathead Indian Reservation; thus a proportion of the population is Native American, who have also occupied the area for a very long time. The Thompson River valley holds a concentration of private industrial timber lands, and the area from Thompson Falls to the Idaho border has a significant amount of private non-industrial land. This area in the western part of



the county is becoming increasingly attractive to residents of Washington State. The farming/ranching community also plays a significant role in the social and economic atmosphere of the county.

Although extractive industries are important in Sanders County, the mixed land base means that a wider combination of economic and political influences affect land use than in Mineral County. In addition, the attractiveness of the rivers and reservoirs for recreation and recreational development, including residences, increases the complexity of social influences. High unemployment in the county contrasts with the relative affluence of recreation visitors and newly arrived residents. Sanders County will likely experience change more slowly than Missoula, but with a concentration of private land along the rivers in the county, any development will become more obvious than in Mineral County. It is possible that an influx of non-residents, attracted by natural resource values, will alter the traditional conservative values of the county over the next decade.

Missoula County is composed of 43% Federal- and State-owned land. This county has a much more diversified economy, social structure, and mix of cultures than Mineral or Sanders Counties. The size of the county's economy, the county's position as a transportation hub, and the regional nature of the medical/retail community combine to support a wide variety of lifestyles and subcultures. The influence of the University of Montana (a medium-size liberal arts school) and the presence of a vocational-technical school attract a number of people to Missoula County. The community contains a significant number of people who came and stayed because of the readily accessible recreation opportunities and the natural beauty. This constituency is vocal and actively involved in the public forum of resource use decisions. The county also supports extractive industries with an influential and articulate interest group. Missoula County residents represent a very plural approach to resource conservation issues, and on controversial issues, they have a tendency to polarize. This could be seen as a microcosm of the broader national debate while the values represented in the two smaller and more rural counties are intensely local. Because of the diversity of the population, and the more pronounced growth

of Missoula County, change is a more familiar aspect of life in Missoula County. In the two smaller counties, significant change has more unfamiliar implications and may create more uncertainty about the future. The northern end of Missoula County in the Seeley Lake area represents a combination of influences on community life, not only being close enough to Missoula to experience some of the urban plurality, but also being a timber- and recreation-dependent community. The fact that Seeley Lake is unincorporated, but clearly a distinct community, complicates its interaction with the county government which is much larger than the local governments of Sanders or Mineral Counties.

Economics

The economic situation of the counties located in western Montana are similar in character, sharing similar trends in growth and decline.

Mineral County is the smallest of the three counties both in terms of population, number of jobs, and total personal income. The major source of income in this county is from the manufacturing sector, even though there were more actual jobs in the government, retail trade, and service sectors in 1990 (*see Figures in Appendix J*). This is an indication that the wage level is highest in the manufacturing sector, and changes in this sector will have significant impacts on the economic health of the county. For example, a recent sawmill closure will affect more than half the manufacturing sector jobs in the county. This will be particularly serious for the county's economic health. Income from Federal, State and local government employment has been stable in Mineral County over the past 15 years. Retail trade, farming and finance, insurance, and real estate sectors have all been relatively stable in terms of employment in the past 10 years. Only the service sector has been increasing in both job numbers and total personal income since 1980. As is typical in the country as a whole, the service sector jobs pay less on the average than jobs in many other sectors of Mineral County.

The economy of Sanders County is roughly twice the size of Mineral County (*see Figures in Appendix J*). The major source of income for the county in 1990 was the government sector, closely followed by the manufacturing sector which has declined since 1975. The service sector was much larger in 1975



and 1980 than in 1990. This decline of the service sector was unique to Sanders County and results from a change in jobs associated with the Flathead Indian Reservation. The reservation headquarters was changed from Sanders County to Lake County in 1984 and the jobs that had been reported in Sanders County were reported in Lake County after that time. There was a rebound in service sector employment between 1985 and 1990, but the 1990 level was still about 350 jobs below the 1980 level. The retail trade sector has been relatively stable for the past 10 years. Employment in the farm sector has also been relatively stable since 1980, and Sanders is the only one of the three counties with a sizable farm sector. Although there has been a doubling of jobs in the finance, insurance and real estate sector between 1975 and 1990, personal income from that sector actually declined during that time. Sanders County appears at this time to be relatively stable without any obvious growth sectors among the main sectors of the economy. Lack of obvious growth in a major sector means that declines in other sectors, such as in natural resource-dependent industries like sawmills, will result in additional unemployment in the county. Unemployment in Sanders County has typically been very high compared to other counties in the state. In 1992 the unemployment rate in Sanders County was 15.2% compared to 12.8% in Mineral County, 5.2% in Missoula County, and 6.2% for the State of Montana. The estimate for the U.S. was 6.8%.

The economy of Missoula is some nine times larger than the combined economies of both Mineral and Sanders Counties. The service sector of Missoula has been growing rapidly in both number of jobs and total personal income, and this is currently by far the largest sector in the county. Unlike the national situation with the service sector providing relatively low-paying jobs, the service sector in Missoula County has one of the highest average income levels of any sector. This is because the service sector in Missoula County includes relatively high-skilled professions such as doctors, accountants, engineers, and a variety of consultants. There are a number of Federal government offices in Missoula County as well as the University of Montana, which results in a large number of government sector positions with high average incomes. The manufacturing sector has been relatively stable since 1980, but that may change with the sale and downsizing of the

Champion International sawmill. Growth of Missoula County as a regional trade center is clearly shown in the rapid increase in the number of jobs and income associated with the retail trade sector. Since 1990 a number of large retail chain stores such as Costco, WalMart and Target have located in the City of Missoula and this will probably be reflected in future employment and income statistics. Finance, insurance & real estate, and the transportation sectors have been relatively stable during the past 20 years. While the populations and economies of Mineral and Sanders Counties have been stable over the past 10 years, the growth of Missoula County's population has been matched by the growth of its economy and its development into a regional center for retail trade, services and the University of Montana.

■ 2.9 Recreation Opportunities and Public Access

All eight rivers provide a myriad of recreational opportunities ranging from float boating and canoeing on the Clark Fork and Clearwater Rivers to hiking, walking, hunting, and fishing on the other rivers.

Access to the rivers varies in ease and distance. The Clark Fork and Clearwater offer convenient access to motorized users directly from nearby roads. The other drainages require a higher degree of user energy to hike or ride in on the available trail systems. Accessibility plays a major role in controlling user numbers and thus impacts upon the resources.

Clearwater River

A variety of water-oriented recreation sites exist on the Clearwater River.

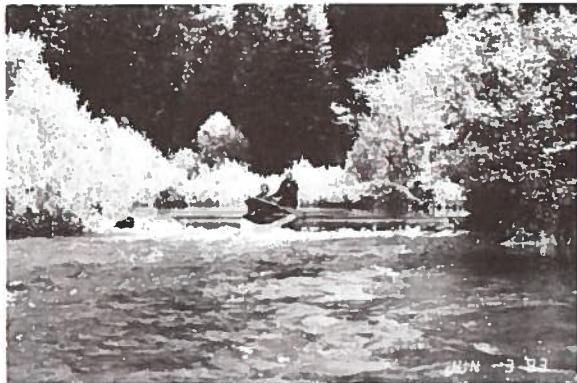
Clearwater and Rainy Lakes are accessible by trail. Boats, however, are limited to what can be carried in on the ¼-mile-long trails. There are public boat launches on Lake Alva and Inez, but larger boats are confined to the extents of the lake's surfaces. The river cannot accommodate craft larger than canoes beyond the lake's perimeters. Watercraft may also be launched at the Seeley Lake Canoe Trailhead located 1 mile north of the head end of



Seeley Lake. The two-mile float from the trailhead to the lake has a no-wake restriction which limits size and speed of watercraft.

A Forest Service Campground at Lake Alva has 41 campsites, with vault toilets, potable water, a small swimming beach, 50-person group campsite, and a boat launch. A dispersed non-fee site at Lake Inez has a boat launch, picnic areas, vault toilets, and 9 scattered campsites with fire rings. No potable water is available.

Currently there are no services authorized under a special use permit for outfitting, guiding, or sightseeing. In the last year several inquiries have been made about providing a canoe livery or guide service on the canoe trail.



Clearwater River, two miles below Lake Inez

Lakes Alva and Inez are enjoyed by fishermen, boaters, and water skiers, whereas Clearwater Lake and Rainy Lake are enjoyed primarily for the scenery and some limited fishing.

Heavy dispersed use in the Chain of Lakes (Lakes Alva, Inez, Rainy, Clearwater, Seeley, and the Clearwater River) is causing an increase in resource damage. The dispersed sites are used by family campers during the summer and by hunters during the fall. Using the Cole Campsite inventory method for undeveloped sites, there are 66 dispersed campsites in the Chain of Lakes. By impact rating, 13 are heavy, 33 are moderate, and 20 are minimum. By Barren Core rating, 27 are high, 13 are moderate, and 26 are low.

The increasing use levels on the lakes and river are changing the quality of the recreation experience.

Too many boats, motors that are too loud or run constantly, crowded boat launches, and crowded dispersed campsites all affect the recreation experience and create user conflicts.

Morrell Creek

The Morrell Falls National Recreation Trail follows the lower study segment from the trailhead to the lower falls and Morrell Lake. Morrell Lake is very shallow and contains a few small fish but is still enjoyed as a destination recreation site. Morrell Falls is the busiest public destination site on the Seeley Lake Ranger District. The falls and lake are used by approximately 2,500 people per year.

The primary use, hiking, begins as soon as the snow melts, around May 15, and lasts until the access road is closed by snow in November or December. Hunters ride stock up the trail and into Grizzly Basin from September through November. Snowmobilers enjoy riding to the falls all winter. Once the falls freeze, occasional ice climbers try them as a route. Most visitors come for the short, relatively flat, 2-mile walk that all ages can enjoy and for the view of the falls. The stream is not navigable so there is no boat use.

The trail is on relatively level ground and good soil, so it stands up to high use well. In wet seasons the muddy spots are made worse by stock and are hard for hikers to avoid. However, the muddy spots dry out without soil erosion. The shore of the lake along the trail shows reduced vegetation. Most of the resource damage along the lake is at the dispersed campsite. The permitted outfitter does not affect the area other than to bring in more visitors. His stock area and campsite is removed from the high-use area. The area below the falls is naturally protected from concentrated use. The narrow draw restricts traffic to the trail and the rocky highwater area along the creek. Compaction and erosion do occur on the unmaintained trail past the upper falls and into Grizzly Basin. Visitors leave the trails to see the top of the lower falls and the bottom of the upper falls.

The trail beyond the falls into Grizzly Basin is used and maintained by a group of returning elk hunters every year. The upper two miles in the headwaters offer scenic alpine views. The middle two miles from the basin to the falls are in a narrow valley in a thick Douglas fir/subalpine fir forest. The lower



two miles from the falls to the trailhead are through a relatively level lodgepole forest. The creek cannot be seen or heard from this section of trail.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

Access to the North Fork and its tributary segments is limited to Forest Service trails. The primary access point is located immediately west of the southern terminus of the mainstem. This trailhead, the North Fork Trailhead, was reconstructed in 1992 to accommodate the use it receives as the 4th most used trailhead into the Bob Marshall Complex. It is designed to accommodate 30-40 vehicles and stock trailers and provides hitching posts, feeding bunks, and a vault toilet. The drainage is also accessible from the east through the East Fork of the North Fork trail system, from the north through the Bob Marshall Wilderness, and from the west through the trail system in the Monture drainage.

Use in the drainage begins as soon as snow melts in May or June. General recreation trips occur throughout the summer and give way to photography and hunting trips in the fall. Private stock and hiking party use occurs throughout the snow-free season. Most use is extended overnight trips, as there are few day hike loops or short destination hikes. The North Fork drainage receives high use in the fall for big game season from September 15 to November 28. Outfitters and private parties pack in camps to hunt predominantly for elk, but also bear and deer. The maximum allowed outfitter use days are 622 days for summer trips and 689 trips for hunting. Of the allotted time, about 75% is actually used annually.

The state fishing season runs from May until November. Fishing is catch and release for cutthroat and bull trout. There are bag limits for other species.

There are no outfitted river running trips in the North Fork drainage. In general, the rivers are not large until the Dry Fork meets the North Fork, and that section is only 5 miles out to the trailhead. In 1993 kayakers were seen using the North Fork on four different occasions. They put in between

Smoke's Bridge and the North Fork cabin after carrying their kayak in from the trailhead.

Effects of recreational use have been tracked annually in the Limits of Acceptable Change (LAC) report since 1987. Overall, monitoring shows the district is within the standards established by the Bob Marshall Wilderness Complex for use levels. Following the Canyon Creek Fire of 1988, use levels declined. By 1991, much of the area recovered and use is beginning to increase again. It is anticipated that monitoring results may show higher impacts in the future with this increase. Mitigation measures are taken to manage the use impact. Outfitters are required to do more every year to reduce the impacts of their camps. Wilderness education programs in local schools strive to reduce future impacts of the general public. When overuse occurs, campsites are naturalized and trails moved.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

A unique feature of the Rattlesnake corridor is its close proximity to Missoula and Interstate 90, making this area very accessible to local residents as well as tourists. The Rattlesnake National Recreation Area (NRA) receives 90% repeat use.

The Rattlesnake Main Trailhead and Horse Trailhead are the only trailheads within the river corridor. There are five other trailheads located outside the corridor that provide access as well. Eighty percent of the visitors enter through the main Rattlesnake Trailhead. The other trailheads are Gold Creek, West Fork Gold, Sheep Mountain, Woods Gulch, and Sawmill. These all have trails which connect with the corridor trails and viewsheds.

Much of the use in the lower drainage occurs on the old road which parallels the Rattlesnake Creek in the NRA. This rocky road was historically used by homesteaders, woodcutters, commercial loggers, and those interested in water either for irrigation or municipal use. It has been closed to public motor vehicles since the mid 1970's and to motorcycle use since the early 1980's. The Forest Service and Mountain Water Company still occasionally drive the road for administrative purposes. Private individuals or groups can obtain special permission



for motor vehicle use to transport people or equipment for educational or research purposes. This road is open to and heavily used by hikers, mountain bikers, skiers, and equestrians.

There has been a lot of concern and discussion regarding the conflicts of hikers, bikers, and equestrians using the same trails. The problems are the speeds attainable on a mountain bike, impacts to trails, and the varied reasons for visiting the area. Many groups such as the Backcountry Horseman, Low Impact Mountain Bicyclists (LIMB) of Missoula, Friends of the Rattlesnake, and the Forest Service have worked together to help resolve these conflicts, through education and signing at the trailheads.

Despite the high levels of recreational traffic, the Rattlesnake receives fairly low pressure for hunting and fishing. Much of this can be attributed to a no-shooting zone for the first 3 miles from the main trailhead and a fishing restriction on the lower 6 miles of the creek.

Currently, the Rattlesnake National Recreation Area and Wilderness (RNRAW) is being managed under the direction of a Limits of Acceptable Change (LAC) based management plan that was completed in December, 1992.

South Fork Lolo Creek (includes: mainstem and No Name Creek)

The South Fork is most commonly entered via the South Fork Lolo Creek Trailhead. While no public road or trailhead is located within the corridor, this trailhead offers the most direct access. The South Fork, however, can be reached by three other routes: the Lantern Ridge Trail, the Bass Creek Trail, and by a non-system trail from near Skookum Lake (approximately 3 miles west of the corridor), which has been used by an outfitter who camps in the corridor.

The South Fork Lolo Creek Trailhead is about a 45-minute drive from Missoula. The main recreational attributes of this drainage are solitude, wild flowers/vegetation variety, and scenic vistas. Hiking opportunities are enhanced by the streamside scenery, fishing, and the presentation of the awesome views of steep, rugged valley walls. South Fork Lolo Trail offers diverse visual settings

as it traverses numerous distinctive timber type stands and open forb-covered avalanche chutes.

There are limited facilities and structures along South Fork Lolo Creek. The trailhead and parking area are lightly developed and unpaved. At the trailhead there is one bulletin board and two short hitching racks. The larger parking area, 0.1 mile up the road, has additional hitching racks, a horse unloading ramp, and parking for 20 vehicles. There are no toilet or water facilities here or along the creek corridor.

The Bass Divide Trail, which is also a prehistoric trail, forks to the southeast. This trail gains 1600 feet in approximately 1.4 miles and leads to an unnamed lake. The creek that flows from this lake into South Fork Lolo Creek is a significant tributary of the drainage.

The only other man-made structures are two trappers' cabins (one in and one outside the river corridor) and a logging road (outside the river corridor) which crosses the South Fork Lolo Trail five times. The river corridor is south and west of this logging road. The first trapper's cabin is located inside the corridor on the west side of the creek. The other cabin is located 0.5 mile south of the wilderness boundary along the trail.

The recreation use along South Fork Lolo Creek is light to moderate. The drainage receives 200 visitors and 400 visitor days annually (1971). Most users are locals coming from Missoula or Lolo. There is one outfitter permitted in this drainage. Present use is estimated at 100 visitors and 200 annual visitor days.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

Access to Cache Creek and its tributaries is relatively limited for both vehicular and foot traffic. The Cache Creek Road follows Cache Creek for roughly 3/4 of a mile where the road ends and foot or horse travel begins. The uppermost parts of Irish Creek and White Creek are also accessible by road with a short hike, 1/2 mile, to reach the actual river corridor. These roads are both open seasonally with gates closing access from early fall until June 15.

Trail access is primarily via two trails, one in Cache Creek, and one in Irish Creek. The Cache Creek



trail accesses the upper reaches of Cache Creek where it turns into a user trail that scrambles to the state line. The Irish Creek trail is a 3-mile trail that connects the Cache Creek trail with the Schley Mountain trail along the divide between Irish Creek and Cedar Log Creek. Pebble Creek and White Creek also have user-developed trails that follow those drainages for several miles.

Since the majority of the Cache Creek drainage is not accessible by motorized vehicles, the trails are the primary means of travel and recreation. All of the recreational activities take place in a primitive or semi-primitive/non-motorized setting. The number of users is moderate to low, and there is almost no winter use of the drainage. Throughout the entire year, users have a very high probability of having an undisturbed experience, isolated from contacts with others.

The trails in Irish, Pebble and White Creeks are lightly used, and except for the lower 1 or 2 miles, are not recommended for stock use. The Cache Creek trail is more accessible and receives moderate use during the late summer months and the first week of big game rifle season. Uses include fishing, hunting, wildlife viewing, hiking, horseback riding, camping, and rock climbing. There are approximately six campsites that have developed through public use along the Cache Creek trail. Most of these are not visible from the trail and receive low enough use that their impacts are almost negligible. The only exception is the weed infestation at several of the sites.

The Cache Creek trail begins at a developed trailhead. The trailhead has a small parking area (ten vehicles/ trailers), hitchrails, an information board, and a loading ramp. This trailhead is used as the primary entrance to the Cache Creek drainage. Even during hunting season, it is rarely filled to capacity.

Recreational use patterns over the years have remained stable in Cache Creek, with a slight increase in summer hiking use and a slight decrease in fall hunting use. It is somewhat unique in its ability to provide an enduring primitive setting, with few encounters or conflicts between users. As other areas around the Lolo National Forest have seen skyrocketing use, Cache Creek has been able to maintain its "remoteness." This is partially because of the limited trail access to the drainage.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

Access to the West Fork of Fish Creek and its tributaries is relatively limited for vehicular traffic. The upper trailhead road is closed to vehicle traffic from early fall until June 15.

Trails access the bottom of the West Fork of Fish Creek and the Middle Fork of Indian Creek. The West Fork Trail crosses the creek at Clearwater Crossing on a cable suspension bridge (foot traffic only) and extends to Fish Lake in Idaho, a total distance of 11.2 miles. With a bridge for foot traffic only across the West Fork, this isolates the trail system across the creek from stock use until late June or early July. Fording the creek is unsafe until that time. The Indian Creek Trail leaves the West Fork Trail at the point where Indian Creek flows into the West Fork. It travels for 6 miles to lower Cedar Log Lake and the junction with Trail #104 just below the state line. Trail #110, Schley Mountain, leaves the West Fork Trail where Cedar Log Creek flows into the West Fork of Indian Creek. It travels along the sidehill just above the creek up to the Schley Mountain trailhead. All of these trails receive moderate use throughout the summer and fall.

There are also several ridge trails that do not fall within the river corridor, but they do provide access or a loop opportunity for travelers. The Indian Ridge Trail (#104) runs along the divide between Cedar Log Creek and Indian Creek. The Cedar Peak Trail (#510) runs between Straight Creek and the West Fork of Fish Creek. The State Line Trail (#738) straddles the divide between Idaho and Montana for more than 30 miles. These trails, with the exception of small stretches of the State Line Trail that access the upper lakes, all receive low use throughout the year. Trail access is also provided via several points in Idaho that tie in with the State Line Trail.

Since the most of the West Fork of Fish Creek drainage is not accessible by motorized vehicles, the trails are the primary means of travel and recreation. All of the recreational activities take place in a primitive or semi-primitive, non-motorized setting. The number of users is moderate to low and there is very little winter use of the drainage. Throughout the entire year, except



for big game hunting season, users have a very high probability of having an undisturbed experience. Although users may come in contact with others on the trail, these contacts are isolated and brief.

Hunting and fishing, both lake and stream, are the primary recreational pursuits. Other uses include hiking, camping, horseback riding, wildlife viewing, and mineral collecting. There are approximately a dozen campsites that have been developed through public use in the West Fork and Indian Creek. Most of these are visible from the trails and often close to the creek. In inventorying the sites, the most prominent impact was the size of the disturbed area in each site. This is a result of long-term, repeated camping in the same site, usually with stock. The stock holding areas have become quite large and often infested with noxious weeds. Other impacts, such as litter, dying trees, and erosion, are minimal.

Clearwater Crossing serves as a trailhead, campground, and administrative guard station. It lies at the end of Road # 7750 and is the primary access point for both the West Fork of Fish Creek Trail and the North Fork of Fish Creek Trail. The camping facilities include a vault latrine and three primitive campsites. Each campsite has a small parking area and a fire grate. Two of the sites have picnic tables. These facilities receive very little use outside of fall hunting season. The trailhead has two large parking areas capable of accommodating 30-40 vehicles and trailers, a loading ramp, hitch rails, a public information board and two public corrals. The trailhead facility receives low to moderate use throughout the year and is filled to capacity during the first week of big game hunting season.

The guard station at Clearwater Crossing contains a cabin, workshop/warehouse, tack shed, covered hay storage, corrals, and hitch rails. It is occupied off and on from June through October with trail crews and backcountry personnel. The public facilities are segregated from the Forest Service administrative site.

The lower Schley Mountain trailhead provides access to the Schley Mountain Trail both up to Schley Mountain and down Cedar Log Creek to the West Fork of Fish Creek. This is a relatively new facility with an information board, vault latrine, parking areas, and hitch rails. This site also houses an outfitter base camp from which the outfitter

travels into Idaho. The road is gated above this trailhead from early September until June 15. During the summer months an upper trailhead may also be accessed by vehicle. This trailhead serves the State Line Trail and the upper end of the Irish Creek Trail. Facilities include an information board and a small parking area which can accommodate 6-8 vehicles. Trailers are not recommended at this upper trailhead as the road has several tight switchbacks and turnaround space is limited. Before the lower trailhead was constructed, this served as the primary access point for the upper elevation trails. With the new trailhead, camping and stock use is now discouraged at this site, and reclamation efforts are underway to repair the impacts from this previous use.

Use patterns over the years have remained stable in the West Fork of Fish Creek, with a slight increase in summer use. The number and impacts on trails and campsites have remained stable. Although this drainage receives more use than others in the Great Burn Proposed Wilderness, it is still able to provide a primitive experience in a remote setting. The ability to reach the State Line trail and alpine lakes in a relatively short ride or day hike is somewhat unique and being discovered more and more by local users. The use in this area is expected to increase over the next ten years.

Clark Fork River

Access to the Cutoff segment of the river is very good along the south side. There are numerous turnouts to get off the highway and view the river. Access to the water's edge at these turnouts is across large rock riprap from highway road construction or natural river bank, depending on the location.

General access on the north side of the Cutoff segment is more limited. Road 18262 provides 1 mile of river access on the north side of the river near the Fourteenmile bridge on Highway 135. This short section of road serves as access to a dispersed recreation site (toilet, firegrate, parking) adjacent to the river. This site provides foot access to the river. There is no ramp; however, it is feasible to carry rafts and light boats to and from the river. There is a non-system road in the west 1/2 of section 9, T18N, R26W that provides access to a timbered bench above the river. There are no improvements at this site other than informal parking. This is a



high bench well above the river; it is not practical to launch or retrieve boats or rafts at this site. There are other sites on the north where the river is accessible on foot by traversing somewhat rugged topography and at some locations by crossing the railroad tracks.

Boat/trailer access is provided at three locations, two of which are on National Forest lands. All of the boat access sites are undeveloped, with roads to the water's edge made of native materials. The Ferry Landing site near Fourteenmile Bridge on Highway 153 is scheduled for development during 1994. These boat access sites are used lightly during the pre-runoff period from late March to early May. Use picks up again following runoff from late May until late October. During mid-summer, the heaviest use period, 10-12 boats/day may use the Ferry Landing access point. The other access point may receive 2-3 boats/day.

Near the community of St. Regis, a boat access, including ramp, parking, and sanitary facilities, is in the planning stage. This is known as the gauging station site. This site is upstream approximately 4 river miles from the western edge of the Cutoff section of river.

The Cascade Campground is a developed National Forest campground and is located 5 miles south of the confluence of the Clark Fork and Flathead Rivers. The campground is open May through October and its 10 units are 75% occupied, with weekends at full occupancy, from mid-June to early September. The campground has water, garbage pickup, tables, fire rings, vault toilet, paved road, and parking sites. The campground also serves as a trailhead for the Cascade Nature Trail and overlook of the Cascade Falls.

There is a dispersed recreation site with toilet, fire grill, and parking, locally known as Patrick Creek. It is located in section 9, T18N, R26W.

Quinn's Resort is a privately owned facility that has developed around a natural hot springs. Quinn's provides a restaurant, bar, swimming and hot tub, playground, 10-15 campsites, and motel accommodations.

Camp Bighorn is owned and operated by the Baptist Conference and provides facilities for an organized youth summer camp. The facility is also used for

retreats and educational workshops during fall, winter, and spring.

The Forest Service River Trail No. 223 is a 9.4-mile long trail located on the south side of the river. It is accessible either at the Ferry Landing site or from the St. Regis end off Road 9113. This trail is in a forested setting generally running parallel to the river. The distance from the river varies from adjacent to the river to approximately 1/4 mile away. This trail is receiving increasing use each year from hiker, horseback riders, mountain bikes, and some trail bikes. It is the only section of trail on the lower Clark Fork that parallels the river.

The Clark Fork river receives a high level of float or drift boating. Approximately 80-90% of the boating use is of this type. The amount of float boating is split about 70:30 between fishing trips and general float trips, respectively. There is some motorized use. About 15% of the boating use on the river is generally smaller-horse-power craft. Jet skis or wave runners only occasionally use the river. There is very little use by large-horsepower boats.

The river is used extensively for sport fishing, by both float and bank fisherman. The largest share of fishermen are floating. Because of ease of access and vehicle pull-off areas close to the river, the lower section of the river between the Ferry Landing site and Highway 200 appears to receive a higher portion of bank fishing. It is estimated that 60-70% of the fishermen are fly casters. Of the fishing public, it is estimated that 60%-70% are unguided and 30%-40% are outfitted.

There are five outfitters that provide guided fishing trips on a routine basis down the Clark Fork in drift boats. In addition, there are a few others that will bring clients on a sporadic basis. They generally have a base of operation elsewhere and use the Clark Fork on a client/interest/opportunity basis. The majority of the outfitters take out at the Ferry Landing site or the informal take-out site across from Cascade Campground. The heaviest use period is July and August with 30-40 trips per week; however, a couple of the outfitters also use the lower section to the confluence with the Flathead River. The outfitter use has been steadily increasing and is expected to continue. One permitted outfitter does some trophy whitetail deer hunting on a day-use basis in the area accessed by Forest Service Trail No.223.



Highway 135 is used to access the general area for hunting, although most of the hunting occurs outside the river corridor and valley bottom. The flat benches on the south side of the river, accessed by the river trail, is moderately popular for whitetail deer hunting.

In general, the effects of recreation use are most readily apparent in the developed and dispersed campsites. In these areas, 20-30% of the campsite core areas is bare/compacted soil caused by trampling. The sites are generally clean with little trash scattered around, and trees within the camp sites are not scarred from axes or knives.

Current recreation use within the corridor area has not created overt animosity among the private landowners as evidenced by the lack of "No Trespassing" signs, comments in general, and comments during the public involvement effort for this EIS. However, if use continues to increase (both general public and outfitted), it is anticipated that conflicts will start to occur. The purpose of the river access development at Ferry Landing is to organize traffic and use patterns and not to correct unacceptable resource damage.



Cedar Log Lake, West Fork Fish Creek drainage

The degrees of diversity in each subregion are called variety classes and establish a measure of inherent scenic quality. There are three variety classes (see Figure 2.10.1). Variety class descriptions include landscape features of National Forest and other lands within the subregion. The visual relationship is important and must be considered in visual resource management.

The Columbia Rockies Subregion is generally described as having rounded and subdued mountains which have been severely glaciated. Valley floor elevations are about 2,000 feet above sea level and ridgetops range from about 7,000 feet to over 10,000 feet. Glaciers, permanent snowfields, and craggy topography are outstanding visual features.

Vegetation in the Columbia Rockies Subregion is moderately varied, with some natural openings. The subregion contains sagebrush, grasslands, many tree species, and ancient cedar groves. It is an area of high-gradient streams and outstanding high mountain lakes. Hot springs are uncommon but do occur. Although portions of this subregion have been heavily impacted by past logging and mining practices, there are still large portions which are relatively untouched, roadless, and rugged.

The Broad Valley Rockies Subregion is characterized as having mountains which typically appear massive and round-topped, as do the connecting ridges within a given range. Individual mountain and ridge tops tend to reach similar elevations.

■ 2.10 Visual Resources

The visual setting can be considered the culmination of all activities and resource values of the river corridors. In addition to the beauty of the natural scenery, the impacts of development, changes in water quantity and quality, and the variation of scenes can leave lasting impressions which finalize the opinion of the rivers.

Character Types

Seven of the eight rivers are located in the Columbia Rockies Subregion Character Type. One river, Rattlesnake Creek, is in the Broad Valley Rockies Subregion. Landscape character types are geographical areas which have similar visual characteristics of land and rock forms, vegetation, and water form. The subregions are developed as a frame of reference and are broad enough to logically stratify into differing degrees of diversity. The character types are based on what the physical landscape looks like and what man has done to it.



There are no glaciers and very few permanent snowfields present within this subregion. Past glaciation becomes apparent in cirques and trough walls, U-shaped valleys, and morainal debris in some of the higher mountain ranges. Rocklands are not a regular present feature. However, when cliffs, outcrops, talus slopes, and scree do occur, rock often becomes a dominant element in the landscape.

Major rivers such as the Missouri, Yellowstone, Jefferson, and upper reaches of the Clark Fork, are dominant water features in the Broad Valley Subregion. Smaller tributaries create both linear and irregular patterns which visually dominate the landscape.



State line area above the West Fork Fish Creek

Vegetation serves to tie the landscape features together in the Broad Valley Rockies Subregion. There is frequently strong interplay of texture and color created by a mosaic of timber, shrub, and grass. For example, groves of deciduous trees exist in grasslands or coniferous stands, stringers of timber or brush follow stream courses into grassland or, conversely, linear meadows trace stream courses in timbered areas.

The overriding image of the Broad Valley Rockies is of spaciousness and variety in the landscape.

Figure 2.10.1 Variety Classes

Variety Classes are generated by classifying the landscape into different degrees of variety. This determines those landscapes which are most important and those which are of lesser value from the stand point of scenic quality.

The classification is based on the premise that all landscapes have some value, but those with the most variety or diversity have the greatest potential for high scenic value. There are three variety classes which identify the scenic quality of the natural landscape.

Distinctive - Class A
Common - Class B
Minimal - Class C

Distinctive (Class A) refers to those areas where features of landform, vegetative patterns, water forms, and rock formations are of unusual or outstanding visual quality.

They are usually not common in the character type.

Common (Class B) refers to those areas where features contain variety in form, line, color, and texture or combinations thereof but which tend to be common throughout the character type and are not outstanding in visual quality.

Minimal (Class C) refers to those areas whose features have little change in form, line, color, or texture. Includes all areas not found under classes (A) and (B).

Historical Setting

Historically, the visual character of the rivers has varied to some extent. Alterations by both natural and man-caused events have been factors in this variation. Vegetative patterns on the mountainsides have been altered by fire and landslides. Depending upon the intensity of the fire events, these patterns have varied in shape, color, and size, ranging in effect from small openings in the canopy caused by understory burns to large openings filled with snags caused by massive stand-replacing fires. The most significant of fire events was the 1910 fire which burned much of western Montana.

In more recent history, man has probably been the greatest influence on the visual character of these river systems. Vegetative patterns have been influenced by timber harvest practices and clearing for structural development. Water quality and clarity has varied too. On those rivers which have no development, quality has remained high. On the rivers, particularly the Clark Fork, which received many of the impacts of industrialization, water



quality has ranged from extremely poor to good. One of the most catastrophic changes in water quality of the Clark Fork was caused by the release of several thousand tons of sediment from the Anaconda Mill tailings ponds in the 1950's. This accidental release discharged toxins into the Clark Fork which turned the entire river red for several weeks. A more recent yet gradual change has been the controlled release of waste from the Stone Paper plant in Missoula. This effluent has loaded nutrients into the river, gradually increasing algae growth and changing the clarity of the river downstream. Residents who have lived along the river for several decades testify to the gradual deterioration of water quality caused by this nutrient loading.

Some level of bank modification was also caused by the floating of logs on the Clark Fork. Evidence of this activity was short-lived and is barely discernible today except by scattered barge moorings which still remain near old mill sites.

Probably the most recent and notable impact upon visual quality along those rivers with private property holdings is the increase in structures. A gradual increase of residents and associated structures is clearly evident along portions of the Clearwater and Clark Fork. The continual demand for recreational and permanent home sites in Montana has put a greater demand on shoreline lots along the Clark Fork and Clearwater Rivers.

The six rivers which flow primarily through Federal lands have been influenced only slightly by man. Evidence of trails and trail crossings is the primary impact on the visual character of these rivers.

Clearwater River

The segment of the Clearwater River considered in the suitability study falls into three fairly distinct visual stretches. The lower stretch, also part of the "Chain of Lakes," begins at the north end of Seeley Lake and extends to the north end of Rainy Lake. The middle stretch extends between Rainy Lake and Clearwater Lake to the north, and the upper stretch reaches from Clearwater Lake to the headwaters.

The lower "Chain of Lakes" stretch of the Clearwater River is the only section of the river that is floatable. This portion of the Clearwater

encompasses a series of lakes with segments of river connecting them. During some high water periods, the river portions of this stretch can be negotiated in a raft or canoe. Log jams and occasional blind channels can make this float challenging. Just north of Seeley Lake is a deeper and more open stretch of the river that includes the Seeley Lake Canoe Trail.

Views from this lower "Chain of Lakes" stretch begin at Rainy Lake with spectacular vistas of the valley and surrounding peaks. Below Rainy Lake, wooded stream banks alternate with occasional openings that frame views of the two mountain ranges that parallel the stream.

Views from Lakes Alva and Inez are similar to those at Rainy. Below Lake Inez, the stream gradient lessens and the channel begins to wind and braid through extensive stands of willows and other riparian plant species. Past and present beaver activity has left low-gradient dams and additional braiding. The willow and cottonwood stands are tall and shield the river from mountain views except in a few select sites. Although close to the highway and private developed lands, the sense of isolation on the river is surprising. The few developments that are there do not intrude significantly on scenic experience.

With its diversity of scenery and its viewshed changing from close foreground to panoramic mountain valley, this lower "Chain of Lakes" stretch qualifies as distinctive. It is unique for the Clearwater drainage.

The middle stretch from Rainy Lake to Clearwater Lake is not floatable. Here the stream gradient is greater, and the vegetation changes significantly from the bottom land species found along the lakes in the lower sections. After the river intersects the highway, it parallels a gravel road for a short distance and then turns north and leaves the road. When the river diverges from the road, access becomes difficult. Walking along the river bank in this stretch is challenging. The area is heavily vegetated with tall brush and woody species. Views here are almost completely foreground and the variety class in this area is C, minimal.

The upper stretch of the Clearwater River contains Clearwater Lake. Views from the lake are highly scenic. Upper portions of this drainage range from



swampy, wooded high meadows to avalanche chutes. This stretch is differentiated by higher elevation plant species and more open vistas. The river is almost completely inaccessible. The Clearwater loop road follows the river to its headwaters, but this road is not in the immediate river corridor, and the river itself is not evident from the road. Views from the road are of midddle and background. These views are very attractive but are similar to other views within the character type. This upper portion of the Clearwater River is classified as common.

Morrell Creek

Morrell Creek, from the trailhead to the top of the drainage, provides outstanding diversity in scenic quality.

The hike from the trailhead to the falls is easy, about 2 miles long, and allows the user to focus on the local landscape. The seen area (visible landscape) is restricted to 90% foreground for the entire hike to the falls. There are seldom views out of the trail corridor but occasionally one can look westward where the visual quality is impacted by past logging activity. Most views are limited to openings on the trail and views through dense vegetation.

There is texture, color and spatial variation along the trail which adds some variety to the foreground. Within the first mile from the trailhead, a dense lodgepole pine stand surrounds the trail. These trees are very close together with little understory vegetation. This section of trail offers a unique opportunity to experience the limited spatial variation of a classic lodgepole pine stand. After the lodgepole pine, the vegetation becomes more dense and visibility is further restricted.

From the trailhead to Morrell Falls, the visual quality of the seen area along the trail is variety class C, minimal.

From the falls to approximately three miles up the drainage, the trail and seen area change dramatically. The falls area offers an incredible audible and visual opportunity to view the cascading water. The hiker is located at the base of the falls when the total view of Morrell Falls can be seen. The falls is suddenly unveiled to the hiker as one emerges from the dense vegetation. This

waterfall is a distinct visual feature for this area. From Morrell Falls the trail traverses up a steep hillside for a few hundred yards to another waterfall which is visually as distinct as the lower falls. From this point the trail is no longer maintained for public use.

For the next two miles, the viewer follows the creek up the drainage while walking through dense and visually limiting vegetation. Along the trail there are avalanche chutes which allow the viewer to see out to the canyon walls. The trail is located in the bottom of a very steep and rugged canyon, and a feeling of smallness comes over the hiker as views of the rock peaks and outcrops emerge. While walking through the dense tree stands, avalanche chutes cut massive openings. The presentation of the canyon walls at the avalanche chute edges enhance the visual quality of the west- and east-facing slopes.

The avalanche chutes increase in number and frequency as one travels farther up the drainage. This increases the open space and the viewing opportunities from the trail. The variation of open and closed space along the drainage is visually exciting and pulls the hiker up the canyon with anticipation for the next visual experience.

The variety class for the upper portion of this drainage is class A, distinct. The visually distinct features are the waterfalls, avalanche chutes, open space, rock outcrops, towering canyon walls, and canyon peaks.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork of the Blackfoot River is entirely unique from the surrounding area because of the massive fire scars left from the 1988 Canyon Creek Fire. This large fire burned the majority of the seen area (visible landscape). The typical visual character type one would expect to see in this area before the fire would be perhaps well-defined vegetative patterns, strong color contrast, or a high degree of visual diversity in vegetative patterns. Other expectations based on the plant communities in the area might be solid, continuous vegetative textures as seen in lodgepole pine stands. However,



because of the recent fire activity, the seen area has been altered to a post-burn visual character.

Since the burn, most of the foreground along the trail is visually dominated by black trees with strongly contrasting white trunks caused from peeling bark. Young trees, bushes, and grasses, which are coming back with tremendous density in some places, give the ground itself a rich color that is primarily seen in the foreground and mid-ground.

In locations along the trail, burned tree stands cast almost haunting shadows over the ground. The contrast between the black trees, vegetation on the ground, and changing shadow patterns provide a very distinct feature to the area.

Mid-ground and back ground views up and down the drainage, and at the canyon walls, can be seen along the trail. Because of the fire these views are much more continuous and frequent than before the 1988 burn. While hiking in the burned area, one can almost always see across the drainage to peaks along the canyon, in addition to very unique water and geological features.

Distant views can be seen of massive talus slopes, mud slides, rock formations, and high mountain peaks while hiking on the trail. Looking down at the drainage, in some locations one can see the terraced geological form of the sides of the canyon. At certain places, flat benches on the sides of the canyons make it appear as if the ground were graded.

While hiking up the drainage, spectacular views of the river itself are continuously seen from the trail. The river is very diverse in form as it meets tributaries and flows down the drainage. In some locations large, unique waterfalls can be witnessed audibly and visually from ideal locations. In other locations the river pours over large boulders and rocks, creating white water and forming deep pools. Yet, in other sections of the drainage, the river is calm and quiet, flowing gently and shallow. Many trails up the drainages are located in close proximity to the creeks and tributaries, providing a constant relationship between the hiker and streams.

While following any of the trails, all visual experiences are influenced by the recent fire activity in the area. From areas where distant views of the drainages can be seen, such as Falls Point

Lookout and other locations, the burned landscape offers visual variety.

At Falls Point Lookout, the view around the area offers a very good example of the seen area around the North Fork of the Blackfoot and other drainages. The incredible visual opportunity is dominated by the vast burned landscape extending to the visual limits of the visible landscape. As far as the eye can see, mosaic patterns of burned and live tree stands intermingle across the landscape. Occasionally, rock outcrops and high rugged peaks can be seen jutting out over the distant background. The color variation of the background views seen from these areas is minimal. Predominately, the colors are tones of blacks, grays, and greens which are interwoven, creating interesting forms.

This drainage is not visually typical of the surrounding area at this time. Because of the recent fire activity, the drainage truly has its own unique character. A variety class based on the Broad Valley Rockies character type would not allow for an accurate visual assessment nor would the classification portray the drainage honestly.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake Drainage is divided into three sections to aid in describing the visual resource: 1) the lower valley, 2) the upper mainstem, and 3) the high country tributaries.

The lower valley consists of a wide-bottom riparian zone in a canyon-like setting. A road follows the stream through the valley floor. The area was homesteaded and cleared extensively in the early part of the century, resulting in meadowed areas that break up what would otherwise be a close foreground of trees. The meadows allow the viewer to see the steep hillsides at the margin of the valley bottom and a midground of stream and riparian vegetation. It is a varied visual experience and while not unique to the area, very interesting. The classification of this stretch of river is B, common, but the historic homestead clearings, apple trees, and other farming relics add to the visual appeal.

At the Franklin Bridge, the stream takes a turn to the north and the broad valley scenery takes on



much more of a canyon appearance. Though the road still parallels the stream, the water is a larger part of the visual experience. Cascades, pools, chutes, and rock formations alter the flow of the stream and offer great visual variety. The canyon walls have mountain goat residents which are often viewed from the road/trail. Side drainages open to the canyon to present long background vistas, and there is continual change in foreground and midground views. Riparian vegetation is confined to the immediate vicinity of the stream. Rocky side slopes have remnants of large coniferous tree stands as well as the more common stands of second growth. The overall visual experience is stimulating and is classified as A, distinctive.

As the traveler comes closer to the wilderness boundary, another change occurs as the landscape becomes characteristic of the "high country." Glaciated valleys hold the stream tributaries, and in the case of Lake Creek, the land form is similar to a "hanging valley." The tributary is accessed by a steep climb up an old logging road next to the stream, and once over the edge of the steepest part, the valley spreads out before the viewer. Thirty-five-year-old logging cuts are responsible for making the landforms and small waterfalls visible in the U-shaped valley bowl. The headwaters of the streams have cirque basins with clear high elevation lakes. In Lake Creek and High Falls Creek, a summer resident elk herd makes wildlife viewing an exciting possibility, and the echoing calls of elk carry easily across the open bowls. The lower stretch of the upper mainstem of Rattlesnake Creek has less visual variety, but the upper end and Wrangle Creek hold widespread vistas of the whole drainage and striking rock formations, some a thousand feet high. The visual classification for the upper tributaries of the Rattlesnake drainage is A, distinctive.

South Fork Lolo Creek (includes: mainstem and No Name Creek)

The trail along the South Fork of Lolo Creek provides a variety of visual experiences, from dense foreground vegetation to background vistas of the Lolo National Forest. The majority of the seen area (visible landscape) along the South Fork of Lolo Creek is within the visually limiting foreground of the trail. Periodically, spectacular views of avalanche chutes, rock outcrops, meadows, flat

river bottoms, talus slopes, and finally Bass Lake and South Fork Lakes can be seen.

Within the first 1.5 miles following the drainage, the trail meanders through thick lodgepole pine stands, and tight visual corridors with spatial variation. As the hiker gains elevation, one enters open space with a visual opportunity to view out from the trail. The trail crosses over a section of private commercial timberlands which have been heavily harvested; therefore, most of the visual opportunity to see out is impacted by logging roads and clearcut timber practices.

Because of the visual impacts and dense foreground for most of the 1.5 miles of trail, the visual quality is variety class C, minimal, with no distinct features.

Shortly after leaving the private property, the viewer follows the trail under tree canopies and through dense vegetation with little visual variety outside the sightline of the trail. One mile further, the trail reaches a crest where there is a breathtaking view of nearly the entire drainage.

After this view of the drainage, the trail continues to be restricted to foreground views. Two-and-a-half miles further, the trail visually opens up to a meadow with approximately one-half mile of the creek in a flat, calm state. It is rare in this area to have such a long stretch of river so peacefully calm and clear, truly a distinct attribute.

Up to this point, the visual opportunity has increased since leaving the private land. The variety class for this section of river is B, common, with a few distinct visual attributes. The distinct scenic areas are: the view of the drainage, the open meadow, and the stretch of calm, flat river.

From the flat river bottom above Anderson Creek to the fork in the trail to Bass Lake, the trail's visual opportunity and character is enhanced. For the remainder of the trail up the drainage, the viewer wanders into spectacular open space created by avalanche chutes. The unobstructed views presented by these avalanche chutes is welcome after being inundated with dense trees and other vegetation. Rock outcroppings, and cliffs come into sight. Meandering in and out of the different spatial surroundings pulls the viewer up the drainage in anticipation.



At the fork to Bass Lake and South Fork Lakes, the visual opportunity is dependent on the trail taken. To Bass Lake the trail climbs up, and in and out of an avalanche chute allowing the viewer a new perspective of the drainage. From the top of the climb No Name Lake and Bass Lake are visible. This adds to the number of distinct views the upper drainage has to offer.

From the trail leading to South Fork Lakes, the visual experience is similar to the section before the fork. The hiker wanders out of dense tree stands and into open space to view the spectacular west-facing wall of the drainage. Eventually coming to South Fork Lakes, the trail provides a variety of visual experiences for the hiker.

From the open meadow in the middle of the drainage to the end of the trails at Bass and South Fork Lakes, the upper section literally takes on a different visual character from that of the lower section. The upper section visually offers rock peaks with distinctive form and color contrast. Talus slopes and massive rock outcrops are visually located at the entrance of the avalanche chutes, which allow for a remarkable presentation. The high mountain lakes offer a distinctive setting of their own character.

The variety class for this upper portion of the drainage is class A, distinctive, with many outstanding features.

Cache Creek (includes: mainstem, Irish Creek, White Creek and Pebble Creek)

The visual experience into Cache Creek trailhead begins by car or van from either Highway 12 or Interstate 90. The hike from the beginning of the trailhead to the top of the drainage, whether up Cache Creek proper, White Creek, Pebble Creek or Irish Creek presents a very enjoyable visual experience.

From the trailhead to the fork at Pebble Creek, the seen area is a variety of open space, tight visual foreground, background vistas, and sudden changes. The viewer wanders in and out of lodgepole pine and other tree stands, intermingled with open river bottom, talus slopes, and vegetative openings. This allows for constantly changing visual opportunities while hiking up the drainage.

There are many distinct visual features along this stretch of trail for the viewer to notice. Avalanche chutes, talus slopes, mountain peaks, rock outcrops, hundred-foot tree snags, and the stream itself, among other aspects of the drainage, are distinct and pleasing to see while hiking.

One aspect which enables this drainage to be classified as distinct is that while walking along the trail the river is either completely viewed or glimpsed for the entire route. There is always a visual connection between the trail, the hiker, and the river.

The first half of the drainage is considered variety class A, distinct. With the number of distinct qualities and features this section provides, the hiker is allowed many pleasant views.

From the fork at Pebble Creek to the top of this tributary, the visual variety increases as one travels farther into the drainage. Initially, the views are limited as one walks up the challenging path. Along the way, the hiker may notice brief openings out of the trail to a waterfall, talus slopes, or hanging rock cliffs. Farther up the drainage, both the west and east canyon walls can be seen. The canyon walls offer unique vegetative patterns along with old tree snags and rock outcrops, which add to a positive visual experience.



"Eagle Rock" (on skyline) in Pebble Creek, Cache Creek drainage

While on the trail, views of high mountain peaks can be seen in the upper sections of the drainage. Along the trail, the hiker periodically encounters random giant boulders with unique spherical form. Looking up the drainage when openings in the



vegetation allow, a massive rock formation is the focal point. Unique forms and lighting contrasts can also be observed from different locations along the trail.

Pebble Creek is visually distinctive with many unique open views to the canyon walls and rock spires and up the drainage to rock formations where birds, lizards and other animals are resembled in the rock forms. Views along the foreground and trail also add to the visual quality. Because of the continuous visual change and seen area the variety class level of Pebble Creek is A, with many distinct features.

From the mouth of Pebble Creek to the top of Cache Creek the visual opportunity changes from thick vegetation and limited views to open background vistas of the upper drainage. As the hiker continues up the trail the views and spatial variations are constantly changing.

Past the fork at Pebble Creek to the top of the drainage, the views on the trail are predominately restricted to foreground. As one hikes, there are several views which are brief but allow for vistas through openings to rock formations and rock peaks in the canyon.

Along the trail in the upper sections of the drainage, the views out are more available than in the lower sections. The seen area offers views of a giant rock formation on the east wall of the canyon, along with rock outcrops and an avalanche chute on the west side. In the upper portion of the drainage, one can see the classical U-shaped glaciation of the canyon.

Once the hiker reaches the top of Cache Creek, looking down provides a wonderful opportunity to view the entire upper portion of the drainage. Across the high valley, avalanche chutes, rock outcrops along the upper ridge, and unique vegetation patterns form the visual experience. Near the top of the drainage, a massive rock step with the Idaho-Montana divide behind is unique and worth the hike to see.

The upper portions of Cache Creek from Pebble Creek to the top of the drainage is variety class A, distinct. The consistent vistas out of the dense foreground and the distinct features provide a hiking experience that is very visually pleasing.

The visual experience as one moves from the junction of Irish Creek and the main stem of Cache Creek is similar to the hike from the mouth of Pebble Creek to the headwaters of Cache Creek. The lower reaches of Irish Creek are visually dense foreground with occasional breaks in the vegetative corridor. The only stand of remnant old growth is located in this stretch. The stream is visually apparent for short stretches and present in the background as sound. The upper part of the tributary opens up into high meadows, rock outcrops, and slides. From the top of the drainage, three forks of Irish Creek are seen, as well as an expansive view of Cache Creek and the obvious "hanging valley" form of Pebble Creek.

From Irish Basin to the top, the drainage is variety class A, distinct. The wide panoramic views of the landscape, along with the high likelihood of viewing several species of wildlife (elk, deer, bear, coyote, and, on occasion, wolf), combine to present a great visual experience.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork of Fish Creek is typically experienced by horseback or by hiking in from the trailhead at Clearwater Crossing. This entrance is also one of the primary viewsheds for the next 4 to 5 miles along the river corridor, and allows the viewer to see up and down the drainage.

The visual experience along the trail from Clearwater Crossing to Indian Creek is limited to the foreground. The vegetation and spatial variation of trees provide the viewer with a constant changing foreground experience. Texture, color, and a strong lighting contrast within the vegetation enhance the hiking experience.

The proximity of the river to the trail varies throughout the first section of the river. Along some portions the cascading river can be seen. At other locations the river is only noticeable by the sound of water spilling over rocks. Along the first five miles of trail, one's visual and/or audible distance to the river is rarely separated completely.

The first 5 miles of river corridor, as it is viewed from the trail, is of variety class B, common. The spatial perception of foreground becomes visually



redundant after a few miles, although there are pleasing visual foreground attributes from Clearwater Crossing to Indian Creek that allow for an enjoyable hiking experience.

Continuing up the West Fork of Fish Creek Trail to the top of the drainage, the viewer experiences visual relief from the continuous dense foreground. At approximately 2 miles past Indian Creek a grove of old-growth cedar trees (one cedar being nearly ten feet in diameter) provides an almost sacred visual atmosphere. Shortly after walking through the cedar stands the trail opens to an avalanche chute and waterfall, which are welcomed visual contrasts to the last 7 miles of strictly foreground vegetation views. For the remaining section of trail, the viewer walks through dense vegetation and periodically enters open space where one can see up and down the drainage or across the canyon.

This section is variety class B, common, as there are few variety changes. Those that do occur are emphasized their contrast with the foreground space.

The distinct visual features along the West Fork of Fish Creek are: the cedar trees, waterfalls, and avalanche chutes. The cedar groves have a distinct entrance and a panoramic view of the drainage occurs at the top of the trail.

Indian Creek offers more visual variety than the other drainages and allows the viewer to see out from the foreground-predominated trail. Following this trail the hiker walks through dense foreground similar to the other drainages, with interesting natural features such as large old-growth cedar trees. Unique in character, these trees are about a thousand years old and are distinct in size and appearance.

The trail opens up in places which allow the viewer to see out of the densely forested trail. As one hikes up the trail toward Cedar Log Lakes, the viewshed increases and background views of the surrounding area become available.

The openings from the trail and the visual quality of the cedar stands are visually distinct for this character type. Along with the view area of the waterfall from West Fork of Indian Creek and Cedar Log Lakes, this section is variety class A, distinct.

Clark Fork River

The visual character of the Clark Fork can be separated by the two segments proposed for designation.

The Slowey segment is relatively wide and shallow and the water's surface looks smooth with very few riffles. It meanders through the valley which is quite wide and has a nice flat bottom on both sides of the river. The whole visual experience along this segment of the Clark Fork is very scenic.

The vegetative patterns in the area are mostly continuous tree canopy, especially right next to the river. On the surrounding slopes, vegetation patterns are fairly continuous on the eastern and northeastern facing slopes and more open in patches on the western and northwestern facing slopes. Ponderosa pine and Douglas-fir are the main conifer species along the bottom and drier slopes. Cottonwoods here and there along the river's edge provide some visual diversity.

The prominent landforms along the Slowey segment of the Clark Fork are mountains with moderate to steep slopes and rounded ridges. The Clark Fork meanders down through the middle of these mountain ridges leaving a wonderful weaving of bottom land vegetation and water. The railroad, Interstate 90, and, where there is room, the frontage road, follow the river along the valley bottom.

Timber harvesting and road building are not noticeable from this segment of the river. It's not until one approaches the community of St. Regis that one can notice some timber removal activities to the south of the Interstate.

The Clark Fork River is a popular river for recreation. People canoe and raft this river almost continuously throughout the warmer months. Although wide and flat in many places, some rapids and more challenging grades in the river do exist. River outfitters can be hired for river trips. Even though Interstate 90 and other developments are near the river, views and experiences from the river are said to have a feeling of isolation.

The Clark Fork is a distance away from the road and Interstate along this segment. Travelers may have the feeling that it is there but cannot fully see



it. Many structures and other developments lie between the travel corridors and the river. Private homes, railroad tracks, power lines, and cleared fields often separate the viewer from the water's edge.

Driving along the Interstate from Slowey Campground allows only a few views of the Clark Fork River. Some of the traveling time is through timber which completely hides the river from view. Just before the Interstate reaches the community of St. Regis, it crosses the Clark Fork. It is at this point that the river bends and heads northeast.

The segment of the Clark Fork River from Slowey Campground to St. Regis is classified as being common for the visual character type of the Columbia Rockies variety class, in which this river is located.

The second segment (the Cutoff Segment) is more varied in appearance and flow. Sometimes the river is relatively wide and shallow and sometimes it is narrower and quick flowing with white water, rapids, riffles, and large boulders breaking up the otherwise smooth river surface. The scenic qualities of the river are the central focus of this segment.

Vegetative patterns in the area range from mostly continuous vegetation on the upper slopes of both sides to patchy or sparse. Ponderosa pine and Douglas-fir trees dominate the drier sites; a mix of conifers, including some larch, dominate the more moist sites. Some cottonwoods and beautiful displays of red osier dogwoods are scattered along the river's edge.

The mountains along the Clark Fork in this segment are rocky and steep. Often they appear to tower above the valley floor which has become narrower than it was in the Interstate segment. Rock outcrops, scree slopes, and large rock within and near the river become more pronounced as one moves through the valley toward Paradise. Where rock outcrops are most pronounced, coloration of rocks shows unique greens and oranges.

Many spectacular views of the Clark Fork and the surrounding landscape can be viewed from not only the river but also State Highway 135. This highway has recently been designated a "Scenic Byway".

At some locations along Highway 135, the river drops off and is not at all visible. At these spots the seen area is characterized by trees on both sides of the highway. Cool and shadowy with patterns of light shining on the asphalt, these densely forested spots make an interesting contrast and add variety to the route. At times the highway takes you right down next to the water's edge and intimately follows the meandering curves of the river. Several pullouts are located along the highway which enable slower traffic and those in search of views a place to experience the river.

The railroad tracks are an ever-present part of the aesthetic experience of the river. Several railroad bridges cross the Clark Fork, and have aesthetic value of their own. At one bridge, both the highway and the river are crossed. The elegant arches of another add a scenic quality all its own. Across the river from Quinn's Hot Springs, a tunnel through the mountain of rock was carved so that trains could pass.

Private homes, buildings, old car bodies, and other historical evidence of human activities in the area can be noticed periodically along the banks. These structures are generally present on the private land that is intermingled with National Forest System land along this section of the Clark Fork. At one location, a power corridor crosses the river and follows a clearing over the mountain slopes.

This segment of the Clark Fork River is classified as distinct for the visual character type of the Columbia Rockies variety class, in which this river is located.

■ 2.11 Native American Rights and Traditional Uses

The Lolo National Forest has been inhabited since long before recorded history. These original inhabitants developed a complex culture based on fishing, hunting, and gathering of locally available plants. There are three extant Native American groups who have traditionally used this land. These groups are the Pend d'Oreille, Bitterroot Salish, and the Kootenai. The first two groups are very closely related Salish speakers. The Kootenai group is only distantly related to the Salish speaking groups.



While the Kootenai and Salish are not closely affiliated either culturally or linguistically, they share the Flathead Reservation as the Confederated Salish and Kootenai Tribes (CS&K). The CS&K retain Reserved Treaty Rights from the Hellgate Treaty of 1855. These Reserved Rights include traditional land uses within their "usual and accustomed territory" outside the Reservation. These traditional land uses include hunting game, fishing, gathering plants, and grazing horses and livestock. These Reserved Rights are exercised on the Lolo National Forest.

American Indian Religious Freedom Act

In addition to reserved rights, the American Indian Religious Freedom Act guarantees the right of all Native Americans to practice their religions and to access sacred areas on Federal land.

The American Indian Religious Freedom Act (42 U.S.C. 1996) (AIRFA) was approved in 1978 as a joint resolution of Congress. Regulations were never promulgated for AIRFA and over the years it has been an area of contention between tribal governments or individuals and various Federal land-managing agencies. AIRFA establishes a Federal policy to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise their traditional religions including, but not limited to, access to sites (42 U.S.C. 1996).

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (PL 101-601), addresses the rights of lineal descendants and members of Indian Tribes and Native Hawaiian organizations to certain human remains and to certain precisely defined cultural items with which they are affiliated. NAGPRA requires Federal agencies to prepare inventories of the remains in their possession and to consult with affiliated Native American tribal groups regarding their repatriation. A National Park Service taskforce charged with drafting the regulations for NAGPRA is currently at work. The Forest Service is proceeding with the required inventories and will initiate consultation with the appropriate tribal groups when they are completed.

Heritage Resource Protection

Federal laws protect heritage resources which are located on Federal lands. The National Historic Preservation Act (NHPA) of 1966 as amended (PL 89-665, 16 USC 470) is the primary legislation which drives Federal heritage resource management. The NHPA established the National Register of Historic Places (*NRHP*). The intent of the NHPA is to recognize and encourage protection of places having historic significance.

Properties of historic significance cover a broad spectrum of property types, such as prehistoric and historic sites. Significant properties may be entered into the National Register of Historic Places. There are four criteria which make a property eligible to the NRHP (see *Figure 2.11.1*)

Figure 2.11.1. National Register of Historic Places Criteria

Criterion A: association with events that have made a significant contribution to the broad patterns of our history.

Criterion B: association with the lives of persons significant in our history.

Criterion C: embodiment of the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D: properties that have yielded, or may be likely to yield, information important in prehistory or history.

Section 106 of the NHPA requires that a review be conducted prior to undertaking any Federal action that might affect a site on or eligible to the National Register. This provision extends to properties which have not been formally evaluated for eligibility, including sites as yet unknown. Federal actions that trigger this review include construction, property transfers, licenses and permits, loans, and other similar activities. The purpose of the 106 review is to determine if a site could be adversely affected and, if so, to identify ways to avoid or mitigate the adverse effect. The NHPA does not grant the authority to stop a project in order to preserve a cultural resource but mandates that cultural resources be "taken into account." The entities



charged with implementing Federal and state cultural resource protection laws include, at the Federal level, the Advisory Council on Historic Preservation and the National Park Service's Keeper of the National Register, and at the State level, the Montana State Historic Preservation Office. Montana's cultural resources are managed through a partnership between the State and

Federal agencies. The Montana State Historic Preservation Office is the lead agency in review of potential impacts to significant heritage resources (Upper White Salmon River Wild and Scenic River Study Report and Final Legislative Environmental Impact Statement).



Franklin Ranger Station, Rattlesnake Creek, ca 1932

■ 2.12 Archeological and Historical Resources

The eight study rivers display a myriad of vestiges from the recent and distant past. The heritage resources found along the rivers consist of evidence of prehistoric, historic, and, in certain cases, contemporary human activity. Evidence can be material, literary, or oral.

Prehistoric material remains include travel routes such as the Lolo Trail, structures such as stone cairns or rings, and other evidence of human activity such as stone flakes and tools. Historic material remains include such things as historic roads and trails, buildings, dumps, and mine spoils.

Literary evidence includes journals of exploration and settlement (Lewis and Clark and their travel route), some of which has little or no material remains associated with it. Oral evidence consists

primarily of the identification of traditional and sacred properties important to the Tribal community.

All of these help us piece together the puzzle of human use and development of the rivers. They also help us interpret and understand the relationship of earlier people to the study rivers.

Clearwater River

With the exception of the borders of the lakes, much of the land immediately adjacent to the river is quite marshy and was uninhabitable by both prehistoric and historic peoples. Because of this condition, there is a low likelihood of numerous undiscovered prehistoric resources. Because of the large stretches of marshy land, occupations tend to cluster on the limited space provided by dry landforms. What this has led to is the constant reuse of occupation sites from prehistoric to modern times. Historic and modern activities have probably eradicated a number of prehistoric sites through ground-disturbing activities. In addition, historic



logging was quite destructive to the land immediately adjacent to the river because of the use of splash dams and the floating of logs down the river to the mill.

The most significant activity that occurred within the study area is historic horse logging at the turn of the century. The historic logging of this area is significant not only because of the technology, which consisted of horse skidding to the lakes, using splash dams to raise the lake levels, and blowing the dams with dynamite in the spring to float the logs clear to the mill at Bonner, but also because this was the area for one of the first Forest Service timber sales in the nation.

Although there is a rich body of literature which addresses historic logging in the area, the landscape has changed significantly since that time, leaving little material evidence in the form of camps or landscapes to document the logging activities which took place. The Clearwater River Wild and Scenic corridor does not appear to contain exceptional heritage resource values. Prehistoric sites are scattered and often-times heavily disturbed because of modern developments. Historic resources are limited to the Seeley Lake Ranger Station, which is eligible for the National Register of Historic Places. While there is a rich history of extensive horse logging in the area, the material evidence for these practices is almost gone, and what is left is extensive literary documentation of the logging history. Like the St. Regis Cutoff, this area may provide an opportunity to interpret the logging history because of the literary and photographic record.

Morrell Creek

Morrell Creek contains no evidence of prehistoric land use. Historic activity was confined to logging activity in the bottom of the drainage. According to informants, an historic cabin is located above the falls and adjacent to the old Morrell Creek Trail, which is unmaintained beyond the falls. Little is known about the cabin and its history, and it is currently unrecorded.

The Morrell Creek Trail appears on the 1903 GLO map as an "Indian Trail." The Salish maintain oral traditions regarding the falls and the trail to them. Although presently unrecorded, the Morrell Creek Trail may be eligible to the NRHP because of its

association with traditional Native American, historic recreation, timber harvest, and Forest Service activities.

While no cultural resources other than the trail itself are within Morrell Creek drainage, the area has a medium probability of yielding both prehistoric and historic resources. Historic resources might consist of material related to hunting, trapping, and timber harvest activities. Prehistoric and traditional resources may relate to vision quest, occupation, hunting, quarrying, and travel.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork and its tributaries contain two prehistoric sites; the Dobrota Creek Lithic Scatter, and the East Fork/North Fork Lithic Scatter. Two historic sites include the Falls Point Lookout and a Crows Nest lookout tree (standing in 1984 but perhaps destroyed by the 1988 Canyon Creek wildfire). Falls Point Lookout was determined eligible for listing on the National Register of Historic Places in 1984 for its association with the 1930's depression era Forest Service and its role in fire detection. The integrity of the Crows Nest lookout is unknown since the 1988 Canyon Creek Fire which burned several thousand acres within and outside the Scapegoat Wilderness.

The Ovando and Cooper's Lake USGS topo maps of 1903 show a cabin near the Dry Fork-Flathead Divide. There is no physical evidence of this structure because it is likely that this site was also destroyed during the 1988 Canyon Creek fire. The 1903 USGS maps show trails extending up the North Fork and Dry Fork of the Blackfoot. Trails are also shown extending up Canyon Creek, Dobrota Creek, and Tobacco Valley. All these travel routes receive continued use as Forest Service system trails used for Wilderness administration and for recreation by commercial outfitters and the general public.

Two main themes emerge regarding prehistoric land use of the North Fork of the Blackfoot and the surrounding area. First is transportation as both the North Fork and the Dry Fork were probably prehistoric travel routes, especially the Dry Fork



with its low grade. This is based on the assumption that existing trails in 1903 and extending up major drainages were probably prehistoric and/or historic Native American in origin.

The second theme is resource procurement. There are several significant prehistoric sites in the vicinity of the North Fork of the Blackfoot River trailhead at the junctions of the East and North Fork of the Blackfoot and the North Fork of the Blackfoot and Dobrota Creek. These sites probably served as base camps supporting specific tasks such as gathering biscuit root, whitebark pine nuts and hunting at higher elevations over 8000 feet on the Scapegoat Plateau. Other activities which may have occurred here include religious sites used for vision quests or chert procurement for the manufacture of chipped stone tools. The limestone protruding from the Scapegoat Plateau possibly contains chert, although no outcrops have yet been identified. The prehistoric sites within the North Fork all appear to be eligible for listing on the National Register of Historic Places under Criterion D, the potential to yield information important in understanding prehistoric land use.

Several historic sites within the North Fork of the Blackfoot River reflect early Forest Service history. Two back-country cabins, the North Fork and the Carmichael, have been determined eligible for the National Register of Historic Places under Criterion A. The North Fork Cabin is also eligible for the National Register under Criterion C, as an example of the C-1 building style and of rustic log construction. Fire detection and suppression activities are reflected in the existing lookouts: Falls Point, a 1930's L4 style and the Canyon Creek Crows Nest. These two structures do not technically fall within the analysis area for this project, yet fire detection and suppression activity have been an important role of the U.S. Forest Service in this area beginning in 1905 and continuing today. These structures have been determined eligible for listing on the National Register of Historic Places for their association with Forest Service fire suppression activities and for their unique architectural styles. The current condition of these structures was not formally determined during the limited fieldwork for this project. The tree lookout was probably consumed in the 1988 Canyon Creek wildfire and Falls Point Lookout, although spared by the 1988 fire, is in unstable condition. A long-term management

decision needs to be made in consultation with the Montana State Historic Preservation Office and the Advisory Council on Historic Preservation for the future of this property.

The North Fork of the Blackfoot River appears to have exceptional significance for heritage resource values. The historic resources described above all fit within the theme of early Forest Service land management activities. Likewise, many of the trails within the study area existed prior to the creation of the Forest Service and are



Carmichael Cabin, North Fork Blackfoot River

"historic" resources in their own right dating from the early 20th century (1903-1909). The trails will need to be recorded and evaluated for their eligibility for the National Register of Historic Places. The historic trails along with the early Forest Service administrative facilities may constitute a historic district associated with early Forest Service land management activities.

The prehistoric resources within the North Fork of the Blackfoot River corridor also appear to have exceptional significance. This area holds similar archeological manifestations to those sites located within the Cache Creek drainage. The North Fork of the Blackfoot river contains several prehistoric sites located at high elevations on the Scapegoat Plateau which reflect seasonal task specific activities such as hunting or gathering vegetal foods. Likewise, several resident occupation sites have been located at lower elevations along the North Fork of the Blackfoot River and its tributaries. The completeness of the archeological record in this area has the potential to yield important information relating to the prehistoric



The South Fork Lolo Creek contains several known historic and prehistoric features. The South Fork has a long history associated with trapping. An interview with a local trapper related that several cabins had been built by Frank Breckhskyfer (sic) and Bill Stoctom (sic), woodmen in the early 1920's. He also mentioned the ruins of three older cabins. The first was located in the same vicinity as the cabin recorded but closer to the creek. The second and third cabins are further up the drainage. #2 was located east of the trail, just north of the South Fork meadows. #3 was located 50 yards east of the trail about 1/4 mile north of Big Snowslide meadows. He also mentioned that there was another small cabin ruins near the Montana/Idaho line on the Middle ridge, and on the Idaho side built by Frank Breckhskyfer (sic) and Slim Helderson (sic). Two cabin ruins are also located at Granite Lake and one on the Brushy Fork about 1/2 mile before Elk Meadows. Another site is a stone chimney structure located east of the pack trail.

The South Fork Lolo Creek contains two prehistoric sites. The first of these is a lithic scatter at the "No-Name" Lake. This lithic scatter is associated with the main pack trail that continues on to Bass Lake and into the Bitterroot Valley. There is also a prehistoric site recorded at Bass Lake. This trail was most likely an Indian travel route branching off the Lolo/Nee Mee Poo National Historic trail. Strong evidence supporting this claim is the steep grade when the trail diverts away from the creek in section 24. The Lolo trail, the Southern Nez Perce trail and the "Old Indian trail" crossing the Continental Divide at Gibbons Pass all contain such grades. The trail at Gibbons Pass climbed 2,000 ft. in 3 miles.

The South Fork of Lolo pack trail may be eligible to the NRHP because of its association as an Indian travel route, branching off the Lolo/Nee Mee Poo trail and as a route used by trappers and the Forest Service.

Cache Creek (includes: mainstem, Irish Creek, White Creek, and Pebble Creek)

Cache Creek contains numerous significant prehistoric resources ranging from isolated artifacts to task specific type sites (including a quarry site) and residential campsites. These sites contain important research value because they provide strong evidence of the use of higher

elevations for sustenance. A total of 14 prehistoric archeological sites are located along the Montana-Idaho State line on the ridges above Cache creek. These sites include: a lithic scatter located above Irish basin, a vitrophyre quarry site located above Montana creek, a saddle drive kill site located on the ridge between Pebble Creek and the South Fork of White Creek, a prehistoric occupation site located on the State line between Pebble and Cache Creek, a temporary occupation site located on State line above Irish Basin, a lithic scatter located on State line above Irish Basin, a lithic scatter located on State line above Irish Basin, a lithic scatter located above Cache Creek on State line south of Leo Lake, a lithic scatter located on State line at the headwaters of Cache Creek, a lithic scatter located east of Cache saddle, and a lithic scatter located near the headwaters of Pebble Creek. Three (3) additional prehistoric lithic scatters are located in Idaho, on the Clearwater National Forest near Cache saddle.

Many of these prehistoric sites would not individually be considered eligible for listing on the National Register of Historic Places. However, when the Montana-Idaho State line and the Cache Creek drainage is viewed as an archeological district, each prehistoric site may be a contributing element and thus eligible for NRHP listing.

A more recent historic site, Slenes cabin, although not part of a recognized historic mining district, appears eligible for National Register listing for its association with 1930's depression-era subsistence mining activities.

Cache Creek and its surrounding area lies completely within Federal ownership and is managed by the Lolo National Forest. Much of this land lies within the proposed Great Burn Wilderness area because of its essentially pristine natural condition. Consequently, the overall integrity of the heritage resources (archeological and historic sites) within the area is generally very good. Currently, the only known adverse affects to prehistoric resources have been natural fire (i.e., 1910 fire) and perhaps surface collecting of prehistoric artifacts from along the open ridges of the State line.

The prehistoric resources within the Cache Creek drainage are exceptional because of the overall integrity of the sites, their condition, and their



location on the landscape. The numerous types of prehistoric resources represented demonstrates a complete settlement and subsistence system within this area during the Middle prehistoric period (5500 B.C. - A.D. 500). The values of these sites are primarily scientific in that they demonstrate the variety of activities and locations of human use during this period.

The historic resource is clearly eligible for register listing for its association with 1930's subsistence mining and perhaps in the future will serve to interpret this period and its activities to the general public. This could be accomplished several ways such as adaptive reuse for agency administrative purposes, restoration for an interpretive site and/or cabin rental or simple stabilization and interpretation. Nevertheless, the Slenes cabin contributes to the heritage resource values within the Cache Creek drainage.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork of Fish Creek does not contain exceptional heritage resource values. Evidence for human use of the study area is sparse and thus far limited to the historic period. The West Fork of Fish and Indian Creek are not bad travel corridors, although the North Fork is reported to be easier. There is a noticeable lack of prehistoric sites along the State line above here which may indicate that the study area received limited Native American use. On the other hand, it has not received the same intensity of archeological survey as the Montana-Idaho State line to the southeast (i.e., Kid Lake to Pilot Knob, Munger: 1993). There is plenty of game and other natural resources in the area but perhaps these are a post-1910 fire effect.

Historic use (post-1860 A.D.) seems to be confined to hunting and trapping and perhaps transportation to and from Moose City, Idaho. Numerous martin sets were observed throughout the drainage, indicating that trapping was an important economic endeavor in the past. There are active hunter's camps in the drainage at just about every flat spot with water. Only two sites were recorded: a probable trapper's camp on Cedar Log Creek just above the junction with the West Fork of Indian Creek and the remains of a cabin and can dumps at Indian Creek camp.

Clark Fork River

There is evidence of prehistoric land use in the St. Regis Cutoff, possibly dating back as far as 10,000 years. The Cutoff is a known prehistoric travel route. The oldest GLO's designate the trail through the Cutoff an "Indian Trail." There are several extensive and probably long-term occupation sites and numerous smaller short term occupation and processing sites. Quinn's Hot Springs was well known to the tribes of the area, and the waters were used for medicinal and perhaps ritual purposes. The surrounding tributary drainages and mountain slopes were areas for hunting deer, elk, and most important, sheep. The river itself was a travel route and fishery. Our knowledge of prehistoric site location in the Cutoff is fairly extensive, although no systematic testing has been performed.

Historically, the Cutoff has been used for the same purposes as it was prehistorically. The "Indian Trail" became a wagon road with a ferry. The wagon road was improved in the 1930's to accommodate motorized vehicles, but the road was not paved or the ferry replaced by a bridge until the 1960's. At the turn of the century, the Cutoff was important for mining. Ore was brought over the ridge from Superior on the Iron Mountain Ore Road, parts of which still exist. The ore was loaded on barges and floated downstream to Paradise where it was put on a train. The broad terraces of the Cutoff were homesteaded early and are still farmed today. Remnants of original log structures are visible from the river in several places. Logging has been a major industry on the Cutoff since the turn of the century. Anaconda had a large mill at St. Regis until 1912, and numerous smaller private mills operated throughout the Cutoff for years. Evidence of these old mills, log chutes, horse logging camps, and logging landscapes are still visible. The CCC (Civilian Conservation Corps) were active in the cutoff. There were two camps, one at St Regis, and one at 14 mile. There is still evidence of the 14 mile camp; stone and concrete foundations. The CCC built the original cutoff road in the 1930s. There is much photo documentation of the construction, using what must have been the very first mechanized road building equipment. Quinn's Hot Springs was a popular recreation area from the very beginning. The resort was established quite early (about 1910-15) and attracted people from Missoula, who would come by train and holiday there.



The following sites are located on the St. Regis Cutoff. There are no sites recorded between Slowey and St. Regis.

1. **Historic gaging station.**
Eligibility: presumed not eligible
2. **Historic Ferry/ Travel route.**
Eligibility: Presumed eligible as part of Mullan Rd.
3. **Historic dwelling/hard rock mining.**
Eligibility: Probably not eligible except as a contributing element
4. **Historic dwelling.**
Eligibility: Presumed not eligible, loss of integrity
5. **CCC developed spring.**
Eligibility: Presumed not eligible loss of integrity
6. **Historic cabin.**
Eligibility: Probably not eligible
7. **Lithic Scatter**
Eligibility: Potentially eligible under Criteria A and D
8. **S & H Mine.**
Eligibility: Potentially eligible under Criteria A and D
9. **Lithic Scatter/Occupation.**
Eligibility: Potentially eligible under Criteria A and D
10. **Trappers cabin.**
Eligibility: unknown
11. **Lithic Scatter/ Occupation.**
Eligibility: Potentially eligible under Criteria A and D
12. **Cabin.**
Eligibility: Presumed not eligible, no integrity
13. **Lithic Scatter/ Occupation.**
Eligibility: Potentially eligible under Criteria A and D
14. **Hardrock mine.**
Eligibility: Presumed not eligible, no integrity
15. **Lithic Scatter/ Occupation.**
Potentially eligible under Criteria A and D
16. **CCC Camp/ Ferry landing; Historic component of 24SA 153.**
Eligibility: Potentially eligible under Criteria A
17. **Rock structure/ Lithic Scatter.**
Eligibility: Determined not eligible
18. **Historic cabin/ Mining.**
Eligibility: not eligible, burned
19. **Lithic Scatter/ Occupation.**
Eligibility: Potentially eligible under Criteria A and D
20. **Lithic Scatter/ Occupation.**
Eligibility: Potentially eligible under Criteria A and D
21. **Historic road.**
Eligibility: Determined eligible under Criteria A and C.

The archeological themes which are represented for prehistoric and historic periods include the following:

Prehistoric:
travel- river, known trails
occupation- sites
special use- hot springs, vision questing, hunting, fishing



Historic:

travel/transport- river, trail, road, ferry
 mining- Iron Mountain road and barges, contemporary flagstone quarries
 CCC- camps and road building
 Occupation- homesteading and farming
 Logging- horse logging landscapes, old mills
 Recreation- Quinn's

over Precambrian Belt Supergroup rocks (metamorphosed sandstones, clays, siltites, and argillites). The Precambrian rocks were deformed during Tertiary times. The uplifting forces that they were subjected to resulted in a series of tilted fault blocks whose western margins are, generally, the topographically higher or uplifted side.

The Clearwater begins on high elevation, glaciated, alpine ridges that are drained by steep to very steep avalanche chutes with a high percentage of rock outcrops. These landforms are located on the eastern quarter of the drainage. The slopes in this area range from 60 to over 100 percent on jagged alpine ridges associated with glaciation. Sediment is delivered efficiently because of the very steep concave slopes and the high drainage densities. The soil and substratum are relatively thin and have limited storage capacity; therefore, water moves rapidly off these sites. These areas receive very high amounts of precipitation. Drainages are spaced about 200 to 500 feet apart and consist of very small streams and draws.

The remainder of the watershed is gently rolling glaciated hills that occupy the Seeley Lake valley floor. Slope gradients are from 0 to 35 percent. Topography varies from a knoll and pothole topography characteristic of glacial moraine to nearly flat plains of ablation till or ground moraine. Stream patterns are irregular or deranged. Pothole lakes, poorly drained bogs, and wetlands are common throughout. Till is inherently high in silt which is highly erosive. Precipitation is high but sediment delivery is inefficient because of low slope gradients. The river runs through a series of lakes formed in the continental glaciation on the valley floor. The adjacent floodplain is highly variable, but cobble or gravelly material is very common.

The river corridor contains two geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. The first is a deep and narrow incised gorge to the immediate northeast of Rainy Lake, and the other is the "chain-of-lakes" represented in the area by Rainy Lake, Lake Inez, Lake Alva, and Seeley Lake. While deep U-shaped glacial valleys are common in the northern Rocky Mountains, few contain an assemblage of connected lakes as does this portion of the Swan Valley.



Looking down Cache Creek from glacial step. Note U-shaped valley

Clearwater River

The surface geology of the Clearwater is predominately Pleistocene glacial deposits that lie



While lands some distance to the south and southeast of the Clearwater contain gold, silver, and copper mineralization, there is no history of mining or significant mineralization that can be ascribed to the Clearwater or the surrounding area. Overall, the locatable minerals potential in the corridor appears to be low, as does the potential for future mining claim location activity. A low rating would have to be applied to the leasable minerals potential as well, since the nearest producing oil and gas fields are some 70 miles to the northeast of the subject lands.

Quaternary alluvium and Pleistocene glacial deposits cover much of the study area. A good portion of these deposits is sand and gravel that are suitable for use as aggregate. However, these raw materials are readily accessible and available throughout the Swan Valley.

The uniqueness of the Clearwater River area is attributable to its continental glaciated lands on the western three quarters and the eastern quarter to the high elevation, glaciated, alpine ridges. The residual area is made up of limestone, argillite, and quartzite parent materials while the continentally glaciated area is made up of glacial till derived from the metasedimentary rock. This stream is controlled by a glaciated landscape. The water quality is very good, but the streams do carry moderate amounts of glacial flour during peak flows.

Morrell Creek

The surface geology of Morrell Creek above Morrell Falls is predominately Belt Supergroup rocks (metamorphosed sandstones, clays, siltites and argillites) belonging to the Helena and Snowship Formations. Below Morrell Falls, Pleistocene glacial deposits and Quaternary alluvium predominate. The Precambrian rocks were deformed during Tertiary times. This deformation resulted in a series of tilted fault blocks whose western margins are, generally, the topographically higher or uplifted side.

The headwaters of Morrell Creek are on the high elevation alpine ridges of Grizzly Basin. These landforms are very steep, wall-like cliffs and mountain slopes associated with alpine glaciation. This basin is a very large avalanche area which drains through a very narrow canyon with

avalanche chutes on both walls. Rock outcrops are common, with avalanche chutes and natural landslides inherent to the upper reaches. Sediment is delivered efficiently because of steep concave slopes, high amount of precipitation, and high drainage densities. Drainage spacings are about 200 to 500 feet apart and drainages are characterized by very small streams and draws. The soil surface and substratum are relatively thin and have limited capacity for water storage; therefore, water moves rapidly through these landforms.

Morrell Creek passes out of the canyon onto a flat glacial outwash plain formed from large masses of continental glacier outwash sediments. The substrate is porous and gravelly. Stream spacing is very wide. These plains are very inefficient at delivering sediment.

Morrell Creek contains no geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. The area does contain many vestiges of the Pleistocene ice age, i.e., U-shaped glacial valleys, aretes or knife-edged ridges, glacial moraines, and drift, but these are features common to many other drainages in this part of Montana and the northern Rocky Mountains.

While lands some distance to the south and southeast of Morrell Creek contain gold, silver, and copper mineralization, there is no history of mining or significant mineralization that can be ascribed to Morrell Creek or the surrounding area. Overall, the locatable minerals potential for Morrell Creek appears to be low as does the potential for future mining claim location activity. A low rating would have to be applied to the leasable minerals potential as well, since the nearest producing oil and gas fields are some 70 miles to the northeast of the subject lands.

Quaternary alluvium and Pleistocene glacial deposits cover the lower portions of the drainage. A good portion of these deposits is sand and gravel that are suitable for use as aggregate. However, these raw materials are readily accessible and available in the surrounding area.

The uniqueness of the Morrell Creek Drainage is associated with its varied landscapes. The lower portion is developed in continental glaciated lands, while the upper portion of the drainage is high



elevation, glaciated, alpine ridges. The residual landscapes consist of argillite and quartzite parent materials, while the continentally glaciated area is composed of glacial till derived from the metasedimentary rock. The water quality is very good, but the streams do carry small amounts of glacial flour.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

All but the lower two miles of the main stem of the North Fork of the Blackfoot River are within the Scapegoat Wilderness; hence, those lands have been withdrawn from mineral entry as of January 1, 1984.

The surface geology consists of Precambrian Belt Supergroup rocks (metamorphosed sandstones, clays, siltites and argillites) and lower Paleozoic sedimentary rocks overlain, along the valley floors and sides, by a mantle of glacial sediments and quaternary alluvium. The Precambrian and Paleozoic rocks have been deformed during Tertiary times.

The North Fork headwaters begin on high elevation alpine ridges, glacial cirque headwalls, and glacial cirque basins. These landforms range from very steep, wall-like cliffs in cirque basins and very steep jagged alpine ridges associated with continental glaciation to concave alpine basins which have gentle slopes. These cirques do not contain small lakes but are wet and boggy. These landforms have a high percentage of rock outcrops, avalanche chutes, and a large number of natural landslides in all parts of the drainage. Sediment delivery to the stream system is extremely high because of the active landslides and debris flows that deliver directly into the adjacent streams. The soils and substratum at the higher elevations are relatively thin and have limited capacity for hydrologic storage; therefore, water movement is rapid. These areas receive high amounts of precipitation. Drainage spacings are about 200 to 500 feet apart and the drainages characterized by very small streams and draws.

The streams pass through steep and very steep glaciated mountain slopes and glacial troughwalls as one proceeds down the drainages. This continues

to the junction of Lake Creek and the main stem of the North Fork Blackfoot. The slopes are concave, with gradients of 55 to 85 percent. These landforms contain many landslides and debris flows. The drainage pattern is parallel with drainage spacing, usually more than 1500 feet. A change from a straight slope to a somewhat convex one along the lower third of the mountain generally signifies the deposition of glacial till. Soils are a complex of glacial till on the lower third of the slope and residual soils on the upper two thirds of the slope. Glacial till deposits are quite deep on the lower part of the slopes and in the valley bottoms. High amounts of ground water move through the soil mantle in these landforms and springs are common along the slope where glacial till occurs. Sediment is delivered efficiently because of the very steep slopes. The streams in these areas are controlled by the glacial valley trains and the rubble within them.

The North Fork contains no geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. The area and its drainages does contain many vestiges of the Pleistocene ice age, i.e., U-shaped canyons, glacial moraines, and drift, but these are features common to many other drainages in this part of Montana and the northern Rocky Mountains.

Lands to the east of the North Fork Blackfoot River contain gold, silver, and copper mineralization. Some of these areas have seen minerals development in the past, and at least two are being reviewed for future mineral development. However, there are no mining claims within 2 miles of the North Fork. Overall, the locatable minerals potential for the North Fork appears to be low as does the potential for future mining claim location activity. A low rating would have to be applied to the leasable minerals potential as well, since the nearest producing oil and gas fields are some 65 to 70 miles to the northeast of the North Fork.

While common variety mineral materials do occur within the study area, they are also found in areas and in places outside the immediate area of the study lands and in areas that are more readily accessible, convenient, and economic to potential users.

The uniqueness of the North Fork Blackfoot River is attributable to its glaciated lands, avalanche



chutes, and large number of natural landslides in all parts of the drainage. Typically, the streams begin in cirque basins or on alpine ridges and then wind down the glacial valley trains. These trains are made up of glacial till derived from the metasedimentary rock of the area. The stream corridors are controlled by the residual landscape. The water quality at high flows is greatly affected by slumps and landslides within the drainage.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake Creek study area lands are within either the Rattlesnake Wilderness or the Rattlesnake National Recreation Area and by the provisions of the Rattlesnake Wilderness Act of 1980 (P.L. 96-476; 94 STAT. 2271), are withdrawn from mineral entry.

The surface geology of the Rattlesnake consists of Precambrian Belt Supergroup rocks (metamorphosed sandstones, clays, siltites and argillites) and lower Paleozoic sedimentary rocks overlain, along many of the valley floors and sides, by a mantle of glacial sediments and quaternary alluvium. The Precambrian and Paleozoic rocks have been deformed during Tertiary times.

The headwaters of the Rattlesnake begin on high elevation alpine ridges, glacial cirque headwalls and glacial cirque basins. These landforms range from very steep, wall-like cliffs in cirque basins and very steep jagged alpine ridges associated with glaciation to concave alpine basins which have gentle slopes. A large percentage of these cirques contain small lakes. These landforms have a high percentage of rock outcrops, avalanche chutes, and a few natural landslides in the upper part of the drainage. Sediment is delivered to cirque basins efficiently because of steep concave slopes and the high drainage densities. The basins tend to trap sediment from moving downstream. The soil and substratum are often relatively thin and have limited capacity for hydrologic storage; therefore, water moves rapidly through these landforms. These areas receive high amounts of precipitation. Drainage spacings are about 200 to 500 feet apart and the drainages are characterized by very small streams and dry draws.



A small falls in Rattlesnake Creek

The streams all pass through steep and very steep glaciated mountain slopes and glacial troughwalls lower down the drainage. The slopes are concave to straight with gradients of 55 to 85 percent. The drainage pattern is parallel with drainage spacing, usually more than 1500 feet. A change from a straight slope to a somewhat convex one along the lower third of the mountain generally signifies the deposition of glacial till. Soils are a complex of glacial till on the lower third of the slope and residual soils on the upper two-thirds of the slope. Glacial till deposits are quite deep on the lower part of the slopes and in the valley bottoms. High amounts of ground water move through the soil mantle in these landforms, and springs are common along the slope where glacial till occurs. Sediment is delivered efficiently because of steep slopes. Deeper soils on lower slopes help to slow snowmelt runoff. The streams in these areas are controlled by the glacial valley trains and the rubble within them.

The Rattlesnake contains no geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. The drainage does contain, however, one feature that is fairly unique. This geologic feature is a large terminal morain approximately two-thirds of the way down the Rattlesnake drainage. This large morain lies perpendicular to the valley and is most noticeable to the hiker and mountain biker because of the steep ascent and descent over its scarps. Large cobbles and gravels deposited at this location testify to the dumping point of the large sheets of ice which once covered this area. The area and its drainages also contain many vestiges of the Pleistocene ice age, i.e., U-shaped canyons, cirques, cirque basin or tarn



lakes, but these are features common to many other drainages in this part of Montana and the northern Rocky Mountains.

Lands some 16 or more miles to the south of the Rattlesnake in the Garnet Range contain base metal mineralization, essentially gold, silver, copper, lead, and zinc. Beginning in the 1870's, several areas in the Garnet Range have seen minerals development and production, but there are no current operations at present or proposals for future large-scale operations. Most of the Garnet Range does remain open to mining claim location.

Overall, the locatable minerals potential for the Rattlensake appears to be low as does the potential for future mining claim location activity. A low rating would have to be applied to the leasable minerals potential as well, since the nearest producing oil and gas fields are more than 90 miles to the northeast.

While common variety mineral materials do occur within the study area, they are also found in areas and in places outside the immediate area of the study lands and in areas that are more readily accessible, convenient, and economic to potential users.

The lower 6 miles of Rattlesnake Creek pass through steep and very steep stream breaklands with wide colluvial and alluvial bottoms. The mountain landforms have gradients, typically, greater than 65 percent and are formed in argillite and quartzite parent materials. These are residual landforms and strongly control the stream gradients and bed.

The Rattlesnake Creek Area has some distinctive characteristics that are attributable to its glaciated lands and very steep breaklands. Typically, the streams begin in cirque basins or on alpine ridges and then wind down the glacial valley trains. These trains are made up of glacial till derived from the metasedimentary rock of the area. The residual landscapes feature steep, rough breaklands. The water quality is very good, but the streams do carry moderate amounts of glacial flour during peak flows.

South Fork Lolo Creek (includes: mainstem and No Name Creek)

All but the lower or northern 3.8 miles of the South Fork drainage are within the Selway-Bitterroot Wilderness and, by the provisions of the Wilderness Act of 1964 (P.L. 88-577; 78 STAT. 890), are withdrawn from mineral entry as of January 1, 1984.

The surface geology of the South Fork consists of Precambrian Belt Supergroup rocks, essentially schist, gneiss, and small amounts of amphibolite and biotite quartzite. In places, these rocks have intrusions of granitic rocks. However, there is no evidence that any of these intrusive granitics crop out within the study area.

The South Fork of Lolo Creek begins on high elevation alpine ridges, glacial cirque headwalls, and glacial cirque basins. These landforms range from steep, wall-like cliffs in cirque basins and steep jagged alpine ridges associated with glaciation to concave alpine basins which have gentle slopes. The cirques which occur in the upper part of the drainage contain small lakes.

These landforms have a high percentage of rock outcrops, avalanche chutes, and natural landslides because of the inherent potential weakness of the parent material. Sediment delivery is efficient because of steep concave slopes and the high drainage densities. The soil and substratum are relatively deep and have good capacity for water storage. These areas receive moderately high amounts of precipitation. Drainage spacings are about 200 to 500 feet apart and the drainages are characterized by very small streams, seeps and draws.

The South Fork passes through steep and very steep glaciated mountain slopes and glacial troughwalls lower down the drainage. The slopes are concave to straight, with gradients of 55 to 85 percent and drain into the glacial valley trains below. The drainage pattern is parallel with drainage spacing usually 1500 feet or less. A change from a straight slope to a somewhat convex one along the lower third of the mountain generally signifies the deposition of glacial till. Soils are a complex of glacial till on the lower third of the slope and bottom with residual soils on the upper two-thirds of the slope. Glacial till deposits are quite deep on the lower part of the slopes and in the valley bottoms. High amounts of ground water move through the soil mantle in these landforms, and springs are common along the slope where glacial till occurs.



Sediment is delivered efficiently because of steep slopes. Deeper soils on lower slopes help to slow snowmelt runoff. The streams in these areas are controlled by the glacial valley trains and the rubble within them.

The South Fork contains one geologic/geomorphic feature that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable: two flat-floored expanses of valley bottom that appear to have been created by sediment filling of lakes that must have formed at the end of the last glaciation. The area and its drainages also contain many vestiges of the Pleistocene ice age, i.e. U-shaped canyons, cirques, cirque basin or tarn lakes, glacial moraines, and drift, features common to many other drainages in this part of Montana and the northern Rocky Mountains.

Lands some 25 miles to the northeast of the South Fork in the Garnet Range contain base metal mineralization, essentially gold, silver, copper, lead, and zinc. However, the overall locatable minerals potential for the South Fork appears to be low as does the potential for future mining claim location activity. A low rating would have to be applied to the leasable minerals potential as well, since the nearest producing oil and gas fields are more than 110 miles to the northeast.

While common variety mineral materials do occur within the area, they are also found outside the drainage in areas that are more readily accessible, convenient, and economic to potential users.

The uniqueness of the South Fork Lolo Creek is tied to the unusual parent materials, the steep mountain slopes, and the glacially influenced cirque basins, alpine ridges, and glacial valley trains. These trains are made up of glacial till derived from granitics and associated gneiss and schist. This stream is controlled by the adjacent residual landscape. The till portion of the drainage supports many springs and seeps. The water quality is very good, but stream bedloads are moderate because of the size and kind of parent material inherent to this stream system.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

The surface geology of Cache Creek consists of Precambrian Belt Supergroup rocks, essentially limestones and quartzites belonging to the Wallace and Mount Shields Formations. In places these rocks have either been intruded or replaced by granitic rocks of the Idaho Batholith. As a result, the surface geology of Pebble Creek and the upper reaches of Cache Creek consist of granite.

The headwaters of Cache Creek begin on high elevation alpine ridges, glacial cirque headwalls, and glacial cirque basins. These landforms range from steep, wall-like cliffs in cirque basins and steep jagged alpine ridges associated with glaciation to concave alpine basins which have gentle slopes. Several small cirque lakes occur within the upper part of Cache Creek. These landforms have a high percentage of rock outcrops. Avalanches and natural landslides are inherent to these upper reaches. Sediment is delivered to cirque basins efficiently because of steep concave slopes and the high drainage densities. The basins tend to trap sediment from moving downstream. The soil and substratum are often relatively thin and have limited capacity for water storage; therefore, water moves rapidly through these landforms. These areas receive high amounts of precipitation. Drainages are characterized by very small streams and dry draws and are spaced about 200 to 500 feet apart. The lower mile of Cache Creek passes through steep and very steep stream breaklands. These landforms have gradients, typically, greater than 65 percent and are formed in argillite parent materials. These are residual landforms and strongly control the stream gradients and bed.

The streams all pass through steep and very steep glaciated mountain slopes and glacial troughwalls lower down the drainage. The slopes are concave to straight with gradients of 55 to 85 percent. The drainage pattern is parallel, with drainage spacing usually more than 1500 feet. A change from a straight slope to a somewhat convex one along the lower third of the mountain generally signifies the deposition of glacial till. Soils are a complex of glacial till on the lower third of the slope and residual soils on the upper two-thirds of the slope. While average soil thickness is probably 15 to 18 inches, it varies widely, with the bottom lands having soil depths in excess of 20 inches and on rocky slopes less than 10 inches.



High amounts of ground water move through the soil mantle in these landforms, and springs are common along the slope where glacial till occurs. Sediment is delivered efficiently because of steep slopes. Deeper soils on the lower slopes help to slow snowmelt runoff. The streams in these areas are controlled by the glacial valley trains and the rubble within them.

Cache Creek contains no geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. Three features of geologic origin do deserve mention in that they bring attention to the geologic forces that must have been responsible for their creation. These three features are: 1) a glacial step more than 100 feet in height; 2) large, rounded boulders possibly associated with the process of mass wasting; and 3) hoodoos and spires along the drainage divides for Pebble and upper Cache Creek. Otherwise, the study area contains many vestiges of the Pleistocene ice age, i.e., U-shaped canyons, cirques, cirque basin or tarn lakes, glacial moraines, and drift, features common to many other drainages in this part of Montana and the northern Rocky Mountains.

Outside the drainage the nearest sites of mineral production are some 18 miles to the northwest of Cache Creek in the Quartz Creek-Tucker Gulch area of Montana and some 20 miles to the southwest near Moose City, Idaho. In both cases, the interest was in gold, both placer and lode. The Moose City area also contains other base metal mineralization, essentially silver, copper, lead, and zinc. Within the Cache Creek drainage, the Snowbird Mine is the only known site where mineral production has taken place; during 1956 and 1957 over 6,500 tons of fluorite were produced at this locality. More significant, perhaps, is the rare earth element mineralization found at the Snowbird Mine and immediately adjacent to the Snowbird Mine in the upper reaches of Irish Creek and around Cedar Log Lakes, the significance of which cannot be adequately evaluated without further study.

The overall locatable minerals development potential for Cache Creek appears to be low as does the potential for future mining claim location activity. In terms of the study area as a whole, however, the locatable minerals potential as well as

the mining claim location potential are low to moderate.

A low rating would have to be applied to the leasable minerals potential; since the nearest producing oil and gas fields are more than 110 miles to the northeast.

While common variety mineral materials do occur within Cache Creek, they are also found in areas and in places outside the immediate area of the study lands and in areas that are more readily accessible, convenient, and economic to potential users.

The uniqueness of the Cache Creek Area is associated with its glaciated lands. Typically, the streams begin in cirque basins or on alpine ridges and then wind down the glacial valley trains. These trains are made up of glacial till derived from the metasedimentary rock of the area. The streams are controlled by the residual landscape. The till material supports many springs and seeps and the water quality is very good, but the streams do carry moderate amounts of glacial flour during peak flows.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The surface geology of the West Fork Fish Creek consists of Precambrian Belt Supergroup rocks, essentially limestones and quartzites belonging to the Wallace and Mount Shields Formations. In the southeast corner of the study area these rocks have either been intruded or replaced by granitic rocks of the Idaho Batholith.

This stream network begins on high elevation alpine ridges, glacial cirque headwalls and glacial cirque basins. These landforms range from steep, concave, wall-like cliffs in the back of cirque basins to steep jagged alpine ridges associated with glaciation, to concave alpine basins which can have gentle slopes, to a series of stair-step levels. Several small cirque lakes occur within the area. These landforms have high amounts of rock outcrop. Avalanches and natural landslides are inherent to these landforms. Sediment is delivered to cirque basins efficiently because of steep concave slopes and the high drainage densities. Cirque lakes and basins tend to trap sediment from moving



downstream. The soil and substratum are often relatively thin and have limited capacity for hydrologic storage; therefore, water moves rapidly through these landforms during the snowmelt period. These areas receive high amounts of precipitation. Drainage are characterized by very small streams and are spaced about 200 to 500 feet apart.

Farther down the drainage, the West Fork and its tributaries pass through steep and very steep glaciated mountain slopes and glacial troughwalls, which are concave to straight slopes with gradients of 55 to 85 percent. The drainage pattern is parallel. Drainage spacing is usually more than 1500 feet. A change in straight slope to somewhat convex along the lower third of the slope generally signifies deposition of glacial till. Soils throughout the area are a complex of glacial till on the lower thirds of the slopes and residual soils on the upper two-thirds of the slopes. While average soil thickness is probably 15 to 18 inches, it varies widely, with the bottom lands having soil depths in excess of 20 inches and on rocky slopes less than 10 inches. High amounts of ground water move through the soil mantle in this landform, and springs are common along the slope where glacial till occurs. Sediment is delivered efficiently because of steep slopes. Deeper soils on lower slopes help to slow snowmelt runoff from upper slopes. After Cedar Log and Middle Fork Indian Creeks join the West Fork of Fish Creek, the stream passes through very steep stream breaklands that are straight to concave slopes up to 3000 feet in relief. These slopes have been formed by fluvial erosion, faulting, or both.

The West Fork and its tributary drainages contain no geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. However, one feature of geologic origin that deserves mention is the assemblage of giant quartz crystals and rare earth mineralization at the Snowbird mine in the southeast corner of the study area. Otherwise, the study area contains many vestiges of the Pleistocene ice age, i.e., U-shaped canyons, cirques, cirque basin or tarn lakes, glacial moraines and drift, features common to many other drainages in this part of Montana and the northern Rocky Mountains.

Outside the drainage the nearest sites of mineral production are some 9 miles to the northwest of the

West Fork in the Quartz Creek-Tucker Gulch area of Montana and some 8 miles to the southwest near Moose City, Idaho. In both cases, the interest was in gold, both placer and lode. Within the drainage, the Snowbird Mine is the only known site where mineral production has taken place. More significant, perhaps, is the rare earth element mineralization found at the Snowbird Mine and immediately adjacent to the Snowbird Mine in the upper reaches of Irish Creek and around Cedar Log Lakes.

The overall locatable minerals development potential for the West Fork appears to be none to low as does the potential for future mining claim location activity. In terms of the study area as a whole, however, the locatable minerals potential as well as the mining claim location potential are low to moderate.

A low rating would have to be applied to the leasable minerals potential, since the nearest producing oil and gas fields are more than 110 miles to the northeast.

While common variety mineral materials do occur within the West Fork, they are also found in areas and in places outside the immediate area of the study lands and in areas that are more readily accessible, convenient, and economic to potential users.

The uniqueness of the West Fork Fish Creek Drainage area is attributable to its glaciated lands in the upper part of the drainage. Typically, the streams begin in cirque basins and then wind down the glacial valley trains. These trains are made up of glacial till derived from the metasedimentary rocks that are the controlling feature in the area. This material supports many springs and seeps and the water quality is very good, but the streams do carry moderate amounts of glacial flour during peak flows.

Clark Fork River

The surface geology of the Clark Fork River consists of an assemblage of Precambrian Belt Supergroup rocks, essentially metamorphosed argillites, quartzites, and siltites belonging to the Prichard, Burke, Revett, St. Regis, and Wallace Formations. Along the drainage, Quaternary alluvium and Pleistocene glacial deposits cover the



valley bottom and mantle the valley slopes. The Pleistocene glacial units are associated with Glacial Lake Missoula and consist of both lake sediments, fine grained silts, and flood deposits. The latter, termed "eddy deposits" or "gulch fills," were created by the repeated and rapid draining of Lake Missoula about 12,000 to 17,000 years ago. This rapid draining also swept many of the valley slopes clean of their normal mantle of soil and waste rock.

Soils throughout the area are a complex of glacial sands, silts, and loess mixed with a high percentage of cobbles derived from the Belt Supergroup rock units. Generally, the soils are well drained and average between 8-12 inches in thickness. The substrata is quite thick, over 4 feet in most areas.

The Clark Fork contains two geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. They are the "gulch fills" and the slopes which have been stripped bare of their soil and rock waste mantle by the rapidly draining waters of Glacial Lake Missoula. These are features of the Pleistocene ice age not common to many other drainages in this part of Montana and the northern Rocky Mountains.

Outside of the drainage, the nearest sites of mineral production are some 30 miles to the west of the subject lands in Idaho and, near the southern end of the study area, 2 miles to the north at the Keystone and Nancy Lee Mining Districts. In addition, 6 to 7 miles to the southeast are the Cedar Creek-Quartz Creek-Tucker Gulch Mining districts. The Coeur d'Alene Mining District was a leader in silver and lead production. These commodities were the principal outputs of the Keystone and Nancy Lee Mining District, while the Cedar Creek-Quartz Creek-Tucker Gulch areas are best known for their placer gold production.

The overall locatable minerals development potential for the subject lands and the study area appears to be low to moderate as does the potential for future mining claim location activity. Four areas along the Cutoff segment of the Clark Fork have been withdrawn for nonmetalliferous mineral

entry. These withdrawals were associated with potential hydroelectric development. The intent of the withdrawals were to avoid damage to adjacent rock formations which could be valuable for dam construction from "low value" quarrying operations. A low rating would have to be applied to the leasable minerals potential, since the nearest producing oil and gas fields are more than 110 miles to the northeast of the subject lands. The geothermal potential at Quinn's Hot Springs, within the subject lands, is quite modest and limited.

Common variety mineral materials do occur within the study area. Sand and gravel are produced from the subject lands as well as decorative/facing stone. In terms of the latter, production over a 20-year period has amounted to 7,000 tons, and there appears to be a continuing interest in further quarry operations. As discussed in Section 2.6, 4 building stone quarries are presently operating along the Cutoff segment.

■ 2.14 Hydrology and Instream Resources

Both visual and chemical quality and quantity of flow affects the potential for designation of the eight study rivers. Visual quality, especially clarity, is often used as a determinant to estimate water quality. In the case of the study rivers, all of them run very clear for the majority of the year. Spring snowmelt increases turbidity and sediment loading, which often reduces clarity. The Clark Fork most noticeably degrades during the spring. The chemical quality of the rivers is good too. The Clark Fork has the highest potential for contamination from historical mine waste runoff from Anaconda and Butte. The majority of these chemicals, however, are tied up within the sediments and are unnoticeable in the Slowey and Cutoff segments. The flow quantities are only slightly affected by adjacent uses such as agriculture. The most noticeable fluctuations are associated with precipitation events such as snowmelt, spring rains, and summer drought.





Cutoff Segment, Clark Fork River

Stream Flow

The distribution of water is highly variable across the lands of the Northern Rocky Mountains, of which the Lolo National Forest is a part. Summers are generally warm and dry in contrast to the long, cold, and moist winters. Most of the annual runoff in the basin is from snowmelt and appears in the rivers in May, June, and July.

Nearly one-half of the 42 inches of average annual precipitation that falls on Lolo National Forest watersheds is released as streamflow. Three-and-a-half million acre-feet of water per year flow through approximately 10,000 miles of stream channel to reach the Clark Fork River. The annual pattern of this stream flow is measured by instruments monitoring flow levels. The measurements are reflected in graphic form by "hydrographs." These visual representations of streams on the Lolo NF show a similar year-to-year pattern. The dominant annual feature is the run-off peak produced by snowmelt. Low elevation snowpacks begin to melt in late March and produce a rapid increase in discharge by mid-April. As spring progresses, higher elevation snowpacks begin to melt, and there is generally an "early peak" discharge in early May followed a couple of weeks later by the higher annual peak. Streamflow recedes progressively toward baseflow, with summer storms registering only short-duration "blips". Depending on the water content of the annual snowpack and spring precipitation, baseflow may be reached as early as August or as late as October. The baseflow in individual watersheds is quite consistent from year to year.

All drainages within the Forest, except two municipal supply watersheds, have been classified (with respect to water quality standards) by the Department of Health and Environmental Sciences as having a "beneficial use" as cold water fisheries. Ashley Creek (Thompson Falls) and Rattlesnake Creek (Missoula) must meet a higher standard for potable water. The chemical water quality of streams draining Lolo National Forest lands is generally excellent. There are no documented point sources of pollution on National Forest lands although a few abandoned underground mines seep mineralized water from their adits.

Water Diversions

A water right in Montana is a right by "appropriation" or taking water from a surface or ground water source and putting it to a beneficial use. Even 25 years ago the total appropriations in the Clark Fork Basin were known to far exceed the available flow. The State is currently involved in the legal process of adjudicating water claims that existed prior to 1973. Because of the enormity of this undertaking, a comprehensive understanding of conflicts between instream uses of water and lawful diversions is not possible at this time. However, there are no existing diversions within the study reaches of the following streams:

Cache Creek	N. Fk. of Blackfoot River
Morrell Creek	South Fork of Lolo Creek
West Fork Fish Creek	

There are water right claims of varying amounts filed on the following reaches:

Clearwater River	Rattlesnake Creek
Clark Fork River	

Depending on natural flow levels, the full use of these claims could affect instream discharge and thus the "values" of the reaches suggested for classification.

Clearwater River

The headwaters of the Clearwater are fed by snowmelt off the Swan Mountain Range. At the foot of the range, river flow is produced by waters from Clearwater Lake, which is fed by underground springs. The lake has an area of approximately 100 acres and is at an elevation of 4790 feet. Water quality of the Clearwater generally is lower during



the early spring runoff and improves throughout the summer as the ratio of groundwater flow to runoff flow increases. There is a definite relationship between land use practices, particularly logging practices, and water quality. Water quality is more affected by logging practices than by the percentage of an area logged.

At its source, the Clearwater River is of very high quality. With one notable exception, the degradation encountered by the river as it flows downstream is caused principally by inflow from tributaries. During the summer, the Clearwater experiences an increase in temperature, decrease in dissolved oxygen (D.O.), decrease in turbidity and suspended solids, a stable rate of nitrates at a fairly low level, a stable rate of phosphates, both ortho and acid hydrolyzable, and an increase in alkalinity and conductivity. The single important contribution to the pollution by the Clearwater itself is in the section of the river above Rainy Lake. The area is badly eroding and depositing material into Rainy Lake. No algal problems appear to exist in Rainy, Alva, Inez, or Seeley Lakes. Total algal numbers are low and species are diverse. Even though some private sewage facilities around Seeley Lake are inundated during high water, there is no evidence of fecal pollution in the adjacent waters of the lake. Definite thermal stratification does not appear to occur in the lakes during the summer months.

By the late 1970's, there was reported evidence of shallow groundwater contamination in the valley. Degradation was primarily bacterial contamination, especially in mid-to-late summer. Also reported was evidence that surface water sample analyses indicated that bacterial quality in the Clearwater River and Seeley Lake was poor, at least during mid-summer. Early 1980 project monitoring by the Lolo National Forest in glaciated tributaries to the Clearwater River did not show significant suspended sediment differences between logged and unlogged watersheds.

Morrell Creek

The natural features of Morrell Creek are a function of ancient glaciation. Watershed shape is long and narrow with the main valley floor made up of irregular deposits of glacial till. This till can be "heavy," resulting in poor infiltration and subsurface drainage. Because of their fine grain soil particles, glacial tills are generally very erosive and

are easily transported in water. The topography for this type of valley is generally undulating with lower slopes, which tend to keep sediment delivery risks low. Also, the main stream channels are described as "under-fit"; that is, they evolved under conditions of much higher water flow. They are thus able to carry higher volumes of water without a high risk of eroding sediment from within the channels. The runoff and water quality in the study reach of Morrell Creek is adequate to support any recommended classification.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

Between June and October 1988, the Canyon Creek Fire burned over most of the 180,000 acres of the North Fork Blackfoot River watershed in the Bob Marshall/Scapegoat Wilderness. Because over 90 percent of the burned area is in wilderness, no watershed rehabilitation measures were recommended or applied. During the late summer of 1989, a series of severe thunderstorms in the vegetatively unprotected watershed produced visibly large quantities of sediment in the river. The large outwash fan (Kleinschmidt Flat), where the North Fork leaves the mountains, testifies to the historic volumes of sediment that have been transported by this stream since the last glacial period. The wilderness designation of the watershed will insure the continued natural condition of the drainage and offers an ideal opportunity to understand the vegetative/hydrologic recovery of a glaciated mountain watershed. Sediment and discharge monitoring in the drainage will record the hydrologic response to vegetative recovery of the burned area.

Two permanent stations utilizing automatic streamflow and sediment monitoring devices have been installed in the watershed. One station is located at the concrete bridge over the mainstem. Another station is located on Lake Creek at the treated timber bridge 100 yards upstream from the stream's confluence with the North Fork. These stations are intended to be maintained for at least 20 years to record the changes in flow and sediment yield during the period of recovery. It is anticipated that sediment and water yield in this glaciated watershed will drop off markedly during the first



5-10 years, as ground vegetation rapidly recovers. Occasionally, rainstorms or other trigger events may produce slumps and landslides. Several years down the road as tree growth progresses and roots of burned trees rot away, there may come a time of renewed instability, as the weight on the slopes exceeds the internal strength of the soil system. Water yield values may not return to pre-burn conditions for several decades.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake Creek watershed encompasses 80 square miles in a rugged area 70 miles west of the Continental Divide. The creek headwaters lie 17 miles north and 4 miles east of Missoula, in several glacial cirques. It flows south-southwest through a scenic gorge where it empties into the Clark Fork River. The Rattlesnake drainage is designated "A-Closed" by the Montana Department of Health and Environmental Sciences (a municipal supply watershed). Prior to 1983, the watershed supplied approximately 40 percent of the potable water needs of the city of Missoula. The excellent water quality of Rattlesnake Creek would support the classification recommended. However, the "A-Closed" classification also implies that public access and activities are to be strictly controlled under conditions prescribed by the State Board of Health. On October 19, 1980, the United States Congress designated the Rattlesnake National Recreation Area and Wilderness. This designation helped preclude development activities which would have had a negative ramification on the use of the Rattlesnake as a municipal watershed. Recreational use levels, however, have had some impacts upon water quality. The transmission of Giardia, a protozoan which results in intestinal discomfort, has been the greatest problem, associated with domestic pets and horse use in the drainage.

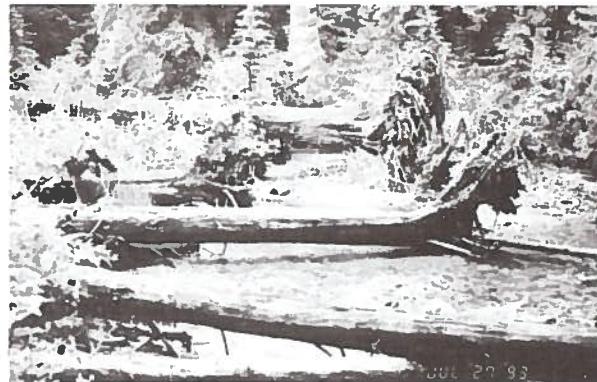
South Fork Lolo Creek (includes: mainstem and No Name Creek)

Stable channel conditions exist in the South Fork Lolo Creek because of the relatively undisturbed nature of the watershed. The entire segment under consideration lies within National Forest land. The stream flows through a confined channel for most

of its length, and the gradient throughout most of the stream is moderately high (2-5%). A notable exception is the flat gradient in the vicinity of Meadow Creek. Substrates in the stream are primarily rubble to boulder sized, with low amounts of surface fines.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

As tributaries to Fish Creek, Cache Creek and the other relatively pristine streams in the headwaters serve two functions. First, they provide stable channels in undisturbed riparian areas that produce the important spawning and rearing habitat required by migratory and resident native fish populations. Second, they yield high-quality water to all the reaches downstream. As an ecosystem component, streams such as Cache, Irish, and Pebble Creeks are therefore extremely important in maintaining the integrity of the system.



Middle Fork Indian Cr./W. Fork Fish Cr. drainage

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork and its tributaries lie within the Great Burn Roadless Area and are entirely on National Forest land. No previous logging or associated road building has occurred within any of the drainages. Mining activities have also been negligible. Current watershed and stream channel conditions are therefore a result of natural forces.

The West Fork Fish Creek contains a variety of channel characteristics, from wide, low-gradient portions in the lower reaches to narrow, turbulent



high-gradient sections upstream. Overall, the higher gradient, fast water reaches predominate.

Most pools in the system are created by large woody debris, especially in the headwaters where the stream channel is more narrow and high flushing flows are less common. The system appears to be very dynamic, with high flushing flows in the spring moving large amounts of bed material and woody debris in the lower reaches. A very important feature of this stream which contributes to the watershed's ability to deliver high quality water is the low level of bed fines within both pools and riffles.

Channel conditions in Indian Creek are similar to the upper reaches of the West Fork Fish Creek. The stream has a relatively high-gradient with corresponding turbulent, high-velocity flows. Instream fine sediment levels are low, and particle sizes in the gravel and small cobble size range predominate.

The lower ½-mile of Cedar Log Creek cascades through a very narrow, extremely high-gradient canyon before emptying into the West Fork Fish Creek. There are numerous waterfalls throughout this reach. The middle portions of Cedar Log Creek, above this high-gradient canyon, are low-gradient, meandering reaches, with frequent pools resulting from large amounts of woody debris.

Clark Fork River

While there are several perennial tributaries to the "Cutoff and Slowey" reaches of the Clark Fork, there are also numerous unnamed intermittent streams. The mapped average annual precipitation on these tributary watersheds is 40 inches. Drainage areas are typically less than 1 square mile. Based on observations of local watersheds such as Cascade Creek, a drainage area of at least 2 square miles seems to be necessary to support a perennial flow of more than one cubic foot per second. The lands in the corridor immediately adjacent to the river are river terraces where volcanic ash soil overlays very gravelly to very cobblely alluvial deposits broken by talus stringers and rock outcrops of weakly weathered metasedimentary rocks.

The U.S. Geological Survey has measured the discharge of the Clark Fork at St. Regis, midway between the segments, since 1911. The historic

average mean daily flow at this station during the period 1911-1966 was about 7,000 cubic feet per second (cfs). The mean daily peak flow was approximately 27,000 cfs and occurred at the end of May. Over that period of record, annual peaks have ranged from 12,000 cfs in 1941 to 68,000 cfs in 1948. The river generally exceeds the average mean daily flow of 7,000 cfs from early April through mid-July. In the drought years of the 1930's and the late 1980's, winter baseflow averages approached 2,000 cfs. The minimum daily flow reported at this station was 870 cfs on January 10, 1980.

During most years, suspended sediment concentrations in the middle Clark Fork, from Missoula to the Flathead River, generally decrease in a downstream direction as a result of additional dilution from cleaner incoming tributaries. Suspended sediment concentrations are normally in the range that affords a "high level of fisheries protection" (less than 25 mg/l). This information indicates that the reach of river from Deer Lodge to Rock Creek carries a noticeably heavier load of sediment than downstream reaches. Substantial improvement in suspended sediment concentrations has taken place as the river approaches the study reaches.

Metals concentrations are an infrequent problem in the Clark Fork from the confluence of the Blackfoot River downstream to the Idaho border. The relative metals pollution severity for these study reaches of the Clark Fork is zero.

The quality and flow volumes of the Clark Fork River in the study reaches are sufficient to support any classification recommended.

■ 2.15 Fisheries and Aquatic Life

The eight study rivers contain a wide range of fish species including native and non-native species competing for similar resources. Habitat of the rivers is in fair to excellent condition, with bank stability and spawning gravels in varying condition and quantity. Although the rivers do not contain large man-made impoundments which prevent spawning migrations, they do have natural barriers such as waterfalls and geological separations which prevent species from moving between flow reaches.



These natural breaks provide several unusual circumstances for genetically pure populations.

The fisheries resource provides a popular recreational attraction to local residents and tourists. A surge in flyfishing on the rivers of western Montana has been noted since the recent production of the movie, "A River Runs Through It".

Clearwater River

Current fish populations within the Clearwater River and Chain of Lakes system represent the effects of many years of manipulation from fish managers, land managers, and the public. Non-native species have been introduced into many of the lakes and have spread throughout the system. The result is an out-of-balance aquatic ecosystem, with native and non-native species competing for similar resources. As many as 20 different fish species currently inhabit this system. Of particular consequence to the native westslope cutthroat and bull trout is the presence of brown, brook, and rainbow trout. These fish hybridize and compete with the native trout, resulting in reduced population viability of the native species.

Aquatic habitat in the Clearwater River has been degraded by past activities in the watershed, and current conditions are only fair. Habitat in the upper reaches is of higher quality than that in the lower reaches. The numerous high-gradient tributary streams in the upper watershed flow primarily through National Forest System lands and are in good condition relative to tributaries lower in the Clearwater River drainage.

Habitat in the upper Clearwater River is limited by low numbers of pools (30:70 pool:riffle ratio) and by poor quality of existing pools. Bank stability has historically been a problem between Clearwater Lake and Rainy Lake. Substrate composition, however, is in relatively good condition, with an abundance of spawning substrate available.

The middle portion of the Clearwater River, from Rainy Lake to approximately two miles upstream of the inlet to Seeley Lake, is low gradient (2-3%) with numerous small meanders, shallow riffles, and low quality pools. Substrate composition is primarily rubble and gravel, with large quantities of sand and surface fines in pools (*approximately* 30-50%). Overhead cover throughout most of this reach is

good. Banks are dominated by an alder understory and lodgepole/spruce/mixed fir overstory which provides excellent cover and thermal shading. Perhaps the most notable habitat problems within this reach are the dams below Rainy Lake and Lake Inez. These dams are approximately 6-10 feet high with insufficient take-off pools below. They were installed in the mid-1950's to keep "rough" fish from dispersing into upstream lakes. However, they are barriers to upstream movement of all species and influence migration, spawning, and rearing patterns of migratory species such as westslope cutthroat and bull trout. Removal of these structures would benefit the Clearwater River ecosystem.

Aquatic habitat in the lower Clearwater River is in worse condition than any of the upstream reaches. This is a very low gradient (0-2%), meandering section with an abundance of slow-moving pool habitat. Substrate composition within pools is nearly 100% sand and surface fines. Much of this fine sediment has entered the Clearwater River from the West Fork, where extensive logging on corporate land has caused severe erosion problems.

Clearwater, Rainy, Inez, and Alva Lakes influence the Clearwater River aquatic ecosystem in several ways. First, they act as sediment traps or "sinks" between river segments, removing fine particulates from the water column as the water velocity decreases within the lakes. Second, they increase the non-shaded surface area of the water and decrease the water velocity, which allows more solar heating and causes increased water temperatures downstream. Finally, they act as juvenile and adult rearing areas for many fish species, including adfluvial westslope cutthroat and bull trout.

Because of the current habitat conditions and the influence of non-native species in the Clearwater River aquatic ecosystem, the fishery resource in the segment under consideration is not considered "outstandingly remarkable".

Morrell Creek

As a third order, relatively low-gradient tributary stream, Morrell Creek provides important spawning and rearing habitat for migratory fish and also provides habitat for all life-cycle stages to resident fish. Morrell Creek contains bull trout and



westslope cutthroat trout, both of which are listed as "sensitive species" in Region 1. Overall habitat quality is high, especially in the upper reaches.

Resident populations of bull trout and westslope cutthroat trout occur throughout Morrell Creek. Fish population data collected in 1991 showed over 90% of the fish present to be bull trout. Morrell Creek may also be a critical spawning stream for migratory bull trout and westslope cutthroat trout within the Clearwater and Blackfoot River systems. Montana Interagency Database data (1984) notes a proportional number of large-sized bull trout present, supporting this migratory assumption. Other fish species present in Morrell Creek include brown trout, rainbow trout, brook trout, and sculpins. Tailed frogs were also recorded.

Harvest activities have occurred along Morrell Creek below Morrell Falls. The area above Morrell Falls is essentially pristine. Because of the roadless portions of the Morrell Drainage, only about 20% of the total watershed has had harvest activity. The stream gradient below Morrell Falls is relatively low (1-2%).

Overall habitat quality in Morrell Creek is good but is limited by inadequate pools and a lack of bank undercut and cover. This situation is largely a result of the confined and moderately entrenched channel morphology. Bedrock confinement during high flows flushes woody debris through the system and causes naturally high levels of bedload movement. This results in fewer pools and less spawning area availability. Past logging activities have also influenced the stream character slightly, causing minor bank erosion in some places and reducing the overall amount of potential woody debris recruitment.

Morrell Falls is a barrier to upstream fish passage. There are, however, several small, shallow lakes in the headwaters of the Morrell drainage. These lakes probably do not sustain viable fishery populations because of their small size and potential for freezing solid in the winter. They therefore do not likely provide recruitment to the upper portions of the stream.



Upper Morrell Falls

The first $\frac{1}{2}$ -mile above Morrell Falls is very high-gradient (~ 15-20%) with numerous small (< 15 feet total length) but deep (up to 10 feet) pools and an abundance of boulder- and bedrock-created pocket water. Fish habitat is minimal, and spawning gravels are scarce. The substrate is primarily bedrock (extreme scouring takes place in this reach because of the steep gradient). The stream is confined within steep, glacially scoured canyon walls and cliffs. Riparian habitat is therefore minimal. Numerous small waterfalls without take-off pools act as barriers to fish passage. No fish were observed in this $\frac{1}{2}$ -mile segment.

The upper 3-mile reach is of lower gradient and is better quality fish habitat. The gradient is approximately 5-7%, with numerous high-quality pools, runs, and glides. Pocket water is also abundant. There is a large amount of spawning gravel available within this reach. Large woody debris contributes significantly to the pool habitat in the lower portions of the reach. The riparian area is healthy (mature conifers, alder, mountain maple, etc.) and the potential for continued recruitment of woody debris is significant. The upper sections of this reach have a limited amount of mature conifers in the water influence zone. Substrate ranges from bedrock in the steeper cascade areas to small pea gravel in pool tail-out areas. There is a good mix of all substrate sizes. The canyon is slightly wider than in the lower reach, with talus slopes extending to the stream in many areas. Again, no fish were observed within the reach.

The geologic isolation of Morrell Creek above Morrell Falls has potential significance as a genetic



reserve for the system. Although no fish have been observed within this reach, it is possible that small, isolated populations of native species such as westslope cutthroat or bull trout exist in this reach and have simply not been recorded. If this is the case, these populations would most likely be genetically pure and would therefore be important in maintaining the genetic background of the population.

Because of its importance in providing high quality habitat for two sensitive fish species, the fishery resource in Morrell Creek should be considered "outstandingly remarkable".

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork Blackfoot River is a fifth-order stream. Most of the North Fork Blackfoot watershed lies within the boundaries of the Scapegoat Wilderness on National Forest System land. The lower portion flows through a wide, flat valley known as the Kleinschmidt Flat, which is under mostly private ownership. Because of the wilderness status of the upper portions of the watershed, there has been no timber harvest activity within the area. Extensive trail systems exist throughout the entire watershed and receive heavy use. These trails likely contribute small amounts of sediment to the stream during storm and runoff events, but the overall effect on instream aquatic habitat is expected to be minimal.

Recently, natural forces have played an active role in changing aquatic habitat in the North Fork. The Canyon Creek Fire in 1988 burned a large portion of the watershed, including much of the riparian area along the main river and tributary streams. The loss of overhead canopy and understory vegetation increased runoff and changed flow patterns, resulting in high erosion and several areas of mass wasting. The abundance of standing dead trees in riparian zones will result in high amounts of large woody debris throughout the system when these trees begin to fall down. As a result, fisheries habitat is expected to be very dynamic in the near future.

Currently, the North Fork Blackfoot River contains high-quality fish habitat and supports many

naturally reproducing fish species, including westslope cutthroat and bull trout. The river is physically complex and provides habitat for all life-stage requirements. Long, low-gradient riffles and pool tail-outs are available for spawning, nearby high-quality pools exist for cover and over-wintering, and side-channels and backwater areas exist for young-of-year rearing. North Fork Falls, an 80-foot sheer drop waterfall between Dry Fork and the East Fork Blackfoot River, is a complete barrier to upstream fish migration. This natural barrier effectively eliminates the entire watershed above the falls from use by fluvial fish.

Both fluvial and resident populations of westslope cutthroat and bull trout exist in the North Fork Blackfoot River. The large fluvial fish migrate several miles between the river and tributary streams to spawn. Resident populations exist in the headwaters and in tributary streams throughout the system. Because of a variety of factors, the numbers of fluvial bull trout have declined in the Blackfoot/Clark Fork system. Maintaining and improving aquatic habitat in the North Fork Blackfoot River and its tributaries is integral in sustaining viable populations of both forms of these species.

Fisheries and aquatic habitat in the North Fork Blackfoot River is characterized by low amounts of pool habitat (approximately 10% of all habitat types). Pool habitat is limited by high-flushing flows and low channel meanders. Much of the available pool habitat is boulder created and is of high quality. Pocket water is an important component of the available fish habitat, forming numerous small holding areas for both resident and fluvial fish. Surface fines throughout the system are low (5-15%), and spawning gravels are present in moderate amounts. Spawning gravels are more abundant in the reaches below North Fork Falls than above.

The mainstem channel below North Fork Falls is somewhat unstable. This is likely because of the recent fire and subsequent loss of vegetative cover in the watershed. Levels of instream fine sediments are relatively low but may have been somewhat lower prior to the fire. Most substrates in the North Fork Blackfoot River are coarse gravel to small boulder sized, with little fine to medium sized gravels present. This variation in gravel sizes is important in terms of spawning potential of the



stream. The larger fluvial fish likely have sufficient spawning gravels available, but the smaller resident fish may rely heavily on the smaller gravel sizes available in tributaries to the North Fork for spawning.

Overall, habitat quality in the North Fork Blackfoot River is in good condition because of the variety and complexity of habitats available in this relatively unaltered stream. Because of the important habitat that the North Fork Blackfoot River provides to both westslope cutthroat and bull trout, it qualifies as an outstandingly remarkable fishery resource.

Dobrota Creek is a third order tributary in the extreme headwaters of the North Fork Blackfoot River. Habitat quality is currently influenced by the effects of the Canyon Creek Fire. Most of the riparian area has been burned, resulting in low overhead cover and reduced thermal shading. Several areas of mass wasting, which have resulted from the fire, contribute sediment to the stream. Dobrota Creek is lacking in pool habitat (10% of all habitat types) but contains abundant pocket water habitat (65% of all habitat types). These pocket water areas provide considerable habitat for resident fish. Surface fines in Dobrota Creek, despite the mass wasting on the hillsides, are low (5%). Spawning gravels are available (35%), but bedload movement appears to be common, resulting in less than optimal conditions for spring spawners. High bedload movement is likely the result of a moderately confined and fairly high-gradient (4%) channel. Fish populations in Dobrota Creek, in terms of species composition, are probably similar to those in the North Fork Blackfoot River above North Fork Falls. Westslope cutthroat and rainbow trout inhabit the North Fork above the falls. Anglers report catching brook trout in this section also. Bull trout may be present, but no records are available to confirm this.

Cooney Creek is a third order tributary in the extreme headwaters of the North Fork Blackfoot River. Habitat quality is exceptional throughout most of the stream. Some riparian areas were burned during the Canyon Creek Fire. In these areas a small level of mass wasting along steep slopes is expected to occur in the next few years. Spawning potential of this stream is very high, with an abundance of suitable gravels (60-65% of substrates) and nearby high-quality pools. Pool habitat is somewhat limiting within the stream

(15-20% of all habitat types). Levels of surface fines are low (5-15%) throughout the stream. Fish populations in Cooney Creek, in terms of species composition, are probably similar to those in the North Fork Blackfoot River above North Fork Falls. Westslope cutthroat and rainbow trout inhabit the North Fork above the falls. Anglers report catching brook trout in this section also. Bull trout may be present, but no records are available to confirm this.

Dry Fork Creek is a fourth-order tributary which drains most of the western half of the upper North Fork Blackfoot watershed. Portions of the stream periodically go dry because of subterranean flow. Beaver activity occurs in the lower reaches, creating habitat diversity. In the middle reaches, near the Dry Fork-Flathead Divide, the stream has the potential during high flow periods to break out of its defined channel and cross into the Flathead River drainage. Rock gabions were placed along the banks of Dry Fork Creek in the mid-1960's to prevent this but are currently dysfunctional. The stream is dominated by low-gradient riffles (approximately 75% of all habitat types). Pools and glides are associated with meanders and woody debris jams. The majority of the substrates are spawning sized gravels, (30-55% of substrate), and levels of surface fines are relatively low (5-20%). This combination of substrates and the riffle/pool/glide habitat available make Dry Fork Creek a high-quality spawning stream for both fluvial and resident fish. The Canyon Creek Fire affected much of the Dry Fork watershed and riparian area. Potential woody debris, overhead cover and mass wasting will be influenced by the effects of this fire in the future. Habitat quality in Dry Fork Creek in terms of providing high quality spawning and rearing areas for both westslope cutthroat and bull trout in the North Fork Blackfoot River system is outstandingly remarkable.

Cabin Creek is a third-order tributary to Dry Fork Creek. The stream has been heavily influenced by the Canyon Creek Fire. Numerous areas of mass wasting and channel instability are evident, and overhead cover in the riparian area is lacking. The stream is dominated by low-gradient riffle habitat and is generally lacking pools throughout its length. High amounts of potential woody debris recruitment in the near future will likely increase the amount of pool habitat available. Despite the



unpolluted water to these sections. As an ecosystem component, streams such as Cache, Irish, White Creek, and Pebble Creeks are therefore extremely important in maintaining the integrity of the system.

Fish populations within the four stream segments consist primarily of bull trout and westslope cutthroat trout. Interagency Database data also shows brook trout in Cache Creek. Department of Fish, Wildlife and Parks surveys in Cache Creek have shown moderately high use by migratory bull trout in the past. Surveys in 1993, however, located no bull trout in Cache Creek. One spawning pair of fluvial bull trout was located in the middle portion of Cache Creek in late August. Westslope cutthroat trout likely utilize these streams for spawning during their spring migration also.

Fisheries and aquatic habitat in Cache Creek is above average when compared to other streams on the Forest. Cache Creek contains a variety of habitat types, from wide, low-gradient meandering portions dominated by riffles, to narrow, turbulent, higher-gradient sections consisting of mostly pocket water habitat. Overall, the stream is characterized by low amounts of pool habitat (15-25%) and extensive fast water areas (75-85%). Much of the fast water habitat is high-quality pocket water, however, which provides holding areas and cover and makes up for some of the lack in pool habitat.

Cache Creek is very dynamic, with high-flushing flows in the spring moving large amounts of bed material and woody debris through the system. In addition, there is a lack of potential large woody debris in the riparian zone of many reaches of Cache Creek where avalanche chutes extend to the stream. This lack of woody debris, coupled with the large size and consequential high-flushing flows of the stream, results in low amounts of instream woody debris and accounts for the low overall pool:riffle ratios.

Fine sediment levels throughout Cache Creek are generally low (<10%), but accumulations occur in some slow water areas. The low amounts of sediment within the stream contribute to the high quality of habitat available. Spawning gravels are abundant in the lower gradient portions and are unimpacted by sediment. The abundance of spawning habitat and the high utilization by both

resident and migratory westslope cutthroat and bull trout make the Cache Creek outstandingly remarkable as a fisheries stream.

Pebble Creek is a moderate sized (2-3 meters wetted width) stream with high-quality habitat which varies considerably from the lower reaches to the headwaters. In the lower mile, the stream is very high-gradient and confined, flowing over primarily bedrock and boulder substrates. A 300-500 foot- section of small waterfalls and bedrock chutes with limited resting areas in this reach provides a total block to upstream fish migration. Above this, the valley floor widens, and the stream gradient decreases to 1-2%. The stream flows for approximately 3 miles through this open meadow type basin. Habitat in this section is characterized by numerous meanders, abundant pool habitat, and small-sized substrates. There is a large amount of spawning habitat within this reach which is inaccessible to migrant fish from Cache Creek. No records are available to indicate fish populations or densities within Pebble Creek. It is likely, however, that westslope cutthroat exist in the low gradient reaches above the falls. These fish potentially represent a genetically pure strain because of their physical isolation, and therefore should be considered an outstandingly remarkable resource value.

Irish Creek is a relatively small (1-2 meters wetted width), moderately high- gradient (3-7%) stream which contains marginal fish habitat. The stream is lacking in pool habitat and spawning areas. Most of its length is dominated by high-gradient riffles cascading over cobble and boulder sized substrates. Gravel sized substrate suitable for spawning is limited. There is likely a small population of resident westslope cutthroat in Irish Creek, but its significance as a spawning tributary to Cache Creek is minimal. Fisheries and aquatic habitat in Irish Creek possess no outstandingly remarkable values.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork Fish Creek and its tributaries lie within the Great Burn Roadless area and are entirely on National Forest System land. No previous logging or associated road building has occurred within any of the drainages. Mining activities have also been negligible. Current



watershed and instream habitat conditions are therefore a result of natural forces.

As tributaries to Fish Creek, these relatively pristine streams serve two functions. First, they provide the high-quality spawning and rearing habitat required by migratory and resident native fish populations. Second, they improve water quality in downstream reaches by providing unpolluted water to these sections. As an ecosystem component, streams such as the West Fork Fish Creek, Indian Creek, and Cedar Log Creek are therefore extremely important in maintaining the integrity of the system.

Fish populations within the three proposed stream segments consist primarily of bull trout and westslope cutthroat trout. Electrofishing estimates conducted in August 1993 on the West Fork Fish Creek showed bull trout densities ranging from 0.3 to 7.7 fish per 100 square meters. Westslope cutthroat were found in densities ranging from 0.6 to 3.0 fish per 100 square meters. These densities are typical of low order, mountainous streams on the Forest. Department of Fish, Wildlife and Parks surveys in the West Fork Fish Creek have shown high use by migratory bull trout, and westslope cutthroat likely utilize this stream for spawning during their spring migration also. Electrofishing estimates on Indian Creek showed low densities of bull trout (0.14 fish per 100 square meters) and moderate densities of westslope cutthroat (8.0 fish per 100 square meters). Montana Interagency Database data shows westslope cutthroat trout to be abundant in the middle, low-gradient reaches.

Aquatic and fisheries habitat in these streams is above average when compared to other streams on the Forest. The West Fork Fish Creek contains a variety of habitat types, from wide, low-gradient portions in the lower reaches to narrow, turbulent, high-gradient sections upstream. Overall, the stream is characterized by low amounts of pool habitat (15%) and extensive fast water areas (85%). A large proportion (34%) of the fast water habitat is high-quality pocket water, however, which makes up for some of the lack in pool habitat. Most pools (60%) are created by large woody debris, especially in the headwaters where the stream channel is more narrow and high-flushing flows are less common. The system appears to be very dynamic, with high flushing flows in the spring moving large

amounts of bed material and woody debris in the lower reaches. Perhaps the most important feature of this stream which contributes to the high quality of habitat available is the low level of fine substrates within both pools (8%) and riffles (10%) and the high amount of spawning-sized gravels available (45%) in both. The abundance of spawning habitat and the high utilization by both resident and migratory westslope cutthroat and bull trout make the West Fork Fish Creek outstandingly remarkable as a fisheries stream.

Habitat in Indian Creek is similar to the upper reaches of the West Fork Fish Creek. The stream is low order and relatively high-gradient, with low amounts of pool habitat available. Pocket water is an important component of the available fisheries habitat. Instream sediment levels are low, and spawning gravels are abundant. This stream likely receives heavy use from resident bull trout and westslope cutthroat trout during their spawning periods. Habitat quality, because of the undisturbed nature of the watershed, is outstandingly remarkable.

The lower ½ mile of Cedar Log Creek cascades through a very narrow, extremely high-gradient canyon before emptying into the West Fork Fish Creek. There are numerous waterfalls throughout this reach, which act as natural barriers to upstream fish migration. Migratory forms of bull trout and westslope cutthroat therefore do not utilize most of Cedar Log Creek for spawning. The middle portions of Cedar Log Creek, above this high-gradient canyon, are low-gradient, meandering reaches with an abundance of high-quality pools and spawning habitat available. Woody debris is the most significant component in creating pools in these reaches. Resident westslope cutthroat trout occupy these reaches up to the headwaters, which begin at Cedar Log Lakes near the Idaho/Montana border. No records could be found indicating that exotic species have been introduced into Cedar Log Lakes. The population of westslope cutthroat in Cedar Log Creek therefore has the potential for being genetically pure. This is somewhat unique, given the extensive range of exotic species within the middle Clark Fork system. Because the westslope cutthroat trout population in Cedar Log Creek is potentially genetically pure, the fishery resource of this stream should be considered outstandingly remarkable.



Clark Fork River

Human disturbances such as mining, hydroelectric development, land use practices, and sport fishery manipulation have caused native fish populations and aquatic habitat in the Clark Fork River to be below their past levels. Viable populations of many species do exist within most reaches of the river, however, and these fish provide important recreational opportunities.

The middle Clark Fork River is currently well below its potential in terms of fish production and habitat utilization. Many factors contribute to this problem, one of which is the lack of usable, high-quality tributaries within the reach for spawning and rearing habitat. Many larger streams such as Rattlesnake, Rock, Tamarack, and Siegel Creeks and the Blackfoot River system, which historically provided habitat integral to the overall functioning of the ecosystem, have been blocked by dams and impassable culverts. Other streams are de-watered for irrigation. Still others have suffered habitat degradation from land-use practices such as mining, logging and grazing. Some streams are unusable because of natural factors such as subterranean flow at fault lines, impassable falls, and ephemeral flow patterns. The Clark Fork River itself suffers from past accumulations of toxic metals in bottom sediments. These natural- and human-caused factors combined have produced a system that has diminished spawning and rearing habitat.

Fish populations within the middle Clark Fork system consist of various native and non-native species. Rainbow and brown trout are the most abundant game species. Native populations of westslope cutthroat and bull trout are low. Other fish species which inhabit the middle Clark Fork River include northern pike, northern squawfish, longnose sucker, largescale sucker, mountain whitefish, largemouth bass, yellow perch, peamouth, pumpkinseed, and sculpin. Trout densities in the middle Clark Fork River are low when compared to large river systems in south and southwestern Montana, but are typical of rivers in the local area. The average size of fish in the middle Clark Fork is relatively large, which provides a locally outstandingly remarkable resource. Many of the larger fish are fluvial bull trout. Protection of these fluvial fish and their habitat is integral in sustaining the viability of the species.

Aquatic habitat in the two portions of the middle Clark Fork River under concern is variable. Much of the area is dominated by relatively homogenous glide habitat. The banks are stable but provide little diversity in terms of nick-points, woody debris, and undercutting. Substrates are rounded cobble to rubble sized and afford minimal submerged cover and holding water. In short, there is a lack of physical habitat diversity needed to sustain dense populations of fish species.

Other segments of the reaches under study provide excellent pool/riffle combinations and abundant physical habitat diversity. Large boulders are present in the substrates, providing holding water for fish. Riffles are dominated by gravel and cobble sized bed material. Deep pools exist for over-wintering, and shallow side channels and backwater areas offer protection for young-of-year fish. These areas provide a variety of habitats which likely support higher concentrations of fish than in the more homogenous areas. Overall, however, the sections containing this more complex fish habitat comprise only about 25% of the area in the reaches of concern.

The two reaches of the middle Clark Fork River under concern provide average fish habitat. Fish populations are diverse, and the locally moderate to high densities and large average size of game species is outstandingly remarkable.

2.16 Vegetation

The eight river segments reflect the full range of vegetation types found in western Montana: from open grasslands to bare rock faces. The vegetational range is predominantly affected by aspect and elevation, which control moisture and soil depth. The moist stream bottoms which lie directly adjacent to the rivers contain willows, brush, and shade-tolerant tree species such as cedar, Douglas-fir, and larch. The drier side slopes and benchlands contain ponderosa pine and larch. As the elevation increases, moisture increases to where fir is found in the upper and middle reaches of the high elevation mountain slopes. In areas where soil has not developed, small forbs, twisted white bark pine, and colorful lichens and mosses occupy the slopes.



In addition to providing aesthetic quality, the timber which grows along the river corridors provides a valuable commodity. This resource has been exploited in some of the developed drainages such as Rattlesnake Creek and the Clark Fork River. In other drainages, such as the North Fork Blackfoot, it has undergone severe natural changes from fire.

Clearwater River

The Clearwater River corridor is dominated by stands of lodgepole pine, subalpine fir, Douglas-fir, and western larch. On the slopes and upper benches, stands tend to be in the late seral stage of succession with two or more stories. Even-aged lodgepole pine (4- to 8- inch diameter, 60-70 years old) dominates. Dense subalpine fir regeneration and saplings up to 20-feet tall occur in the understory, limiting viewing distances. It is not uncommon for these pine stands to have a scattered, large-diameter larch overstory. Many of the western larch are several centuries old and are unique because they have survived almost a century of logging in the valley.

Pockets of mature to over-mature Douglas-fir also occur along the slopes of the corridor. Size and age suggest they survived the last major fire, which occurred in the early 1900's.

The riparian area and most of the gentle bottom lands associated with the river are dominated by subalpine fir, often in conjunction with Englemann spruce and lodgepole pine. These are characterized by multi-sized and multi-aged stands that burn infrequently because of the cool, moist environment.

Habitat types along the Clearwater are typical of those found along other rivers or creeks in the area. All are representative of cool, moist, productive sites capable of supporting good conifer growth. Understory vegetation commonly found includes a dense layer of blue huckleberry, dwarf huckleberry, twinflower, pinegrass, thimbleberry, serviceberry, beargrass, and pachistima.

There are a few broad areas of brush north of Rainy Lake and between Rainy Lake and Lake Alva. These consist of willow and buckthorn.

One Forest Service sensitive plant species, *Grindelia howellii* (Howell's gumweed), is

known to occur on private land near the lakeshore of Seeley Lake. *G. howellii* exists in various disturbed and natural habitats, including roadsides, grazed pastures, pine plantations, forest openings, river terraces, and native grasslands. Recent Forest policy has been to concentrate protective and maintenance efforts on plants occurring in natural habitat, while noting its presence in disturbed sites.

Known in the vicinity of the Clearwater River (and possibly in wetlands associated with it) are three sensitive plants:

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins, and in moist woods and thickets in the mountains. This species is sensitive (imperiled) in Montana but demonstrably secure throughout its range in Canada and the northern U. S. In Montana it is found on the Flathead Indian Reservation, the Flathead and Lolo National Forests, and on private land.

Potamogeton obtusifolius Mert. & Koch (Blunt-leaved Pondweed) grows in muddy shallows of ponds, sloughs, lakes, and fens in mid to low elevations. While listed as sensitive (imperiled) in Montana, *P. obtusifolius* is globally secure. Its range includes Canada and portions of the northern U. S.

Howellia aquatilis Gray (Water Howellia) is proposed for Federal listing as a threatened plant. It is known to occur just north of the headwaters of the Clearwater river. It grows in vernal glacial pothole ponds and oxbow sloughs which dry by late summer. To date, searches of suitable *H. aquatilis* habitat on the Seeley Lake Ranger District have revealed no occurrences of that species along the Clearwater River.

Habitat for a number of Forest Service sensitive plant species exists in the Clearwater riparian zone (see Appendix F).



The Nature Conservancy/Montana Natural Heritage Program database map also shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Clearwater River proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

Morrell Creek

The Morrell Creek corridor provides a variety of features, each with some unique vegetative communities. Species associated with the predominant habitat types of Morrell Creek include subalpine fir, Engelmann spruce, lodgepole pine, Douglas-fir, and western larch. Much of the area is in late seral to mid-climax stage of succession because of the absence of fire. Stands frequently are multi-storied with dense subalpine fir in the middle story and understory. Overstories consist of lodgepole pine, western larch and spruce. Lodgepole pine is dying and falling because of age. Stands with overstories of western larch and spruce are less common, but because they are much longer lived, they comprise a significant component of the stands that may remain intact for several centuries. There is at least one old growth western larch stand below Morrell Lake. Large diameter larch (greater than 21 inches) with the yellow-orange bark are typical. Trees per acres, size, and overall character of these trees are not only unique to the Morrell corridor but to the entire drainage. Stands of large diameter spruce are also unique in terms of their size and occurrence throughout the drainage. These are found on the broad riparian areas below Morrell Lake. In the same vicinity are forb patches of cow parsnip and false hellebore that at one time were more prevalent but have diminished in size because of succession.

All the timber stands are mature to over mature except for one stand of lodgepole pine 3-5" in diameter, that resulted from a stand replacing fire about sixty years ago. Unlike other stands in the corridor, this stand is dense, even-aged, 100% lodgepole pine with very little understory.

Understory vegetation is variable but typically consists of menziesia, beargrass, blue huckleberry, grouse huckleberry, and alder. Riparian areas and avalanche paths are dominated by dense alder.

Grindelia howelli (Howell's Gumweed) is known to occur at the confluence of the Clearwater River and Morrell Creek, somewhat below the area proposed for status as a Wild and Scenic river. *G. howellii* exists in various disturbed and natural habitats, including roadsides, grazed pastures, pine plantations, forest openings, river terraces, and native grasslands. Recent Forest policy has been to concentrate protective and maintenance efforts on plants occurring in natural habitat, while noting its presence in disturbed sites.

Known in the vicinity of Morrell Creek (and possibly in wetlands associated with it) are the following sensitive plants:

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins, and in moist woods and thickets in the mountains.

Howellia aquatilis Gray (Water Howellia) is proposed for Federal listing as a threatened plant. It is known to occur just north of the headwaters of the Clearwater river. It grows in vernal glacial pothole ponds and oxbow sloughs which dry by late summer.

Habitat for a number of Forest Service sensitive plant species exists in the Morrell Creek riparian zone (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of Morrell Creek segments proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

North Fork of the Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork Blackfoot River corridor was included in the boundary of 1988 Canyon Creek Fire. This was a stand replacing fire that set stand conditions back to early seral stages of succession. Slopes are characterized by standing dead Douglas-fir, western larch on the drier sites, and



lodgepole pine, subalpine fir, and Engelmann spruce on the moister, cooler sites. There are individual and patches of survivors, some of these several acres in size on the slopes and in the riparian areas. The remaining patches are composed of mature and overmature trees that were established at the time of the last major fire, about 150-200 years ago. In some of the patches, fire swept through the understory, consuming most of the vegetation. In other areas, fire skipped over the patches leaving seral species in the overstory and subalpine fir in the understory.

Natural regeneration consists of predominantly lodgepole pine and western larch, the tallest of which are three feet. Density varies from several hundred trees to several thousand trees per acre. Other understory species such as alder, menziesia, beargrass, huckleberry, Arnica, and twinflower are present but do not dominate the site.

Rock cliffs and talus slopes which support very little vegetation are common on the west side of the corridor in the upper portion of the drainage.

Only one sensitive plant, *Grindelia howellii*, is known to occur in the vicinity of the North Fork Blackfoot river. *G. howellii* is likely to occur in natural openings along and above the river system.

Habitat for several additional species appears to exist along the river system (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the North Fork Blackfoot River segments proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

Several vegetation communities can be found in the Rattlesnake, including: barren scree, riparian, dry southerly and westerly forested aspects, moister northerly forested aspects, older lodgepole pine and subalpine fir in upper elevations, and multi-storied stands of Englemann spruce and subalpine fir.

The scree sites in the drainage are located predominantly at lower elevations and are the dominant landform on the southerly aspect toe slopes immediately adjacent to the riparian zone. These scree slopes are typically forested with scattered Douglas-fir, ponderosa pine and small clumps of aspen. Shrub species include mountain maple, ocean spray, ninebark, and mock orange. Most of the old-growth yellow pine that remains in the Rattlesnake appears to be confined to these rocky, difficult-to-access sites since most of the lower reaches of the drainage were logged in past decades.

The riparian corridor at the lower reaches is a mosaic of black cottonwood, dogwood, willow, and other riparian species. Stream terraces, where the water table is deeper, frequently have ponderosa pine, and Douglas-fir, with snowberry as the predominant understory shrub. The tree canopy is open on most sites, and the drier stream terraces and uplands have established populations of exotics, including knapweed, timothy, and others. Above Franklin Bridge the riparian area narrows to a band immediately adjacent to the stream. Willows and dogwoods are the principal species.

Mixed second growth stands are found primarily on southerly and westerly aspects in the lower reaches of the drainage. Past settlement, logging, and wildfires have altered the vegetative community considerably from those that occupied these sites under a more natural disturbance regime. A fire in the early part of this century, perhaps 1919, burned up the drainage to the approximate location of Franklin Bridge. The existing stands are a mix of second growth Douglas-fir and ponderosa pine, with western larch on the moister sites. Some limited homesteading and fairly extensive logging in the lower reaches of the drainage removed most of the old-growth ponderosa pine that survived the early-century fires.

Mixed conifer stands are found on the north and east slopes and gentle terrain below approximately 6,800 feet elevation. The north aspect below Franklin Bridge is a mixed stand of western larch, Douglas-fir, and lodgepole pine. Some of these stands probably date from the 1919 fire, but these sites also have extensive stands of late seral old-growth western larch. The younger fire origin stands are single-storied, even-age stands. The late seral larch stands are large diameter, and old,



standing over multiple canopy layers of Douglas-fir and subalpine fir. Some stands that underburned in 1919 have understories of dense pole-size lodgepole pine and western larch. Stands adjacent to the creek near Franklin Bridge have populations of pacific yew. The stand of pacific yew immediately downstream from Franklin Bridge is the only population of tree form pacific yew known to exist on the Missoula Ranger District. All other known populations are the more common shrub form. Sites above the confluence of Rattlesnake Creek and Wrangle Creek are a mosaic of old-growth Englemann spruce stands and early seral communities dominated by lodgepole pine, western larch, Douglas-fir, along with subalpine fir and Englemann spruce. These early seral communities originated from extensive clear-cutting in the 1960's. The upper elevations, from 5,000 to 7,000 feet on southerly and westerly aspects are typically occupied by older lodgepole pine that is giving way to an understory of subalpine fir. Fuel loadings from dead and down lodgepole is relatively high in areas where this process is well along.

The uppermost portions of all the drainages that make up the Rattlesnake are typically above 6,500 feet elevation and on all aspects. Plant communities are typically dominated by multi-storied stands of Englemann spruce and subalpine fir. Some stands still have some whitebark pine but most are dead from a combination of mountain-pine-beetle-caused mortality in the 30's and more recent mortality caused by white pine blister rust. While the bark beetle mortality was a natural occurrence, the white pine blister rust mortality is caused by an introduced fungi that has had devastating effects on the white bark pine community. White bark pine has very little natural resistance to this infestation. Given its low natural resistance and poor opportunities for regeneration in the absence of fire, this species will likely disappear from the drainage over the next decade or so.

One sensitive plant, *Dryopteris cristata* (Crested shield-fern), is known to occur on the banks of upper Rattlesnake Creek. No threatened, endangered, or proposed plants are known to occur in Rattlesnake Creek or on its banks.

Two sensitive plants are known to occur in the vicinity of this creek:

Carex paupercula Michx. (Poor Sedge) grow in fens, peat bogs, and swampy woods at low elevations, often with other Carex species.

Phlox kelseyi Britt. v. *missoulensis* Cronq. (Missoula Phlox) is endemic to Montana. It is found on open, windswept slopes at a wide range of elevations.

Habitat for seven additional sensitive plants occurs in the area surrounding Rattlesnake Creek (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map also shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Upper Rattlesnake Creek proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

South Fork of Lolo Creek (includes: mainstem, and No Name Creek)

The scree sites in the South Fork Lolo Creek are located in the uppermost reaches of the drainage in a complex mosaic with open sparsely forested sites. These scree sites are dominant on the southeast aspects. They are typically forested with scattered subalpine fir, whitebark pine, and alpine larch at the highest elevations. Patches of rocky forested scree are interspersed with sparsely forested sites and alpine meadows and avalanche chutes.

Avalanche chutes are common in the upper portion of the drainage and along with open scree slopes are a dominant vegetative feature in the upper half of the South Fork.

Mixed conifer stands are confined to the lower portion of the drainage and generally to the steep east, west, and south aspects. Rock outcrops are common as these habitat types commonly occur on the stream breaklands. The vegetative mosaic is characterized by a mosaic of single-storied Douglas-fir and lodgepole, with scattered groves and individuals of old-growth ponderosa pine and some western larch. Stands are two to multi-storied where old-growth is present.



Mixed conifer stands of western larch, Douglas-fir and lodgepole pine make up the largest portion of the drainage. The lower side slopes of the drainage, the drainage bottom, and much of the moderate terrain in the upper reaches fall into these habitat types. A mosaic of single-storied western larch, lodgepole pine, Douglas-fir stands and multi-storied stands of the same species with understory layers of Douglas-fir, lodgepole pine, and subalpine fir characterize the lower half of the drainage. Overstory western larch and Douglas-fir that survived previous fires are common. The lowest portion of the drainage has a few streamside stands of western red cedar that range in structure from single-storied to multi-storied with the large old trees bearing evidence of past fires. A single-storied stand of lodgepole pine that is interspersed with clones of quaking aspen is the dominant community on Lantern Ridge. The upper half of the drainage is dominated by large old-growth Engelmann spruce in excess of 300 years. A mosaic of even-age spruce and subalpine fir make up the remaining stands. Even age stands of subalpine fir form concentric rings at the base of many of the avalanche chutes, with the youngest stands adjacent to the existing opening and progressively older stands downslope.

The upper elevations, from 5,000 to 7,000 feet on easterly and westerly aspects, are typically occupied by older lodgepole pine that is giving way to an understory of subalpine fir. Fuel loadings from dead and down lodgepole is relatively high in areas where this process is well along.

Sites at higher elevations include subalpine fir/wood rush in cold wet basins adjacent to lakes, with a mosaic of alpine larch-subalpine fir, whitebark pine, and scree habitat types on the steep slopes and ridgeline sites in the upper portion of the drainage. Plant communities in the cold basins are predominantly multi-storied spruce-fir stands. Alpine larch occurs as groves and stands on upland sites. Whitebark pine is common throughout this habitat group and is heavily infected with white pine blister rust. Considerable mortality has occurred. Given whitebark pine's low natural resistance to this disease and poor opportunities for its regeneration in the absence of fire, this species will likely disappear from the drainage over the next few decades.

No threatened, endangered, proposed or sensitive plants are known to occur in the South Fork of Lolo

Creek or on its banks. However, two sensitive plants are known to occur in the vicinity of this creek:

Allotropa virgata T. & G. (Candystick) survives only in tripartite symbiosis with a mycorrhizal fungus and mature conifers. This species occurs in mature lodgepole pine forests in Region 1; it could occur with other mature conifers as well.

Mertensia bella Piper (Oregon Bluebell) is found on wet, seepy, open to partially shaded slopes in the upper montane or lower subalpine zone.

Habitat for six additional sensitive plants occurs in the area surrounding the South Fork of Lolo Creek (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the South Fork Lolo Creek proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

Most of the vegetation in the broad glacial valley of Cache Creek originated after the 1910 fire, and the landscape is unusual in its lack of older, larger trees. The forested land is made up of young or pole-sized trees dating from the 1920's or 1930's. Except for several patches of pure lodgepole pine, most of the forest stands are mixed types with Douglas-fir, lodgepole pine, spruce, western larch and subalpine fir. The forest understory is composed primarily of alder, mountain maple, huckleberry, menziesia, and beargrass. In the upper elevations some mountain hemlock and whitebark pine also exist.

Avalanche chutes, as well as talus slopes and rock outcrops, are a common landscape feature. They comprise 30% of the landscape or more. In the upper third of the drainage, surface rock, avalanche chutes, and brushfields are the dominant type. The brushfields associated with the avalanche chutes are rich growing sites, often with seeps or wet



meadows at the bottom of the chute or at the upper end, below the steep cirque headwalls. The vegetation includes coneflower, elderberry, thimbleberry, cow parsnip, alder, menziesia, and beargrass. At lower elevations, brushfields also occur on hot, dry, south-facing slopes. 6

Along the main trail and other sites used by the public, several noxious weed species have become established in small patches. Spotted knapweed is most common, but also present are goatweed, houndstongue, and Canada thistle. Presently, the knapweed is confined to scattered spots adjacent to the trail in dry openings and in established campsites. The other weeds are only present in established campsites. In total, noxious weeds occupy less than twenty acres in the drainage, but they have the potential for much greater spread, especially in the lower-elevation, dry brushfields.

The vegetation directly along the stream courses is healthy and provides excellent armoring against heavy spring runoff. Willow, red osier dogwood, alder, and sedges are the primary species. Cache Creek is open and flat, with a gentle gradient along most of its distance. The upper three miles has a steep gradient as it climbs through the cirque basins to the State line. Sedge meadows and beaver ponds with some cottonwood occur frequently along Cache Creek. Irish Creek, Pebble Creek, and White Creek have much steeper gradients with dogwood, alder, and moss-covered rocks dominating.

No Forest or Montana threatened, endangered or sensitive plants are known to occur within ½ mile of this stream.

Several miles north in the Quartz Creek drainage, *Cypripedium fasciculatum* Kell. (Clustered Lady's Slipper) grows in dry-to-moist forests in the montane zone, especially with mature Douglas-fir and ponderosa pine forest with ninebark and/or snowberry in the shrub layer.

Six sensitive plant species occur east of the drainage near Lolo Hot Springs. All may have habitat near Cache Creek.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams.

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens, and around springs and seepage areas, often near thermal waters at lower elevations.

Gentianopsis simplex Iltis (Hiker's Gentian) is found in mountain bogs, wet meadows, and seepage areas, especially in warm thermal waters.

Mertensia bella Piper (Oregon Bluebell) is found on wet, seepy, open to partially shaded slopes in the upper montane or lower subalpine zone.

Orogenia fusiformis Wats. (Turkey Peas or Tapered-root Orogenia) is found in open places, along slopes and ridges, in woods and meadows, from valleys to the mid-montane zone.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps.

In addition to the six plants listed above, habitat for several sensitive plants is suspected in or near Cache Creek (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Cache Creek areas proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The vegetation and terrain of the West Fork of Fish Creek and its tributaries can be divided into three distinct zones. The lower zone includes the river corridor from Clearwater Crossing to a river elevation of roughly 4,000 feet. This is a broad, benchy stream corridor with silty soils, the result of floodplain activity over the years. The majority of the area is in a forest cover of lodgepole pine, spruce, and fir. The trees are pole-sized and young



sawtimber, mostly originating after the 1910 fire. There are pockets of pre-fire remnants throughout. There are also low elevation brushfields of willow, alder, and elderberry.

The middle elevation zone includes the river corridor in the 4,000 to 4,800 feet elevation range. The stream here is in a narrow valley, sometimes even canyon-like. The valley itself has a moderate gradient; however, the valley sideslopes are quite steep, 50-75%. The growing sites are mesic and, either because of chance or site characteristics, were mostly protected from the 1910 fires. Some of the upper sideslopes have burned repeatedly. The vegetation is characteristic of the mosaic that years of natural fire can create.

The mixed forest type includes western white pine, spruce, subalpine fir, Douglas-fir, lodgepole pine, western larch and cedar. The understory contains menziesia, huckleberry, beadlily, alder, maple, elderberry, and thimbleberry. There are small inclusions of aspen and willows and wet meadows. Much of the vegetation is mature sawtimber, ranging in age from 100-300 years old. Not only are the trees old, but often they are also unusually large, several feet in diameter. These are scattered among other mature stands and some stands established in the last 100 years. While some of the older larch and white pine are diseased and the crowns are breaking up, the old growth cedar occurs in thick clumps that create a unique aesthetic and biologic habitat. The understory is almost non-existent in these areas. In this middle zone, there is almost no part of the river corridor that is not entirely within a closed canopy of trees.



One of the giant old-growth cedars, West Fork Fish Creek

The upper zone contains alpine habitat types in avalanche chutes, alpine ridges, cirque headwalls and basins and very steep sideslopes. Rock outcrops are present in this zone, where they are totally absent from the other two. The forested stands occur in patches and contain subalpine fir, spruce, mountain hemlock, and whitebark pine. The understory includes grouse whortleberry, woodrush, and beargrass. The brushfields associated with the avalanche chutes are rich growing sites, often with seeps or wet meadows at the bottom of the chute or at the upper end, below the steep cirque headwalls. This vegetation includes coneflower, elderberry, thimbleberry, cow parsnip, alder, menziesia, and beargrass.

Noxious weeds are presently confined to a number of campsites in the West Fork of Fish Creek and Indian Creek, isolated trailside locations, and the trailhead at Clearwater Crossing. Primarily spotted knapweed is invading, but also houndstongue, Canada thistle, and other "barnyard" weeds such as fan weed. The vector for weed spread has been pack and saddle stock, and most of the weeds are only found in the stock holding areas of the campsites. In total, noxious weeds occupy less than twenty-five acres in the area but do have potential for spread. However, the majority of the habitat types found in the West Fork of Fish Creek are not considered high risk for the rapid spread of weeds.

The vegetation directly along the streamcourse is healthy and provides excellent armoring against heavy spring runoff. Willow, red osier dogwood, alder, sedges, and moss-covered rocks are the primary species. A few open sedge meadows and beaver ponds are present, but most of the river stretch is rocky, cascading over a moderate gradient, with plentiful down woody material and pools. No Region 1 sensitive plants are known to occur within $\frac{1}{2}$ mile of this stream.

Several miles north of the West Fork Fish Creek in the Quartz Creek drainage *Cypripedium fasciculatum* (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and ponderosa pine forest with ninebark and/or snowberry in the shrub layer.

Habitat for the several sensitive plants is suspected near the West Fork Fish Creek (see Appendix F).



The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the West Fork Fish Creek areas proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

Clark Fork River

Vegetation along the Clark Fork River is diverse, gradually changing from the mixed conifer forests which blanket the broad canyon slopes near Slowey and St. Regis to the sparse vegetation found on the steep, rocky faces of the narrow canyon near the confluence with the Flathead River. Broad, flat, or sloping benches along the river are covered with open ponderosa pine forests or grasslands. Vegetation in this canyon is strongly influenced by the landforms present.

Mixed conifer forests are found on north-facing slopes and floodplain terraces along most of the river. These are relatively densely forested areas with a mixture of species including Douglas-fir, ponderosa pine, western larch, and lodgepole pine. Pockets of western red cedar are found along streamcourses. Trees dominate the vegetation and are generally 60 to 90 feet tall, 8 to 15 inches in diameter, and 80 to 150 years old. Older larch, ponderosa pine, and Douglas-fir occur but are scarce and widely scattered. Where not excluded by the dense tree canopy, the understory vegetation is dominated by moderately dense medium size shrubs (2 to 5 feet tall); primarily ninebark, oceanspray, serviceberry, and wild rose (*Rosa gymnocarpa*).

Ponderosa pine forests are found on south-facing floodplain terraces, benches, and slopes. These forests generally have an open appearance. Vision under the forest canopy is not restricted by shrubs or dense trees. Ponderosa pine is the dominant species, but up to one-third of the trees may be Douglas-fir; these sites are too dry for other conifer species to grow. Trees dominate the vegetation, are generally 50 to 80 feet tall, 8 to 20 inches in diameter, and 80 to 120 years of age. Older, yellow-bark ponderosa pine occur, but are rare and widely scattered. Understory vegetation is characterized by low shrubs (1 to 3 feet tall) and grasses. Spotted knapweed, a short-lived perennial,

has become the dominant ground cover on most of these sites, displacing native vegetation. The most common native shrubs are snowberry and serviceberry; native grasses include bluebunch wheatgrass, elk sedge, and pinegrass.

Terrace grasslands occur on the dry alluvial slopes and floodplain terraces along the river, where the site is too harsh for trees to establish (because of lack of water or repeated flooding) or where past human activity has removed the tree cover and competing vegetation now excludes it (i.e., along roads and railroad rights-of-way). The dominant vegetation of these terraces is grasses and low shrubs. Spotted knapweed has invaded and completely dominates most of these sites. Scattered ponderosa pine trees occur as individuals and small groups.

Rocky faces occur on very steep, rocky slopes on both sides of the river, primarily in the lower 10 miles (between Fourteenmile bridge and Highway 200) where the canyon narrows. Rock outcrops and talus slopes are the dominant landscape feature, but shrubs, grasses, and some trees reside on the rocky faces where small bits of soil are found. Tree cover is very variable, from less than 5 percent on the most open slopes to dense pockets of trees in protected ravines. Ponderosa pine and Douglas-fir make up the composition of tree species; pine is dominant on south and west-facing slopes, and Douglas-fir on north and east-facing slopes. Mixes of the species are common, especially where mature, yellow-barked pine are found with young Douglas-fir growing beneath them. Trees are of all ages and sizes, from seedlings to mature trees, 70 feet tall and over 20 inches in diameter. Serviceberry is the major shrub species and is as much a feature of these areas as the trees in some places. Other shrubs include mock orange, oceanspray, and chokecherry. Bluebunch wheatgrass is the major grass species.

Cottonwood trees, willows, and water birch characterize the vegetation type which is found on floodplain terraces and along major streamcourses flowing into the river. Most of this type is found in the lower 5 miles of the river above its confluence with the Flathead River.

Agricultural development occurs where cultivated lands or residential or commercial development form the dominant land feature. Most of this is in



the lower 3 miles of the river above the confluence with the Flathead. Cultivated lands consist primarily of hay crops.

One sensitive plant, *Cypripedium fasciculatum* (Clustered Lady's Slipper) occurs within ½ mile of the Clark Fork river along the area designated for consideration as Wild and Scenic. This site is near Falls Creek west of Cascade Falls. It was discovered during sensitive plant surveys of the Muchwater Quarry project (Plains Ranger District).

Several other threatened, endangered, or sensitive plant species could occur in wetlands associated with the proposed Wild and Scenic portions of the Clark Fork River (see Appendix F).

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Clark Fork segments proposed for Wild and Scenic designation.

Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

■ 2.17 Wildlife

The eight rivers display a wide variety of wildlife habitats and species (see Appendix G). Specific wildlife resources that were found to occur in one or more systems include: 1) adjacent critical deer and elk winter range; 2) nationally significant populations of bighorn sheep; 3) high concentrations of moose; 4) unique wetlands and waterfowl concentration areas; 5) bald eagle nesting and wintering habitat; 6) osprey and great blue heron nesting areas; 7) sensitive species populations; 8) peregrine falcon nesting cliffs; 9) rare or unique plant communities; 10) mountain goat habitat; 11) essential grizzly bear habitat; and 12) high value elk summer range (see Table 2.17.1).

Table 2.17.1 Wildlife Species

	WR	SHE	MOO	WET	BE	GBH	SEN	FAL	PLT	GO	GRI	ESR
Clearwater				X	X	X	X				X	
Morrell							X			X	X	X
N Fk Blackfoot					X		X				X	X
Rattlesnake	X						X			X	X	
S Fk Lolo							X		X	X	X	
Cache	X		X	X			X		X	X	X	X
W Fk Fish	X		X				X		X	X	X	X
Clark Fork	X	X			X	X	X	X	X			

WR winter range

SHE bighorn sheep range

MOO moose range

WET wetlands

BE bald eagles

GBH great blue heron rookeries/osprey nesting

SEN sensitive animals

FAL peregrine falcon nesting habitat

PLT unique plant communities

GO mountain goats

GRI grizzly recovery areas

ESR high value elk summer range

□ Clearwater River

The Clearwater is a very rich river system from a wildlife standpoint and definitely unusual in terms of habitat. From Rainy Lake to Seeley Lake, the river lies in an enormous glacially-scoured valley. The river connects a series of glacially-scoured lakes, interspersed with marshes, which are the result of eutrophying lakes. The gradient is very low and the river between the lakes is extremely circuitous. Oxbow lakes and sloughs are abundant and actually comprise more total surface area of

water than the channel. Vegetation is composed of dense stands of willow and red osier dogwood. Conifers occur as small islands that colonize small drier hummocks. However, such patches of trees periodically get flooded and/or felled by beaver and are therefore somewhat transitory. Beaver are the most dynamic influence on the lower river. Their dams cause this low-gradient river to change course almost continuously. These course changes result in the rich mosaic of channels, oxbow lakes, sloughs, and willow patches that provide most of the wildlife habitat richness in the area. In addition to large



populations of beaver, the system supports large densities of waterfowl and songbirds. Some of the more common species include the sensitive common loon, yellow-headed blackbirds, hooded mergansers, common yellowthroats, bitterns, American redstarts, harriers, red-necked grebes, long-billed marsh wrens, boreal merlins, and northern water thrushes. Numerous large mammals also inhabit this area, including whitetailed deer, lions, and moose. River otters are present in the system.

The Clearwater River above Rainy Lake is much more typical of streams on the Lolo National Forest. It is a fairly steeply incised stream with a narrow floodplain. Riparian vegetation is composed primarily of spruce and subalpine fir overlying a dense shrub layer of sitka alder and red osier dogwood. A large wildfire burned most of the upper portion of the drainage in the 1880's. Consequently, the vegetation adjacent to the floodplain is composed of relatively dense, even-aged stands of larch and lodgepole pine. Beavers are present in the system but they have much less influence on this stretch of the stream because of the geologically confined nature of the stream and the steeper gradient. Wildlife species typical in such young forests include whitetailed deer, lions, sharpshinned hawks, and pine martens.

The upper portion of the Clearwater is within essential grizzly bear habitat. The headwaters of the Clearwater combined with the adjacent headwaters of the Swan River serve as a linkage zone for bears that migrate between the Bob Marshall population and the Mission subpopulation.

The lower portion of the Clearwater River has extensive stands of mature black cottonwood. This supports nesting rookeries of great blue herons. Mature cottonwoods also support other uncommon species, such as wood ducks, pileated woodpeckers, and yellow-eyed vireos.

Morrell Creek

Morrell Creek has two major landforms: the large cirque basin known as Grizzly Basin above Morrell Falls, and the U-shaped glaciated valley below Morrell Falls. Grizzly Basin is an alpine habitat. Conifer communities are limited to whitebark pine and subalpine fir with a narrow zone of old-growth

spruce along the creek. Grasses, forbs, and shrubs are typical of those found at or near treeline and include heather, grouse whortleberry, potentilla, and wood rush. Mountain goats and hoary marmots are present in the area. Clarke's nutcrackers are seasonally abundant. There is a significant elk population in the area in late summer and fall. Because of Grizzly Basin's remoteness, it provides a fairly critical area of elk security during the early portion of the hunting season.

Below the falls, Morrell Creek follows a low elevation glacial valley. Since the substrate is composed of glacial debris, the stream goes underground through much of the reach below the falls, although there is enough surface moisture to support a healthy riparian zone. Vegetation includes dense stands of lodgepole pine, spruce/fir, and larch/Douglas-fir. Logging has been heavy along the lower half of the drainage, and approximately 40% of the $\frac{1}{2}$ -mile corridor is composed of dense cutover stands. Wildlife species present are typical of spruce/fir forests and include such animals as pine marten, whitetailed deer, goshawks, and pileated woodpeckers.

Morrell Creek in its entirety provides a critical fall migration route for elk that summer in the upper Clearwater/Morrell Creek area and winter on the Blackfoot/Clearwater Wildlife Management Area. Most of Morrell Creek is within occupied grizzly bear habitat. The most productive habitats are within the avalanche chutes in the upper portion of the drainage.

The falls provide excellent habitat for Coeur d'Alene salamanders. The mile of stream immediately above the upper falls is a steep pool/drop environment that may also support salamanders. In addition, this stretch supports tailed frogs and a high density of dippers. Morrell Lake has a small beaver colony.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

Wildlife habitat within this huge drainage can be characterized as a mosaic of glacially-scoured sideslopes, narrow steep ridgelines, and high elevation valleys. The headwaters of the drainage



include some alpine communities at or above treeline.

As a result of the 1988 wildfire, there are vast tracts of standing snags overlying lush grass/forb/shrub communities. The elevation in the drainage varies from 4,600 to over 9,000 feet.

A nesting pair of bald eagles was located just below the Forest boundary in April 1993. Eagle habitat above the Forest boundary is probably marginal but may potentially support another pair of eagles.

The lower river below the North Fork Cabin supports the only known nesting pair of harlequin ducks on the Lolo. This portion of the drainage is good harlequin duck nesting habitat. The trail is high above the creek, hence fishing access is limited. Also, the stream receives little or no floating traffic. Consequently, there is little or no human disturbance. Additionally, this rushing stream contains an adequate amount of woody debris, which is considered another desirable attribute of harlequin nesting habitat.

The North Fork Falls provides suitable habitat for the sensitive Coeur d'Alene salamander. The sensitive lynx and fisher may also occur within this drainage. Fishers generally occupy low elevation lands with some portion of those lands in old growth community types. Lynx occur at higher elevations in all community types.

The entire drainage is within occupied grizzly bear habitat. Scapegoat Mountain and Triple Divide at the head of the drainage is a historic concentration area for grizzly bears in late summer. Bears forage in the 8,000-9,000 foot elevation range on slopes above treeline for roots of biscuitroot (*Lomatium spp.*). In such areas, entire acres of surface vegetation are ripped up to uncover the biscuitroots.

Mountain goats are found on some of the higher-elevation cliffs. High densities of elk are present in the mid- to high-elevation valleys during mid-summer to late fall. Hunting pressure, primarily from horse-mounted guided parties, is intense in the area.

The 1988 burn has provided superb habitat for species requiring early seral communities or snags. Large numbers of the sensitive black-backed

woodpecker were present in the area in 1989 through 1991. The three-toed woodpecker, a close relative of the black-backed, was also present in high numbers. White-crowned sparrows, a species that requires high elevation meadows, and olive-sided flycatchers, a species that hunts insects from the tops of small-diameter dead trees, were also present in the area after the burn. Elk populations seem to have responded positively to the burn, presumably from the increase in grass and forb forage productivity.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, Lake Creek, Spring Gulch, High Falls Creek, and East Fork Rattlesnake)

The Rattlesnake Creek drainage has three major geologic zones with a significant difference in habitats. The lower stream below Franklin Bridge is characterized by a low-gradient stream, a meandering channel with a wide floodplain and well-developed riparian zone, and moderately steep adjacent sideslopes. The floodplain has extensive stands of old-growth black cottonwood and other riparian hardwoods. This community provides habitat for various songbirds including yellow-eyed vireos and veeries. Beaver are very abundant in this portion of the drainage. Their dams support a rich pond/shrub community which in turn provides habitat for American redstarts, song sparrows, yellowthroats, and muskrats. Dippers are common in the swifter portions of the stream. Tailed frogs are present. Adjacent sideslopes provide wintering habitat for mule deer and whitetailed deer. A herd of about 120 elk winter on the extreme south end of the study area in Sawmill Gulch. Old-growth ponderosa pine is limited to a few scattered individual trees. The flammulated owl, an obligate of old growth ponderosa pine, is present in the area. There is no information on whether or not it nests in the area.

The middle reach, from Franklin Bridge to the wilderness boundary, is characterized by a moderate-gradient stream, narrow riparian zone, and very steep adjacent cliffs and sideslopes. Mountain goats were reintroduced to these cliffs in the early 1980's. Scattered pockets of old-growth larch occur along this stretch. Pileated woodpeckers nest in these stands. Goshawks are also present in the area. Beaver colonies are present but at much lower densities than the lower stretch. The sensitive



boreal owl probably occurs on adjacent sideslopes above 6,000 feet elevation.

The three upper forks are all within glacial valley trains. These drainages are very wet. Logging in the early 1960's has resulted in extensive stands of young subalpine fir. This portion of the drainage is generally too high for beaver. Elk summer in these areas in low densities. These upper forks of Rattlesnake Creek are used by elk during migration from the lower Rattlesnake Creek winter range to summer range in the Clearwater drainage to the north. Mule deer and black bear are common. There is suitable habitat for the sensitive lynx. Most forested communities are composed of young spruce and fir. Whitebark pine is present in the headwaters of all three forks. Whitebark pine communities have suffered severe mortality from white pine blister rust. Habitat for the sensitive black-backed woodpecker is present, and one was sighted in the area in 1992.

The drainage from Franklin Bridge to the headwaters is part of the North Continental Divide Grizzly Bear Ecosystem (NCDGBE). The NCDGBE is occupied with a total grizzly bear population of between 550 and 700 bears. The Rattlesnake drainage has the lowest overall density of about one bear per 80 square miles. Grizzly bears are sighted in the area about once every two or three years.

South Fork Lolo Creek (includes: mainstem and No Name Creek)

Wildlife habitats and representative species of the South Fork Lolo Creek are sharply divided between the steep canyon below the wilderness boundary and the highly glaciated cirque basins, trough walls, and valley trains above the wilderness boundary.

The canyon below the wilderness boundary can be characterized as having extremely steep, forested sideslopes, including cliffs and areas of talus. The stream has a moderate gradient with a substrate composed of car-sized boulders. There is no appreciable riparian zone or floodplain. The canyon sideslopes rise immediately once you leave the stream surface. Vegetation is primarily old-growth ponderosa pine with an understory of Douglas-fir or lodgepole. This habitat has become rare on the Lolo because of logging and fire suppression. Wildlife species include pileated woodpeckers, goshawks,

and other old-growth-dependent species. Pikas are abundant in the rocky areas. Dippers are common along the stream. Tailed frogs are present in the system and are well adapted to this rushing stream environment.

The glaciated habitats above the wilderness boundary include much more gentle topography and much more surface water. Hence, overall wildlife populations are higher than those in the lower portion of the drainage. Typical vegetation includes pockets of old-growth spruce/fir, extensive stands of young spruce/fir/lodgepole, and numerous wet meadows, bogs, talus slopes, alder glades, and grass/forb communities at or slightly below treeline. The sensitive boreal owl is present in the old-growth spruce/fir communities. Elk are present during the late summer and fall, although not at particularly high densities. Moose are occasionally present. Goats are present in the extreme headwaters in low densities. The drainage is within the Bitterroot Grizzly Bear Ecosystem (BGBE). Although the BGBE is targeted for recovery by the Fish and Wildlife Service, grizzly bears are not considered present in the ecosystem, at least in terms of having an identifiable, reproducing population. The sensitive lynx may occur in the area, although there are no current records or observations. Habitat for the sensitive black-backed woodpecker is present in patches of mountain pine beetle-killed lodgepole pine.

Cache Creek (includes: mainstem, White Creek, Irish Creek, and Pebble Creek)

Cache Creek is parallel to the West Fork of Fish Creek and is virtually identical in terms of the overall wildlife resource. A few notable exceptions include: 1) Mountain goat populations are probably slightly higher in Cache Creek than the West Fork, particularly in Pebble Creek; 2) elk populations are probably slightly lower, particularly in White Creek and on the south side of Cache Creek; and 3) the lower, south-facing aspect of Cache has a few pockets of old-growth ponderosa pine and western larch that are generally lacking in the West Fork. The Cache Creek drainage was more impacted by turn of the century wildfires which removed much of the old-growth cedar associated with the riparian areas. Overall, timber stands tend to be younger age classes, with lodgepole pine being a major component of the area.



The Cache Creek drainage was severely burned in 1910 and lies in a large glacially-scoured valley. The stream connects a series of glacially-scoured side drainages, and is interspersed with marshes and small meadows which are the result of eutrophying lakes. The stream gradient is low and the drainage provides many opportunities for beaver pond formation, which are abundant and provide important habitat diversity to the drainage. Beaver are the most dynamic influence in the lower drainage. Their dams perpetuate the meadows and marshes which result in the rich mosaic of channels, sloughs, and riparian shrub patches that provide much of the wildlife habitat richness in the area. In addition to a healthy population of beaver, the system supports a diverse population of waterfowl and riparian songbirds.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The West Fork, including Cedar Log and Indian Creeks, also burned in 1910. The resultant vegetative communities include extensive tracts of young lodgepole pine and subalpine fir. Exceptions include steep, south-facing aspects which still remain in open, nonforested shrub communities and high-elevation cirque basins which remain in lush grass/forb or seedling subalpine fir communities. Old-growth communities are limited to a few residual patches on the east end of the drainage.

The streams interconnect a series of glacially-scoured lakes interspersed with small meadows and riparian corridors which serve to provide travelways for wildlife movement throughout the system.

The West Fork and its tributaries are moderately steep pool/drop streams with large rubble and boulders. At mid-elevations, where floodplains are relatively wide and fires had less impacts, stands of old-growth western red cedar are present. This community type is uncommon on the Lolo. Since old growth is generally scarce in the drainage, these stands of old growth provide about the only nesting opportunities for pileated woodpeckers. While pileated woodpeckers are generally dependent on larch, ponderosa pine, or cottonwood, they can apparently also utilize red cedar.

A few deer and elk winter on some of the low elevation south-facing slopes. Most of the area's ungulate populations, however, migrate to the Burdette Creek winter range, 12 miles to the east.

The West Fork supports one of the highest densities of moose on the Lolo. Moose can be found anywhere in the drainage. Virtually all of the high-elevation lakes and potholes, including Cedar Log Lakes and Siamese Lakes, have moose populations during the summer and fall. The floodplains of Cedar Log and Indian Creeks also provide excellent moose habitat, as does the area at the junction of the North and West Forks of Fish Creek.

The sensitive lynx and fisher may occur within the drainage. Fisher generally occupy mid- to low-elevation lands with some portion of those lands in old-growth community types. Lynx occur at mid-to-upper elevations in all community types but are drawn to habitats occupied by snowshoe hare. The sensitive harlequin duck probably occurred in the drainage in historic periods. Unfortunately, the proximity of the trail to all reaches of the drainage and the fishable trout populations encourage a fairly moderate amount of instream human disturbance. This makes the drainage undesirable to harlequin ducks. The sensitive black-backed woodpecker occurs in the drainage, particularly in lodgepole pine stands where there are isolated outbreaks of mountain pine beetles. Other sensitive species that may occur in the drainage include the boreal owl, western big-eared bat, and northern bog lemming.

Beaver are common in all parts of the drainage, although not as abundant as in the mainstem of Fish Creek, downstream where the gradient is lower. Other common animals associated with the streams include kingfishers, mink, and dippers. River otters have been sighted in both the mainstem downstream and in the high lakes at the headwaters. Other species of special interest include the uncommon tailed frog, spotted frog, pika, wolverine, marten, great gray owl, and cougar.

The most well-known of the drainage's wildlife attributes is the high summer elk density. The area supports a significant population of elk, and it is a popular pack-in hunting area; hunting pressure is intense. The vegetative mosaic resulting from the



1910 burn has contributed much to the high level of habitat productivity in the area.

Mountain goats are present in the headwaters where cliffs and rock outcrops provide suitable habitats. Admiral Peak at the extreme headwaters of Indian Creek has a small population of goats.

The West Fork of Fish Creek is within the Bitterroot Grizzly Bear Ecosystem (BGBE). Although identified by the USFWS for eventual grizzly bear recovery, the ecosystem is currently unoccupied.

Since late 1992, a lone male radio-collared wolf has been periodically living in the West Fork. The high ungulate density makes the area attractive to wolves, and it's certainly possible, if not likely, that the area could eventually be occupied by a pack.

Clark Fork River

The two portions of the lower Clark Fork River that are under consideration for classification run through relatively narrow, bedrock-controlled canyons. Riparian zones are correspondingly narrow. Flood-dependent vegetation such as black cottonwood is confined to small isolated patches. Riprap from highway and railroad construction has further limited the sinuosity of the drainage. Vegetation on adjacent sideslopes is limited to open park-like old growth ponderosa pine/bunchgrass communities on south-facing aspects, and dense, young-to-mature stands of Douglas-fir/larch on north-facing aspects. Open ponderosa pine communities provide excellent winter range for elk, mule deer, and whitetailed deer. On the northwest side of the river from approximately Sevenmile Creek downstream to the confluence of the Flathead, cliffs and talus slopes dominate the landscape. Bighorn sheep are abundant in this area. Sheep were reintroduced into the area in 1979 and now number approximately 120. These cliffs provide marginal habitat for the peregrine falcon, although no nesting peregrine falcons are currently present. The sensitive flammulated owl is likely present in open ponderosa pine communities.

North-facing dense stands of Douglas-fir/larch support summering populations of mule deer, whitetailed deer, elk, and black bear. Bird species present include species typically found in dense forests such as pileated woodpeckers, goshawks, Cooper's hawks, and yellow-rumped warblers. The splash zone immediately below Cascade Falls supports a population of Coeur d' Alene salamanders. This sensitive species is in the genus *Plethodon* which contains lungless salamanders. Coeur d'Alene salamanders can only breath through their skin. They occur throughout the northern Rockies in isolated waterfall splash zones, where the combination of mist and high insect populations facilitates both respiration and feeding. It's assumed that such populations are totally dysjunct.

Even though the river has a very narrow riparian zone, it supports a high number of riparian-dependent species because of the large size of the river. Dippers, ospreys, common mergansers, and kingfishers are common. A large number of bald eagles winter along the river from November through April. The area contains suitable bald eagle nesting habitat. There are no current active nests; however, the rapid recovery of nesting eagles elsewhere suggests a high likelihood that the area will be occupied by nesting birds within a decade. Nesting ospreys are common. Golden eagles are present yearlong. Roadkill deer provide an abundant food source for both golden and bald eagles, although such situations also create a high risk of eagles getting hit by vehicles. Great blue herons are common along the river, although they are not abundant presumably because of the lack of mature cottonwood stands for nesting habitat. The sensitive harlequin duck is occasionally sighted in the area during migration. Habitat for the uncommon tailed frog is present in some of the larger tributaries. The introduced bullfrog occurs throughout this reach in oxbow lakes and sloughs. This species generally has a severe impact on populations of native frogs where introduced. Beavers are present but not common because of the lack of stream sinuosity and hardwood communities. Other riparian-dependent mammals present include raccoon, muskrat, mink, and otter.





North Fork Blackfoot Falls, from east side of creek



3

Eligibility

Study

■ 3.0 Introduction

This chapter provides a summary of the results of the eligibility and classification analysis. Sections 3.1, 3.2, and 3.3 of this chapter contain a description of the eligibility study including goals and definitions, analysis methods, and outstanding resources identified for each river. Sections 3.4 and 3.5 provide a summary of the classification analysis including definitions and classifications for each river determined to be eligible.

".. existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures... shall not automatically bar its consideration for inclusion: provided, that this shall not construe to authorize, or encourage future construction of such structures within components of the national wild and scenic river system "

■ 3.1 Eligibility Study

The Wild and Scenic Rivers Eligibility Study for the Lolo National Forest was completed in August 1991. The goal of the eligibility study was to evaluate each river within or crossing the proclaimed boundary of the Lolo National Forest to verify whether it met the eligibility criteria specified in the Wild and Scenic Rivers Act (WSRA). Section 1(b) and 2(b) of the Act specify that in order to be eligible, a river must have two characteristics: it must be free-flowing and it must possess one or more "outstandingly remarkable" resource values. The WSRA (Section 16c) defines free flowing as:

The Act specifies that resources to be considered as "outstandingly remarkable" should include, but are not limited to: scenery, recreation, geology, fish and wildlife, historic and cultural sites or uses, and other similar values that may include the ecology of the river and its corridor.

■ 3.2 Outstanding Resource Analysis Methods

The initial evaluation process to determine eligibility for rivers on the Lolo National Forest consisted of three steps:



- 1) Identify which rivers on the Lolo National Forest are eligible for protection under the 1968 Wild and Scenic River Act, as amended;
- 2) assign each eligible river a potential classification of wild, scenic, recreational or combination thereof, based on its existing condition; and
- 3) develop wild, scenic and recreational river management standards to protect eligible river segments until a river suitability study is completed and/or they are added to the national wild and scenic rivers system.

Utilizing the two eligibility criteria (free flowing, outstandingly remarkable resource features), the rivers and streams on or crossing the proclaimed Forest Boundary were evaluated. This evaluation included two phases. The first phase consisted of the review of the 1986 Pacific Northwest Rivers Study, begun in 1985 which was designed to identify river-related natural resource values. The Pacific Northwest Rivers Study, includes the Montana Rivers Study which was coordinated by the Montana Department of Fish, Wildlife, and Parks with participation from the Forest Service, Bureau of Land Management, the U.S. Fish and Wildlife Service, and the Montana Department of Natural Resources and Conservation. The Montana Rivers Study assessed Montana's rivers and streams for their fish and wildlife values and their recreational, natural, and cultural features.

The next phase was a more in-depth analysis of each river to document outstandingly remarkable resources and to determine appropriate river segments for classification. Since the WSRA did not define "outstandingly remarkable" resource values, criteria were developed to define resource values for the Lolo National Forest eligibility assessment. These criteria were developed after an examination of the standards and criteria established in the Montana Rivers Study and included the following:

1

Scenic:



1. Landforms, vegetation patterns, rock forms, and water features combine to create unique, highly memorable, and harmonious visual settings;
2. views along and away from the river or the surrounding scenery are highly diverse; providing river users with scenery that is spectacular and/or not common to other rivers in the region; and
3. human alterations either add favorably to or do not intrude on the river users visual quality.

Recreation:

1. Exceptionally fine, popular, or well-known recreational settings that nearly everyone would agree are "Blue Ribbon" resources;
2. recreational settings that are unique within a region or provide very high-quality recreational opportunities; and
3. river segments having many attributes (natural or historical features) that are highly valued within the region and recreational users are willing to travel long distances or endure difficult access to use these resources.

Geologic:

1. An unusual example of geologic feature, process or phenomena that is unique to the geographic area; and
2. the feature, process or phenomena occurrence being integrally tied to the immediate river environment.

Fishery:

1. River providing exceptionally high quality habitat for sportfish and are recognized as "Blue Ribbon" or fisheries of a similar high caliber; and
2. the feature, process, or phenomenon occurrence being integrally tied to the immediate river environment.

Wildlife:

1. Rivers that provide critical habitat for unique species as indicated by the Forest Plan's indicator species list, federally-listed threatened and endangered species, or the Forest Service's Region One sensitive species list;
2. the species habitat being confined year-round to the riparian corridor or seventy-five percent of the seasonal habitat confined to the riparian corridor; and
3. rivers and adjacent habitat that provide outstanding opportunities for wildlife viewing.

Cultural:

1. Sites included on the National Register of Historic Places (NRHP) or has been determined eligible for the Register, or a site is, in the opinion of the Forest, NRHP eligible, the site has a significant relationship to the river, and the site is regionally or nationally prominent.

Natural:

1. Populations of plant species that are threatened, endangered or sensitive.

2. natural features designated or proposed as national monuments or landmarks; or
3. the collective influence of several important natural values, such as scenery, solitude, vegetation patterns, fire history, geology, avalanches and the diversity of wildlife, that make an outstandingly remarkable value; the synergistic effect of two or more values.

To determine eligibility and potential classification, the rivers were divided into segments considering such factors as:

Obvious changes in land status or ownership;

Changes in river character such as the presence of dams;

Significant changes in development; or,

the presence of important resource values.

Each segment, considered as a whole, will conform to one of the W&SR classifications. In segmenting the rivers the study team took into account the management strategies necessary to administer the entire river and to avoid excessive segmentation.

Applying the "outstandingly remarkable" resource criteria to free-flowing rivers on the Lolo, nine rivers were verified as eligible for further study under the Wild and Scenic Rivers Act:

Clearwater River	Rattlesnake Creek
Morrell Creek	South Fork Lolo Creek
Clark Fork River	North Fork Blackfoot River
Cache Creek	West Fork Fish Creek
Rock Creek	

Rock Creek is not included in this Suitability Study because it will be analyzed alone in cooperation with the Deerlodge National Forest.



■ 3.3 Outstanding Resources on the Eight Study Rivers

The eight study rivers contain an array of resource features which are unique to the Clark Fork River Basin. Several of these features specifically stand out and fulfill the seven "outstandingly remarkable" characteristics described in Section 3.2. Although the rivers individually do not contain all seven criteria, collectively they present the full range of outstandingly remarkable values identified by the Lolo National Forest Eligibility Study (scenery, recreation, geology, fisheries, wildlife, cultural and natural features).

The extensive fieldwork completed during the suitability analysis identified several additional outstandingly remarkable values not originally highlighted on the eight rivers. These features are included within the following paragraphs.

Clearwater River

The Clearwater River possesses several outstandingly remarkable features including its spectacular scenery, unlimited wildlife populations, pleasant recreational experiences, and geological significance.

Scenery along the river provides a unique range of foreground and distant vistas. The most significant views are located within the lower "Chain of Lakes" stretch, where the river meanders within the bottom of a wide U-shaped glacial valley between the Mission and Swan Mountain Ranges. The foreground scenery along the river includes images of willows and cottonwoods which overhang the banks of the river, of braided channels which lure the exploring canoeist into untravelled routes, of water flowing over small beaver dams, and undisturbed banks. These views are enhanced by occasional glimpses of snowcapped peaks and forested mountainsides.

The river connects the regionally significant (recreation) "chain of lakes," providing excellent opportunities for wildlife viewing and water-related recreation. The lower three miles of the river serves as a popular canoe trail. There are two developed and numerous undeveloped camping and picnicking sites along the river. The scenery is

outstanding as you travel down an enormous U-shaped glacier valley with views of the nearby Swan and Mission mountain ranges. The riparian and wetland scenery is relatively unusual for western Montana.

The Clearwater River is one of the few places in western Montana to view loons. The threatened bald eagle also nests within sight of the river. The Canoe Trail provides a unique river-based opportunity for bird watching.

The river corridor contains two geologic/geomorphic features that, in the context of the Wild and Scenic Rivers Act, could be considered outstandingly remarkable. The first is a deep and narrow, incised gorge to the immediate northeast of Rainy Lake, and the other is the "chain-of-lakes," which includes Rainy Lake, Lake Inez, Lake Alva, and Seeley Lake. While deep, U-shaped glacial valleys are common in the northern Rocky Mountains, few contain an assemblage of connected lakes as does this portion of the Swan Valley.

Morrell Creek

Morrell Creek is best characterized by its spectacular scenery, recreational opportunities, and natural features.

The most spectacular scenery of Morrell Creek is at the location of the two falls, which cascade over drops of 30 feet and greater. Both falls offer an incredible audible and visual opportunity. Beyond the falls the views open up to include a panorama of high-elevation meadows and mountain peaks. The variation of open and closed space, from the bottom of the drainage, to the falls, and further up the drainage, pulls the hiker on with anticipation.

Morrell Falls is the largest public destination site on the Seeley Lake Ranger District. The drainage provides year-round recreational opportunities, including hiking, horseback riding, mountain biking, ice and rock climbing, and general viewing. Because the walk into the falls is relatively short and flat, all ages can enjoy the view. The upper segment, which falls within the Bob Marshall Wilderness, provides more challenging opportunities to the hardy explorer.

Collectively, the creek, geology, wildlife habitat, and landform provide natural features which can be



considered outstandingly remarkable. The unique geology of Morrell Creek drainage creates a fairly secluded valley which provides excellent habitat for the endangered grizzly bear and for the migration of elk between summer and winter ranges. The most productive habitats are within the avalanche chutes in the upper portion of the drainage. The valley above the falls is known as "Grizzly Basin." The falls and splash zone of the creek provide excellent habitat for the sensitive Coeur d'Alene Salamander, tailed frogs, and dippers. Morrell Lake also has a small beaver colony. The geologic isolation of the creek above Morrell Falls also has potential significance as a genetic reserve for the sensitive bull trout and westslope cutthroat trout.

The U-shaped glacial valleys, aretes or knife-edged ridges, glacial moraines, and drift and the elevational break between the hanging valley of the upper and lower segments of Morrell Creek add to the spectacular visual nature of this drainage.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, and Dobrota Creek)

The North Fork Blackfoot River and its tributaries possess several outstandingly remarkable features, which add to the wilderness setting that these rivers already exist within. Along with their natural features, these drainages contain unique scenery, recreation opportunities, fisheries, wildlife habitat, and cultural and historical significance.

Visually, the North Fork of the Blackfoot River is entirely unique from the surrounding area because of the massive fire scars left from the 1988 Canyon Creek Fire. This large fire left a landscape dominated by black trees with contrasting white trunks caused by bark peeling from the trees. Because of the lost canopy cover, the variety of landforms, including massive talus slopes, mud slides, rock formations, benches, ravines, and high mountain peaks, stand out in detail. The North Fork Falls provide a sweeping view of water dropping through a narrow rock gorge and over a precipice of 80 feet.

The North Fork is a backcountry recreation mecca. Access to the Bob Marshall, a nationally renowned wilderness area, adds to the recreation attraction. Backcountry use begins early in the drainage, as soon as the snow melts and continues until fall

when it snows again. General recreation trips occur throughout the summer and give way to photography and big game hunting trips in the fall. Because of the extensive distances, most trips into the drainage are extended overnight trips and use pack stock to carry supplies.

Both fluvial and resident populations of westslope cutthroat and bull trout exist in the North Fork Blackfoot River and can be considered an outstandingly remarkable resource. Variations in habitat provide significant spawning habitat for these sensitive species. As a result of the 1988 fire, the fisheries habitat is expected to be very dynamic in the near future. The loss of overhead canopy and understory vegetation increased runoff and changed flow patterns, resulting in high erosion and several areas of mass wasting. The abundance of standing dead trees in riparian zones will result in high amounts of large woody debris throughout the system when these trees begin to fall down. The North Fork of the Blackfoot River is an outstanding example of a regional bull trout spawning stream and is the last big stronghold for bull trout in the Blackfoot drainage.

In addition to large elk herds which graze within the openings of the drainages, the majestic grizzly bear tends to congregate in the upper drainage in the fall. The presence of these free-roaming creatures only adds to the naturalness and wildness of the North Fork and its tributaries. The lower reaches of the mainstem of the North Fork provide habitat for two of the only known harlequin ducks which are nesting on the Lolo National Forest.

The North Fork Cabin and the Carmichael Cabin are eligible for the National Register of Historic places. The prehistoric sites in the higher elevations date back to 6,000 B.C. and coincide with the partial abandonment of the plains during a prolonged drought.

The 1988 Canyon Creek fire created excellent opportunities for scientific study of fire effects and plant and animal response. Because of the wilderness setting, this may be one of the only areas in the northwest which will provide the ability to study the effects of fire on an undisturbed drainage.

Rattlesnake Creek (includes: mainstem, Wrangle Creek, and Lake Creek)



Rattlesnake Creek is a recreationist's paradise. In addition to its accessibility as a recreation area, its other outstandingly remarkable features, including its fisheries habitat and populations, natural features, and historical significance, attract visitors from afar.

The Rattlesnake drainage has earned its nickname as the "backyard playground of Missoula." This drainage provides ready access to spectacular recreational activities, including hiking, walking, jogging, skiing, mountain biking, horseback riding, and fishing. These stream- and water-related recreation values were a key reason for establishing the Rattlesnake National Recreation Area and Wilderness.

Rattlesnake Creek provides habitat for westslope cutthroat trout and for the sensitive bull trout. The catch and release cutthroat fishing for trout up to 20 inches in size is remarkable given the proximity to Missoula. Wildlife abounds within the drainage. The wintering elk and deer herds are often visible from Missoula, and a transplanted mountain goat population can be seen on the rock bluffs farther up the drainage. The Rattlesnake provides habitat for the endangered grizzly bear though densities are low.

Several historic and prehistoric sites are potentially eligible for the National Register of Historic Places. Of special interest is a limestone kiln, unusual for western Montana. Rattlesnake Creek has a long history of recreation use combined with some unique management because of the domestic water supply for Missoula.

Shoo Fly Meadows, in the East Fork of Rattlesnake Creek, is the site of a sphagnum bog, containing *Sphagnum riparium*, which is unique in Montana. There is only one other known location in the contiguous Western states.

South Fork Lolo Creek

The two most outstandingly remarkable characteristics of the South Fork Lolo Creek are its spectacular recreation opportunities and its scenery. The South Fork also contains a trail system of prehistoric significance and several historical sites associated with local trap lines.

The recreation opportunity for hiking within this drainage is remarkably outstanding because of the streamside scenery, avalanche paths, and impressive rugged, steep terrain. Located partially within the Selway Bitterroot Wilderness, the river is within a one-hour drive from Missoula.

With the Bitterroot Divide as a backdrop, distinctive high mountain meadows adjacent to the stream provide outstanding scenery. These moist meadows team with insects and birds and provide a pleasant resting spot for the weary hiker. These meadows stand apart from the large old-growth larch, cedar and spruce that line the middle reaches of the streamside. Nearby, the streambed of the South Fork is filled with huge boulders, which distinctively mark the flow patterns of the creek.

The trail which follows the South Fork is eligible for the National Register of Historic Places because of its association with an Indian travel route. The South Fork trail branched off the Lolo Ne Mee Poo Trail, which was used as a major travel route by native people. Several cabin sites, used by trappers within the early 1920's, are still evident along the trail and throughout the drainage.

Cache Creek (includes mainstem, Irish Creek, and Pebble Creek)

Cache Creek is best characterized by its natural features and by its geologic and fisheries resources.

The geological ruggedness of the upper reaches of this drainage add to the unusual and remarkable scenery of this drainage. Three features of geologic origin are unique in that they bring attention to the geologic forces that must have been responsible for their creation. These three features include a glacial step of more than 100 feet at the head end of the drainage, hoodoos and spires along the drainage divides of Pebble and upper Cache Creek, and large rounded boulders possibly associated with mass wasting. The drainage also contains many vestiges of the Pleistocene age, including U-shaped canyon, cirques, tarn lakes, glacial moraines and drifts, all adding to the spectacular setting. The hoodoos and spires along the divides are spectacular. Images of animals and birds are easy to see and add great interest to the canyon walls. The presence of large, isolated boulders, sitting out on the valley floor is not known to exist elsewhere on the Forest and may be rare in the study region. These boulders may



have rolled from the cliffs or occurred as glacial dropouts, known as erratics. Subsequent weathering has rounded them to nearly ball shape. The prominent glacial step in upper Cache is unmistakable and recognizable by the visitor as being something special in landform development. Glacial scouring is still evident in several places. Other common mountain glacier evidence is present, such as the U-shaped valley fills and outwashes.

Fish populations within Cache and its tributaries consist primarily of bull and cutthroat trout. Brook trout also occur in smaller numbers. Existence of large bull trout (28 to 30-inch maximum size) indicates that these species migrate to Cache Creek from the Clark Fork River. Cache Creek is very dynamic, with high-flushing flows in the spring moving large amounts of bed material and woody debris through the system. In addition, there is a lack of woody debris in areas where avalanche chutes extend to the stream edge. Low amounts of sediment within the stream contribute to a high quality of habitat. Spawning gravels are abundant in the lower gradient. This abundance of spawning habitat and the high utilization by both resident and migratory westslope cutthroat and bull trout make Cache Creek outstandingly remarkable as a fisheries stream.

The naturalness of Cache Creek is characterized by the collective influence of several important values including scenery, solitude, vegetation patterns, fire history, geology, avalanche processes, and the variety of wildlife which inhabit this drainage. The endangered gray wolf occupies and has been recently sighted in the Cache Creek drainage. Moose are plentiful and there are mountain goats in the upper reaches of the drainage.

Numerous cultural sites throughout the drainage are evidence of this area's significance as a prehistoric Indian use area. Cache Creek may have been an important travel route for Native Americans, and may also have been used for high-elevation gathering of pine nuts and other foods. A rock quarry and lithic scatter sites identify the importance of this drainage in the production and trade of manufactured items.

West Fork Fish Creek (includes: mainstem, Cedar Log Creek, and Middle Fork Indian Creek)

The most outstandingly remarkable features of the West Fork include its natural characteristics, its fisheries, and its wildlife populations.

Although the collective makeup of its scenery, solitude, vegetational patterns, geology, and natural processes add to the natural quality of the drainage, the most unique natural feature of the West Fork is the old-growth cedar stands which inhabit the middle reaches of the drainage. These ancient groves of cedar survived the 1910 fire which burned almost the entire West Fork Fish Creek drainage and many nearby drainages. This massive fire left even-aged stands of lodgepole pine and an occasional larch as regeneration. The extensive groves stand out significantly from the remaining even-aged stand in both height and form. The visitor is provided with an cathedral-like setting as he or she goes from the open, even-aged stands into the dark canopy of the cedar stands. The extensive groves are regionally significant by virtue of their scarcity and can be considered remarkably outstanding.

Just outside of the immediate river corridor, Cedar Log Creek contains rare crystals near the Snowbird Mine. These crystals are eligible for designation as a National Landmark.

The West Fork of Fish Creek and its tributaries provide high-quality spawning and rearing habitat for fish moving from the Clark Fork River. They also provide unpolluted waters to this larger system. The West Fork and its tributaries also provide unusually high quality habitat for the westslope cutthroat and bull trout, both of which are sensitive species. The West Fork contains a variety of habitat types, from wide, low-gradient portions in the upper reaches, to narrow, turbulent, high-gradient sections upstream. The low level of fine substrates within both the pools and riffles of the stream testify to the high amount of spawning habitat available for utilization by both resident and migratory fish species. The steep cascades and falls of the lower ½ mile of Cedar Log Creek effectively blocks upstream travel of fish, providing a potentially genetically pure population above this point. This is unique, given the extensive range of exotic species within the middle Clark Fork system.

The West Fork supports one of the highest densities of moose on the Lolo. Moose can be found anywhere in the drainage. Virtually all of the high elevation



lakes and potholes, including Cedar Log Lakes and Siamese Lakes, have moose populations during the summer and fall. The floodplains of Cedar Log and Indian Creeks also provide excellent moose habitat, as does the area at the junction of the North and West Forks of Fish Creek. This drainage also supports a variety of other wildlife species. The sensitive lynx and fisher may reside within the drainage. Harlequin ducks probably inhabited the drainage in historic periods but have not been presently observed. The sensitive black-backed woodpecker inhabits the drainage, as do other sensitive species, including the boreal owl, western big eared bat, and northern bog lemming. Other riparian species such as beaver, kingfishers, mink, and dippers occupy the wetter areas. Larger species including the cougar, elk, and mountain goat frequent the entire drainage. A lone male radio-collared wolf has been periodically living in the West Fork. The high ungulate density makes the area attractive to wolves, and it's certainly possible, if not likely, that the area could eventually be occupied by a pack of wolves.

Clark Fork River

Together, the segments of the Clark Fork River cover almost the full range of outstandingly remarkable values attributable to the eight study rivers. The Clark Fork's most outstanding resources include its scenery, recreation, geologic features, cultural features, and, collectively, its natural features.

The Clark Fork River dominates the visual setting of western Montana. The unique landform associated with the meandering path of this mighty river, including floodplains, river terraces, benchlands, and water-cut cliffs, provide outstandingly remarkable scenery. The scenery is exceptional from the surface of the river while floating, and while standing on the edge, driving by or flying over. The Slowey segment is dominated by rounded, forested slopes and benches, and the Cutoff segment is dominated by large rock faces, steep mountainsides, and narrow river benches. State Highway 135, which follows the Cutoff segment, is designated as "Scenic By-Way" for these reasons. In the fall, the yellow needles of the changing larch add to the beauty and create distinct vistas from the river. The sheer size of the river with its essentially unmodified natural landscape, is remarkable for Montana.

Recreation opportunities along the river edge and upon the river surface abound. These stretches of the Clark Fork are popular for floating, fishing, hiking, camping, and hunting, with people travelling long distances to enjoy the river's amenities. The river trail, combined with Highway 135, follows both sides of the Cutoff segment, providing a unique hiking, mountain biking loop. Both routes vary in distance from the river, providing the user with a "taste" of all the riparian landforms. Several areas provide launching and landing opportunities for canoeists, rafters, and motorboaters. The river provides a range of surface qualities from mild rapids to placid stretches.

The Clark Fork contains two geologic/geomorphic features that are outstandingly remarkable. The first of these is the "gulch fills" which are highly visible from the river and the roadways along the river's edge. The gulch fills, which are located half way up tributary drainages, testify to the rapidly draining waters of Glacial Lake Missoula. These flatter bench-like deposits lure the adventurer away from the river edge in expectation of finding elk herds grazing atop their grassy meadows. The second geologic feature is the slopes along the river which have been stripped bare of their soil and rock waste mantle by the floodwaters of Lake Missoula. The resulting exposed cliffs and rock outcrops appear as monoliths along the river, providing the exuberant hobby geologist with much to explore.

A large herd of bighorn sheep is often viewed along the lower reach of this river. Wintering elk and deer are often visible as well. Bald eagles winter along this stretch of river and osprey nests are common.

Cultural resources in the Cutoff are very diverse and include prehistoric campsites associated with fishing and hunting along the river. Historic resources include Flathead House, built by David Thompson at the confluence of the Flathead and Clark Fork rivers, CCC camps associated with the original highway construction, mining activities, homesteads, and logging.

The Clark Fork is the major river system of the Forest. The Squaw Creek Research Natural Area preserves examples of forested scree habitat and river terrace meadows. The sensitive Coeur d'Alene salamander is found along the river.



Summary

The eight rivers are eligible for designation based upon their outstandingly remarkable scenic, *Table 3.3.1. Outstandingly Remarkable Values*

recreational, geological, fish and wildlife, cultural, or natural values, and because all eight rivers remain in free-flowing condition.

RIVER	SCE	REC	GEO	FIS	WIL	CUL	NAT
Clearwater River	◎	◎	●		◎		
Morrell Creek	◎	◎					●
North Fork Blackfoot River	◎	◎		◎	●	●	◎
Rattlesnake Creek		◎		◎		●	●
South Fork Lolo Creek	◎	◎					
Cache Creek			◎	◎			◎
West Fork Fish Creek				●	●		◎
Clark Fork River	◎	◎	●			●	●

SCE - Scenic

FIS - Fisheries

CUL - Cultural

REC - Recreation

WIL - Wildlife

NAT - Natural

GEO - Geologic

◎ Outstandingly Remarkable Values Identified in Eligibility Study

● Outstandingly Remarkable Values Identified in Suitability Study

■ 3.4 Classification Analysis and Findings

Once the eligible rivers or segments were selected, they were assigned a potential classification of wild, scenic, or recreational, as defined by the WSRA, Section 2(b), based on the condition of the river and development or access scale as they existed during the eligibility assessment. These classifications were defined as follows:

Wild River Areas -- Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic River Areas -- Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational River Areas -- Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

For example, the Clark Fork was designated as "Recreational" because the river is paralleled by a road and railroad, and the corridor contains a noticeable amount of development.

The terms "Scenic" and "Recreational" tend to be misleading because they have common-sense connotations other than level and type of development present. People often believe that rivers designated "Scenic" are managed primarily to retain the scenery and that "Recreational" rivers are



managed to promote recreational use. In reality, management is designed to maintain or enhance the values identified and the character of the river corridor, regardless of the classification.

The Wild and Scenic Rivers Act and Federal guidelines specify that three main factors be considered in classifying river segments: waterway development, shoreline development, and access.

To be classified as Wild, a river also must meet certain water quality standards.

The water quality of a wild river will meet or exceed Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the stream, and for primary contact recreation except where exceeded by natural conditions (FR, Vol. 47, No. 173, page 39457, September 7, 1982).

The type and amount of development varies significantly between river segments.

small wooden dams only minimally change the character of the river.

Access to this segment of the Clearwater is by several private and public road systems. Montana State Highway 87 parallels approximately 80 percent of the system yet is not visible from the majority of the river. Three vehicle bridges cross the Clearwater. A foot trail, which allows floaters to hike back to their starting point on the canoe trail, parallels the lower 2 miles of this segment of the Clearwater.

The riparian corridor in the lower reaches is fairly wide and braided. The upper reaches are more incised and engorged within steep banks. Vegetation on the lower reach is primarily wetlands and forestland, while the upper reaches are forestland. Development along the corridor is mixed, with private inholdings of a residential nature. Most of these homes are not visible from the river. Some commercial timber harvest has occurred along the banks of the Clearwater on both private and public lands. Inholdings of commercial timberland along approximately 1 mile of this river means that timber harvest activities will probably be ongoing, at least sporadically.

Water quality of the Clearwater is very good, with only slight levels of increased sediment from adjacent road systems and harvest activity. Clarity is excellent except briefly in the spring during snowmelt. The river provides domestic water for the town of Seeley Lake.

■ 3.5 River Classifications

Each river was assessed for their value regarding the following four categories for classification:

Free Flowing Nature;
Access
Watershed and Shoreline Development
Water Quality

Clearwater River

The Clearwater River from Seeley Lake to its headwaters qualifies for a "Recreation" classification.

This segment of the Clearwater is essentially free flowing. Two small dams were constructed as fish barriers to prevent brown trout from migrating upstream. Over the years, brown trout have been introduced into the upper reaches, so the effectiveness of the dams has been thwarted. These

Morrell Creek (Trailhead to Falls)

The segment of Morrell Creek from the trailhead to the falls qualifies for a "Scenic" classification.

This segment is completely free flowing with no manmade impoundments or diversions presently or historically identified. A large waterfall separates this segment of Morrell Creek from the upper segment, making fish passage upstream entirely impossible.

Access to this segment is provided by both Forest Development Road and trail. Road 4353, a gravel forest system road which provides access for logging and general forest management to the headwaters of Murphy and Camp Creeks, parallels the first 1/2 mile of the creek. It's influence on the



character of the creek is minimal as it is approximately 1/4 mile from the riparian zone. Trail 30, which meanders along this segment of Morrell Creek provides yearround motorized access to the falls. This trail is a popular snowmobile route during the winter. During the summer months this trail receives a high amount of foot and horse use and moderate amounts of mountain bike use because of its low grades.

The riparian corridor is primarily forestland. Some evidence of recent logging is seen from the trail in various locations, yet, for the most part, this portion of the creek is undeveloped. Past logging activities have influenced the stream character slightly, causing minor bank erosion in some places and reducing the overall amount of potential woody debris recruitment.

Water quality in this segment of Morrell Creek is very good, with high clarity and a pristine appearance.

Morrell Creek (Falls to Headwaters)

This segment of Morrell Creek extending from the waterfalls to the headwaters qualifies for a "Wild" classification.

This segment is completely free flowing. The first one-half mile above Morrell Falls is of very high gradient with numerous small but deep pools and an abundance of boulder- and bedrock-created pocket water. The stream is naturally confined within steep glacially scoured canyon walls and cliffs. The upper 3-mile stretch is of lower gradient with numerous high-quality pools, runs, and glides.

Access to the upper segment is limited to trail users and off-trail scramblers. Trail 409 parallels approximately one-half of this segment and then is discontinued before entering the Grizzly Basin area. This portion of the trail receives less use than the lower segment.

The water quality of Morrell Creek is very good to pristine. The geologic isolation of Morrell Creek above Morrell Falls has potential significance as a genetic reserve for the system. Although no fish were observed during the walk-through survey in 1993, it is possible that isolated populations of westslope cutthroat or bull trout exist. If this is the

case, these populations would most likely be genetically pure.

North Fork Blackfoot River (includes: mainstem, Dry Fork, Cabin Creek, Cooney Creek, Dobrota Creek, Dwight Creek, and Canyon Creek)

The North Fork of the Blackfoot River and its tributaries, including the Dry Fork, Cabin Creek, Dobrota Creek, Cooney Creek, Canyon Creek, and Dwight Creek, qualify for a "Wild" classification.

These segments are completely free flowing with no man-made impediments or diversions. The Dry Fork divide, between the Scapegoat Wilderness and the Bob Marshal Wilderness, contains a series of gabions that were constructed in the 1960's to prevent flood waters from transporting hybrid fish out of the watershed. These gabions are not located along the riverbank and do not obstruct normal flows. It is questionable whether they serve any practical purpose. Although large natural waterfalls on the North Fork obstruct fish movement, they also provide a beautiful scenic attraction.

Access to these segments is strictly limited to nonmotorized trail use. A series of maintained system trails meander within close proximity of all of these stream segments and receive moderate to high amounts of use by recreationists, hunters, and back-country rangers. Because of the length of these trail systems, most access is by horseback. Removal of the vegetative canopy by the 1988 Canyon Creek Fire often affords trail users spectacular views of entire drainages.

The riparian corridors are primarily forestland, with scree slopes, rock points, and open slides. All of the segments lie within the Scapegoat Wilderness except for the upper one mile of Canyon Creek. No previous timber harvesting is evident within any of the corridors or watersheds. Two historic Forest Service cabins can be found near the confluence of the Dry Fork and the North Fork and at the confluence of Cooney Creek and the North Fork. Neither of these cabins negatively impact the character of these river segments.

Water quality of this entire riparian system is pristine, with only occasional sediment increases caused by natural fluctuations in runoff and debris



flows. Water quality of the North Fork of the Blackfoot is most often affected by soil slumps and streambank erosion, natural events caused by the unconsolidated soil types found within this drainage.

Rattlesnake Creek

The Rattlesnake and its tributaries, including Wrangle Creek, Lake Creek, the East Fork, Spring Gulch, and High Falls Creek, qualify for "Scenic" classification. Upper Wrangle Creek qualifies for "Wild" classification.

These segments are all free flowing. A stone and log crib impoundment on Carter Lake at the head of Lake Creek controls water flow from the lake yet does not obtrusively change the character and nature of the Rattlesnake system. Several historical irrigation diversions are still evident along the mainstem of the Rattlesnake. None of these diversions detract from the natural character of the stream course.

Access to the mainstem of the Rattlesnake is provided by an old road which follows the riparian corridor from the trailhead to the confluence of Wrangle and Lake Creeks. Although this road is maintained as a trail system and is open for public use as a trail, the Mountain Water Company maintains rights for using the road for access and maintenance of the dams. From the confluence of Rattlesnake, Lake Creek, and Wrangle Creek, a maintained trail system provides user access into the headwaters of the the three watersheds. All three of these trail systems parallel the riparian corridors, providing almost continuous views or contact with the stream segments. The trail systems within the entire Rattlesnake drainage receive a low to moderate amount of use. The first 3 miles of the Rattlesnake segment above the trailhead receives very high use levels and is primarily a "backyard" recreation area for the residents of Missoula.

Development on these segments has varied historically from homesteads, agricultural use, and water developments for domestic use by the City of Missoula. Timber harvest activities in the early part of the century and again in the late 50's and early 60's are still evident along the mainstem of the Rattlesnake and in Lake Creek. Several old clearcuts and road systems are the most obvious

remnants of this past activity. Modern developments include the trailhead at the southern end of the Rattlesnake and the installation of vault toilets approximately 3 miles up the road system along the creek. Four bridges cross the mainstem of the Rattlesnake. The first one is the county bridge that provides vehicle access to private lands west of the creek. The second, an aesthetic foot/stock bridge was recently constructed above the trailhead to provide access from a separate stock user trailhead. The third bridge is located approximately 8 miles up the mainstem. This bridge, originally a timber frame bridge, was destroyed in the early 80's and replaced with a concrete vehicle bridge. It detracts slightly from the character of the river. The uppermost bridge, 14 miles above the trailhead, is wood.

Water quality in the Rattlesnake and its tributaries ranges from very good to pristine. Recent evidence of giardia, a protozoan causing intestinal discomfort in humans, is found in low concentrations in the downstream creek waters. This has raised concern about the unfiltered use of Rattlesnake water for the City of Missoula. Clarity of the waters is high except during spring snowmelt when naturally occurring sediment is carried in the water.

South Fork Lolo Creek and its Tributary

The South Fork of Lolo Creek and its tributary No Name Creek qualify for "Wild" classification.

Both of these segments are entirely free flowing with no evidence of diversion or impoundment. The majority of the reaches of these creeks are swift-moving flat water without numerous hindrance of flow by large boulders or log jams.

Access to the South Fork of Lolo Creek is restricted to a trail system for the majority of its length. Some roads come close to the riparian area in the lower 2 miles of the creek segment under consideration. Forest Development Road 4292, which accesses the adjacent Dick Creek drainage, parallels the lower portion of the South Fork for approximately 1 mile yet never comes closer than $\frac{1}{4}$ mile to the riparian area. This road has very little impact upon the character of the stream and is closed for the entire year to vehicle traffic. Several private roads on the east side of the creek come within closer proximity and are more evident from the creek because of



openings from tree removal. Additional access is limited to a single trail system which runs parallel to the riparian area, meandering along the edge of the creek. This trail system is closed to all motorized use and receives moderate amounts of foot and horse use. At the confluence of No Name Creek and the South Fork, the trail follows No Name Creek up to No Name Lake and the divide between No Name and Bass Lakes. From No Name Creek there is no system trail following the South Fork to its headwaters.

The riparian corridor is for the most part forestland and wilderness. A moderate amount of harvesting which occurred on public and private lands along the lower 2 miles of the South Fork is the only logging in the watershed of these creeks. No structures are evident along these reaches.

Water quality in both the mainstem of the South Fork and No Name Creek ranges from very good to pristine, with naturally occurring increases in sediment in the spring.

Cache Creek (Mainstem above Montana Creek) and Tributaries

The mainstem of Cache Creek above Montana Creek and its tributaries of Pebble, White, and Irish Creeks qualify for a "Wild" classification.

These segments are completely free flowing with no man-made impediments or diversions presently or historically identified. Large boulders and small debris jams within Cache Creek provide excellent habitat for fish and create a unique visual setting. A large cascading waterfall on Pebble Creek obstructs fish migration but provides spectacular scenery to the visitor.

Access to these segments is limited to nonmotorized trail use except during the winter months when snowmobiles are permitted. Trail 317 meanders within close proximity of Cache Creek for 7 miles, at which point it changes to a path through the headwaters up to the Idaho State line. Trail 319 follows the riparian zone of Irish Creek to its headwaters and becomes indistinguishable from this point on. Pebble Creek has no maintained trail system but is accessed by a trail kept open by hardy users.

The riparian corridor is primarily forestland. No previous timber harvesting or other development activities except for trail construction have occurred within the riparian corridor or the surrounding watershed.

Water quality in Cache Creek is very high to pristine with only slight fluctuations in sediment delivery caused by natural erosion.

Cache Creek (Mainstem below Montana Creek)

The mainstem of Cache Creek below its confluence with Montana Creek qualifies for "Scenic" classification.

This segment is completely free flowing with no man-made impediments or diversions.

Two roads access this segment. Road 17442 accesses Trail 317. This road is located within or close to the riparian area, paralleling the creek for approximately one-half mile. Road 4218 is a main transportation and haul route for the Montana Creek drainage. This road lies approximately 750 feet above Cache Creek. It is closed to vehicle traffic for approximately 6 months of the year.

The riparian corridor of this segment is primarily forestland. Some previous timber harvesting and subsistence mine exploration have historically occurred within the riparian corridor and surrounding watershed, although none of this is overly evident.

Water quality is very high, with only natural occurring seasonal fluctuations in sediment content.

West Fork Fish Creek and Tributaries

The West Fork of Fish Creek and its tributaries, including the Middle Fork of Indian Creek and Cedar Log Creek qualify for "Wild" classification.

These segments are completely free flowing with no man-made impoundments or diversions.

Access to these segments is entirely by system trail, which is maintained for both horse and foot traffic. Except for snowmobile use after December 1st, no motorized or vehicular access is permitted beyond



the convergence of the West Fork of Fish Creek with the North Fork. At this location a trailhead and Forest Service administrative site are developed and provide a portal into the proposed wilderness area in which these streams lie. The West Fork of Fish Creek and the Middle Fork of Indian Creek have trail systems which parallel and remain close to or within the riparian area of these two streams. The trail which provides access to the Cedar Log drainage parallels the stream but is located on the sidehill between Surveyors Creek and Cedar Log Creek. None of these trail systems have changed the character of the streams.

Development along and within these drainages is limited to the existing trails. Because these segments lie within the Great Burn Roadless area (which is a proposed wilderness), no modern development is evident. An old cabin near the confluence of the West Fork and Indian Creek was burned in the 1970's and is no longer evident.

Water quality within all three stream systems is very high to pristine. Small amounts of sediment occur naturally during spring runoff. Clarity is only affected for a short time.

Clark Fork River

Both segments of the Clark Fork River qualify for "Recreational" classification.

Both of these segments are free flowing with no impoundments that control flow. Several irrigation developments which draw water either by ditch or by pump are evident along both reaches of the river. None of these developments drastically change the natural character of the river, and in some cases they are seasonally removed. Water flows may vary

slightly because of the release of water from the Milltown dam located in Missoula.

Access to the Clark Fork is relatively easy by vehicle. The Slowey segment of the Clark Fork is paralleled by Interstate 90 and Highway 10A. It is crossed once by the Interstate near its eastern end. Several small frontage and access roads allow free access to the banks of the river, where boats can be launched. The Cutoff segment is paralleled by Montana State Highway 135 and by a system trail. The Montana Rail Link railroad line parallels both of these segments of the Clark Fork. The railroad crosses the Cutoff four times. This segment is also crossed once by the highway.

Development along the Slowey segment includes a mixture of residential inholdings, agriculture, and forestland. The most obvious activities include the rail line and interstate system, both of which have riprapped portions of the riverbanks that are evident from the river. Development along the Cutoff includes agriculture, residential and limited amounts of timber harvest on forestland. Highway 135 and the railroad have riprapped portions of the river banks that are evident from the river.

Water quality of the Clark Fork is very good, considering the size and level of development along its reaches. Clarity is fairly high except during spring runoff when sediment muddies the water. There is no indication of toxins except for organics which increase algal blooms during summer months. Occasionally, organic foam is found along the river edge or floating down the river during the spring and summer months.

The following tables (Table 3.5.1) summarize the classifications of these rivers:

Table 3.5.1. Potential River Classifications

NORTH FORK BLACKFOOT RIVER

SEGMENT	CLASSIFICATION	MILES	ACRES
Mainstem	Wild	20.0	6,349
Dry Fork	Wild	16.8	5,009
Cabin Creek	Wild	8.4	2,709



SEGMENT	CLASSIFICATION	MILES	ACRES
Cooney Creek	Wild	5.0	1,646
Dobrota Creek	Wild	3.3	1,091
Dwight Creek	Wild	5.1	1,449
Canyon Creek	Wild	5.3	1,524
TOTAL		63.9	19,777

MORRELL CREEK

SEGMENT	CLASSIFICATION	MILES	ACRES
Trailhead to Falls	Scenic	3.0	992
Falls to Headwaters	Wild	2.8	927
TOTAL		5.8	1,919

CLEARWATER RIVER

SEGMENT	CLASSIFICATION	MILES	ACRES
Seeley Lake Inlet to Headwaters	Recreation	19.9	7,245
TOTAL		19.9	7,245

RATTLESNAKE CREEK

SEGMENT	CLASSIFICATION	MILES	ACRES
Mainstem	Scenic	19.2	6,097
Wrangle Creek	Scenic	3.7	1,313
Lake Creek	Scenic	2.3	885
Spring Gulch	Scenic	4.5	1,370
High Falls Creek	Scenic	4.0	1,182
East Fork	Scenic	4.2	1,301
TOTAL		37.9	12,148

SOUTH FORK LOLO CREEK

SEGMENT	CLASSIFICATION	MILES	ACRES
NE 1/4 Section 12 to Headwaters	Wild	11.4	3,642



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SEGMENT	CLASSIFICATION	MILES	ACRES
No Name Creek	Wild	1.1	311
TOTAL		12.5	3,953

CACHE CREEK

SEGMENT	CLASSIFICATION	MILES	ACRES
Mainstem above Montana Creek	Wild	10.2	3,577
Mainstem below Montana Creek	Scenic	1.4	625
Irish Creek	Wild	2.5	964
Pebble Creek	Wild	3.3	1,140
White Creek	Wild	4.6	1,295
TOTAL		22.0	7,601

WEST FORK FISH CREEK

SEGMENT	CLASSIFICATION	MILES	ACRES
Mainstem	Wild	9.4	3,583
Cedar Log Creek	Wild	7.6	2,501
Middle Fork Indian Creek	Wild	3.5	1,290
TOTAL		20.5	7,374

CLARK FORK RIVER

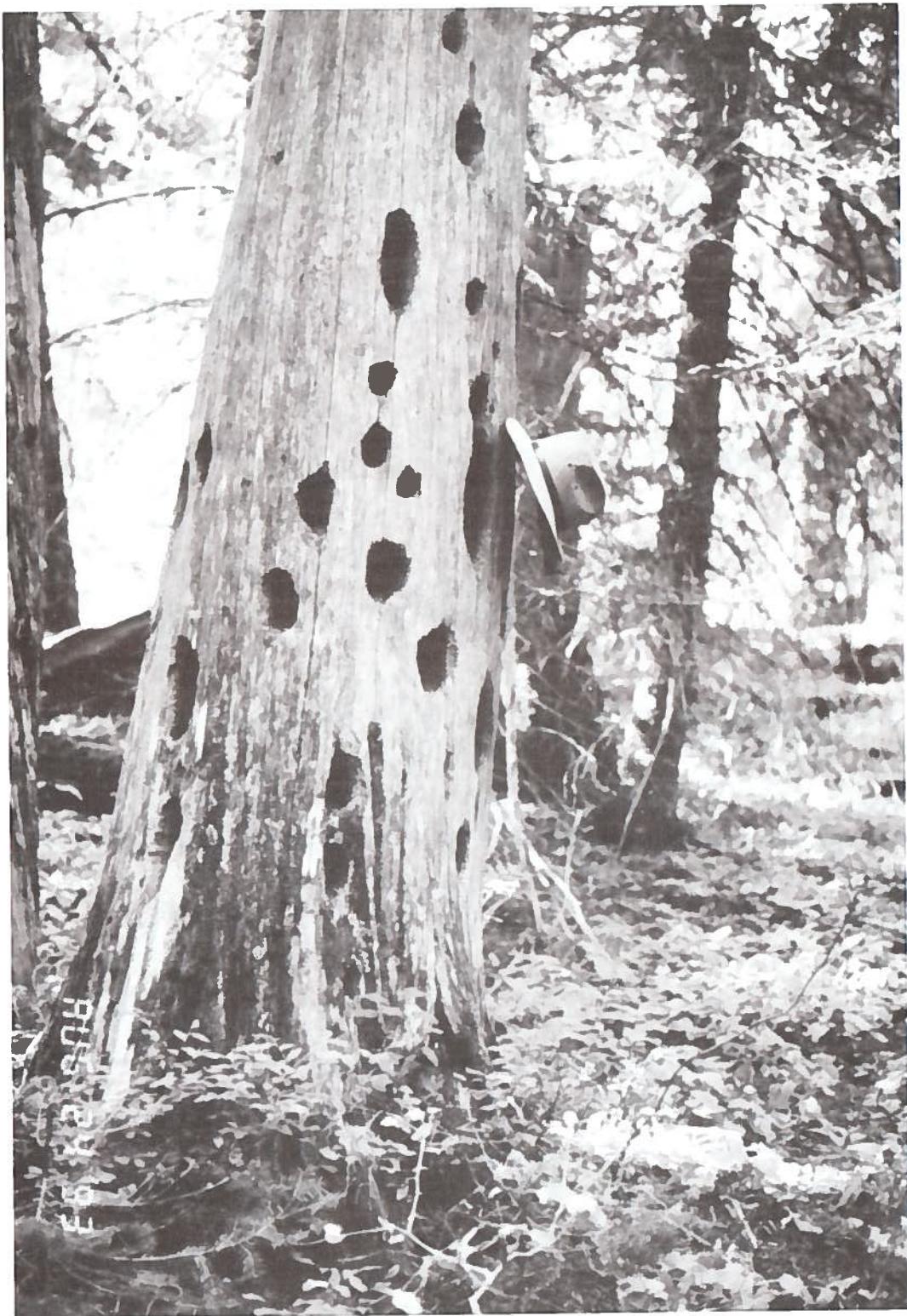
SEGMENT	CLASSIFICATION	MILES	ACRES
Slowey	Recreation	7.0	2,340
Cutoff	Recreation	21.0	7,498
TOTAL		28.0	9,838





Grizzly Basin, Morrell Creek





"Animal Inn" - Cache Creek, near mouth of Irish Creek



4

Alternatives

■ 4.0 Introduction

This chapter presents and compares the six alternatives developed during the study process. Each alternative presents a different view on what rivers should be recommended to Congress for classification. The alternative descriptions generally contain more detail about management direction than is typically contained in classification environmental impact statements. This is because several of the river segment corridors include State and private lands which could be impacted by adjacent Federal land management changes.

Section 4.1 of this Chapter discusses the key issues that formed the basis for developing alternatives. Section 4.2 discusses alternatives not considered in detail; these are alternatives that surfaced during the study process but were rejected for the reasons specified. Section 4.3 describes the alternatives considered.

The rivers recommended for inclusion in the National Wild and Scenic Rivers System, under any of the action alternatives, would have their outstandingly remarkable values protected. Proposed impoundment within the designated reaches for water supply, hydropower, or other uses would be foreclosed. Potential water-related projects on National Forest System land outside the boundaries of the designated reaches would be evaluated for their effect on the outstandingly remarkable values within the classified areas, and, if found to be detrimental to these values, these projects would also be denied.

Under all of the alternatives, private landowners would be able to continue with current land uses and would have the primary responsibility to maintain the existing environment on their lands along the study rivers. Landowners would be encouraged to use the same interim management standards (see Alternative 2) that are guiding the Forest Service for future uses and developments.

Once Congress acts on these recommendations and classifies rivers, the Forest Service will initiate management plans for each river and solicit the help of State and private landowners. It is most desirable to enter management in a cooperative way with all land owners.

■ 4.1 Issues that Helped Form Alternatives

The Interdisciplinary Team condensed the numerous concerns expressed by the public and internally into forty issues. Of these forty, eleven influenced the development of alternatives. The other twenty-nine issues were felt to be already addressed by existing management direction or are addressed under the mitigation and environmental consequences sections of this document. Several issues were left to be addressed in a subsequent management plan that would be developed following congressional classification. The summary of the resolution of the forty issues is included in Appendix H.

The eleven issues that helped form the alternatives are as follows:



Will development and management of recreation facilities in a corridor be affected by classification?

What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?

Will Wild and Scenic River classification provide protection for threatened, endangered and sensitive species?

How will Wild and Scenic River classification affect management of wildlife and fish habitat?

Would Wild and Scenic River classification affect potential relocation of Missoula's water system intake in Rattlesnake Creek?

How will classification affect timber cutting, mining, outfitting, special use permits and future development on National Forest System lands?

Does designation allow federal control over private land? Will designation affect resource development or building?

If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?

Why aren't Lake, Wrangle and Rattlesnake Creeks above the confluence with Wrangle being considered for "Wild" classification?

Shouldn't "Wild" designation (or the most restrictive) be used wherever possible?

Would you consider including the private land at the mouth of Cache Creek in the proposed classification?

The alternatives do not quote the issue(s) directly but the issues provide the philosophy, direction, or "flavor" of each alternative. The alternatives also fulfill the Council on Environmental Quality regulations and the guidelines established in the USDI/USDA Final Revised Guidelines for Eligibility, Classification and Management of River Areas (September 7, 1982) and the Forest Service Handbook 1909.12, Chapter 8.

■ 4.2 Alternatives Not Considered in Detail

Two alternatives that surfaced during the study process were not carried forward into detailed analysis.

The first of these two alternatives provided for protection by means other than national designation. River protection under this alternative could have been accomplished by local zoning or under a State river protection system. To implement this alternative a State system could have been used to gain Federal protection under section 2(a)(ii) of the Wild and Scenic Rivers Act (PL 90-542, as amended). Because of the lack of county zoning and the current local attitudes toward zoning, this option did not appear feasible in this decade. Montana does not have a river protection law complementing the Wild and Scenic Rivers Act, although there is high interest in some State agencies to have one. Because of the apparent lack of public support for zoning and the costs to the State for enactment of a protective law, the alternative was dropped from further consideration.

The second alternative added new rivers not originally selected during the eligibility study. The Forest Management Team decided not to review the additional rivers for eligibility and suitability because of the limited budget and timeline available to complete the suitability report and environmental impact statement on the original rivers under study. It was agreed that new rivers could be reviewed for eligibility in the future and that a provision for this would be made in the Forest Plan.

■ 4.3 Description of Alternatives

Six alternatives developed during the study process were carried forward into detailed analysis. These alternatives provide a wide range of methods to deal with the issues raised internally and by the public.



Alternative 1 - No Action.

The first alternative is the No Action alternative. Under this alternative there would be no proposal to Congress for Wild and Scenic River designation. This alternative describes the Forest Plan situation without Wild and Scenic River proposals. The current interim management standards that have afforded protection to the outstandingly remarkable values of each river would be rescinded, and the National Forest System lands would be managed according to the Forest Plan standards that prevailed prior to Amendment 12 to the Forest Plan (August 15, 1991, the date of the Wild and Scenic Rivers Eligibility Study).

Adoption of this management direction would mean that no Wild and Scenic River programs or designations would be created. There would be no effort to coordinate management activities in the corridors beyond what currently exists. The county, State and Federal governments would continue to exercise their existing authorities in the river corridors.

Resources in the study corridors would receive some protection from Forest Plan management standards and State laws. For example, those National Forest System lands that would again be available for timber harvest would be constrained by visual quality objectives, riparian zone protection, and wildlife wintering and yearlong needs.

For private property, the State's streamside protection, water quality, and stream management zone laws are most notable in affording protection to the streambanks, adjacent land, and water quality. The State subdivision rules also provide for public review of proposed subdivisions; sewage disposal is covered in the same review.

There are no established minimum flows for fish or recreation and no regular water quality monitoring program. There are no rivers fully protected from hydropower development, although Wilderness and the National Recreation Area designations probably preclude serious consideration for the rivers within these areas.

Recreation opportunities and public access are provided on Federal lands and by the counties and

State where the need has prompted such action. On the Clark Fork, Mineral and Sanders Counties are coordinating their planning and implementation to provide water craft launch and takeout sites along the river. The county sheriffs are responsible for search and rescue efforts.

Alternative 2 - Nondesignation with Protection.

This alternative would be similar to Alternative 1, except that the protective interim management standards for the Wild and Scenic Rivers as stated in Amendment 12 would be incorporated into the Forest Plan on a permanent basis. To avoid confusion with rivers classified by the Wild and Scenic Rivers Act, the nomenclature for the rivers would be changed within the Lolo National Forest Plan to reflect primitive and developed settings. Rivers proposed for wild or scenic classifications within the eligibility study would be placed within the primitive setting category. Rivers proposed for recreation classification would be placed within the developed setting (see *Figure 4.3.1*). The interim management standards stated in Amendment 12 would apply to National Forest System lands only. The same opportunities, limitations, and coordination activities as described under Alternative 1 would be applied to State and private lands.

Figure 4.3.1. List of Nondesignated Rivers with Protection

Developed Setting:

Clearwater River
Clark Fork River

Primitive Setting:

North Fork Blackfoot River
Morrell Creek
Rattlesnake Creek
South Fork Lolo Creek
Cache Creek
West Fork Fish Creek

Under Alternative 2, the following Forest-wide management standards would be adopted. The standards are based on Forest Service Handbook 1909.12 - Chapter 8, Standards for Eligible Wild and Scenic Rivers. These standards do not affect other public or private lands and will not abrogate



any existing rights, privileges, or contracts affecting Lolo National Forest lands held by any private party.

	Rivers in a primitive setting	Rivers in a developed setting
Hydroelectric	Development will not be permitted. Where the licensing authority is the Federal Energy Regulatory Commission, the Forest will recommend that no license be issued.	
Water Supply	Development will not be permitted. Monitoring stations may be permitted if unobtrusive.	Minor structures allowed provided waterway generally remains natural in appearance.
Flood Control	Development will not be permitted. Monitoring stations may be permitted if unobtrusive.	Minor structures allowed provided waterway generally remains natural in appearance.
Agriculture	Use restricted to the amount of domestic livestock grazing currently practiced.	Wide range permissible so long as there is not a substantial adverse effect on natural-like appearance of river area.
Timber	Cutting would only be allowed for such investments as trails or for safety of users.	Cutting practices allowed so long as no degradation of outstandingly remarkable values.
Minerals	New mining claims and mineral leases will be allowed unless the outstandingly remarkable value(s) would require withdrawal of lands from mineral entry for protection. Existing operations allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual effects in or outside the corridor.	
Roads	No new construction.	Roads may occasionally access or bridge the river and short parallel stretches constructed if screened.
Motorized Travel	May be permitted but is generally not compatible with this setting.	May be permitted, prohibited, or restricted; controls will be similar to surrounding land and water.
Utilities	New transmission lines, gas lines, water lines, etc., are discouraged. Where no reasonable alternative exists, facilities will be restricted to existing rights-of-way unless there is an overwhelming reason for a new location.	
Recreation Development	Simple comfort facilities may be provided for safety and sanitation.	Modest and unobtrusive development allowed if screened from river.
Structures	Minor existing structures allowed if compatible with the setting. New structures allowed only to enhance resources such as the fishery.	

Alternative 3 - Designation of "At Risk" Rivers.

Under this alternative, only those rivers that are prone to have a water resource-related

development are recommended for classification under the Wild and Scenic Rivers Act. The determination of development potential was made from local knowledge of past and possible upcoming proposals.



The three rivers recommended for classification include the Clearwater River, Rattlesnake Creek, and Clark Fork River. The other study rivers, including the North Fork Blackfoot River, Morrell Creek, South Fork Lolo Creek, Cache Creek, and West Fork Fish Creek no longer receive interim protection afforded by Amendment 12.

Clearwater River

There is an outstanding Federal Energy Regulatory Commission (FERC) license authorizing construction of a hydropower site on the Clearwater River, within the eligible segment. The license was granted in 1989, but because of lack of construction in the time allotted, FERC issued an Order Conditionally Terminating License on August 25, 1993. Although this license may terminate, it is evident that the river is vulnerable to implementation of small hydro-project proposals.

Rattlesnake Creek

The lowest reach of the eligible segment is in a location that makes it amenable to the relocation of Missoula's municipal water system intake from Rattlesnake Creek. A formal proposal has not been made but has been informally introduced to the Forest Service and the public.

Clark Fork River

The Corps of Engineers inventoried several potential dam sites on the Clark Fork, one of which is within the eligible Wild and Scenic Rivers segment. This dam site, located just upstream from the confluence with the Flathead River, would probably flood all bottom lands back to Superior, a distance of approximately 36 miles.

Table 4.3.1. Alternative 3 Rivers

RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
Clearwater River	19.9	Seeley Lake inlet to headwaters	19.9	Recreation	Recreation, Wildlife & Scenery	5,077	1,396	
						772(lakes)		
Rattlesnake Creek	25.2	Mainstem Wrangle Creek Lake Creek	19.2 3.7 2.3	Scenic Scenic Scenic	Recreation & Fishery, all	4,920	177	
						1,313	885	
Clark Fork	27.9	Slowey Cutoff	7.0 20.9	Recreation Recreation	Recreation & Scenery	849 4,503	271 868	1,057 1,335
						163 (river)	792 (river)	



Under Alternative 3, the following management standards would be adopted for the rivers classified by Congress:

**Clearwater River
and
Clark Fork**

Recommended classification: Recreation

Visuals

Management activities that have the potential to alter the visual landscape are permissible so long as the Retention visual quality objective (VQO) in the foreground and Partial Retention VQO in the middle-ground are not compromised. For new activities, view from the water course will appear essentially undisturbed.

Vegetation

Manage vegetation to attain or maintain healthy communities that may be available for use or extraction. Silvicultural prescriptions will be visually subordinate on the landscape. Noxious weed control will be proactive.

Grazing

New grazing permits will not be authorized. Federal land is not subject to open range laws and stock owners are subject to trespass action for unpermitted use.

Fish

Fish habitat improvements are allowed, to correct existing situations that inhibit fish passage, spawning, or rearing, or to stop degradation of habitat. The waterway is to appear natural where this is attainable (fish passage culverts may be obvious but acceptable).

Soil and Water

Water quality will be protected by applying stringent erosion and sewage controls on Federal land. Appropriate State and local agencies will be apprised of problems arising on other ownerships. The Forest Service will cooperate with other Federal and State agencies for the purpose of eliminating or diminishing water pollution.

Wildlife

Manage to provide for wildlife with emphasis on bird habitat. Critical winter habitats, nesting trees, and snags are especially important to maintain with treatment and replacement. Large animal habitat within the Clark Fork river corridor will not be emphasized because of the highways and railroad. Habitat for threatened, endangered or sensitive species, such as the Coeur d'Alene salamander, will be protected.

Minerals

Subject to regulations (36 CFR 228) that the Secretaries of Agriculture and Interior may prescribe to protect values of rivers included in the National System, new mining claims and mineral leases are allowed, and existing operations are allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution. Mining activities outside the boundary but within the visual corridors will be managed with special emphasis on visual quality, through mitigating measures and reclamation.

Water-Related Projects

Operation and maintenance of existing developments would continue, but application for enlargement would be denied. Existing structures that have become obsolete or ineffective would be removed on an opportunity basis. New structures such as dams and diversions are prohibited. Revocation of five Power Site Reserves will be sought in order to eliminate any opportunities for development. Application of riprap for erosion control or property protection may be allowed if there is no other effective measure.

Hunting and Fishing

Hunting, fishing, and trapping will be regulated by the State. After consultation with the State, the Forest Service may prescribe no shooting of guns in limited areas of concentrated public use where user safety outweighs the need to take game.

Private Land Uses

Existing uses will be able to continue at the landowner's discretion. Future land use conversions will be monitored, and where there is potential for degradation of the outstandingly remarkable value(s), the Forest Service will work with the landowner and/or county with the goal of modifying plans to a non-degradation effect. Acquisition of conservation (scenic) easements will only be considered if there is a willing seller. It is not anticipated that easements will be acquired or needed on all private lands within the corridor.

Dispersed or clustered residential developments are allowed. New structures are allowed for habitation and for intensive recreation use. Set-back from the riverbank is desired.

Recreation Development

Campgrounds, picnic areas, and other facilities necessary to guide public use may be established in close proximity to the river, but these are not required. Set-backs and screening will be provided.

Public Use and Access

Where necessary, public use will be regulated and distributed to protect and enhance (by allowing natural



recovery where resources have been damaged) the resource values of the river area. Public use may be controlled by limiting access to the river, by issuing permits, or by other means available through statutory authority. Access and public use of private property is at the discretion of the property owner.

Motorized Travel

Motorized travel on established county, State and Federal roads will continue under rules governing their use. Motorized travel on private property is at the discretion of the property owner. Motorized travel on all other land or water will generally be permitted but will be restricted or prohibited where necessary to protect the values for which the river area was designated.

Rattlesnake Creek

Recommended classification: Scenic

Visuals

Manage to protect and enhance the primitive, natural, and esthetic character of the corridor. The visual quality objectives are Preservation in the Wilderness and Retention in the National Recreation Area. All management and development activities will be evaluated for their potential impacts on these attributes; intrusions will be minimized.

Vegetation

Manage to allow natural forces (vegetation maturation, revegetation, insects, disease, flood, and fire) to dominate in the development of tree, shrub, and grass communities, except as provided in the Rattlesnake National Recreation Area and Wilderness Management Direction, December 1992. Management is permissible to control accelerated erosion and noxious weeds.

Fish

Monitoring of fish and their habitat are the only permissible management activities.

Soil and Water

Water quality will be protected by applying stringent erosion and sewage controls on Federal land. Appropriate State and local agencies will be apprised of problems arising on other ownerships. The Forest Service will cooperate with other Federal and State agencies for the purpose of eliminating or diminishing water pollution.

Wildlife

Manage to provide for wildlife with emphasis on bird habitat. Critical winter habitats, nesting trees, and snags are especially important to maintain with treatment and

replacement. Habitat for threatened, endangered or sensitive species, such as the Coeur d'Alene salamander, will be protected.

Minerals

Subject to regulations (36 CFR 228) that the Secretaries of Agriculture and Interior may prescribe to protect values of rivers included in the National System, new mining claims and mineral leases are allowed, and existing operations are allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, and pollution. Mining activities outside the boundary but within the visual corridors will be managed with special emphasis on visual quality, through mitigating measures and reclamation.

Water-Related Projects

Operation and maintenance of existing developments would continue, but application for enlargement would be denied. Existing structures that have become obsolete or ineffective would be removed on an opportunity basis. New structures such as dams and diversions are prohibited. Application of riprap for erosion control or property protection may be allowed if there is no other effective measure.

Hunting and Fishing

Hunting, fishing, and trapping will be regulated by the State. After consultation with the State, the Forest Service may prescribe no shooting of guns in limited areas of concentrated public use where user safety outweighs the need to take game.

Private Land Uses

Existing uses will be able to continue at the landowner's discretion. Future land use conversions will be monitored, and where there is potential for degradation of the outstandingly remarkable value(s), the Forest Service will work with the landowner and/or county, with the goal of modifying plans to a non-degradation effect. Acquisition of conservation (scenic) easements will only be considered to limit land use conversions if there is a willing seller. It is not anticipated that easements will be acquired or needed on all private lands within the corridor.

Dispersed or clustered residential developments are allowed. New structures are allowed for habitation and for intensive recreation use. Set-back from the riverbank is desired.

Recreation Development

Campgrounds, picnic areas, and other facilities necessary to guide public use may be established in close proximity to the river, but these are not required. Set-backs and screening will be provided.



Public Use and Access

Where necessary, public use will be regulated and distributed to protect and enhance (by allowing natural recovery where resources have been damaged) the resource values of the river area. Public use may be controlled by limiting access to the river, by issuing permits, or by other means available through statutory authority. Access and public use of private property is at the discretion of the property owner.

Motorized Travel

Motorized travel direction is contained in the Rattlesnake National Recreation Area and Wilderness Management Direction, December 1992. Briefly, only permitted and administrative vehicle travel is allowed to the Wilderness boundary; Mountain Water Company has vehicle access rights on specified roads in the Wilderness to allow for dam maintenance.

The remaining rivers (Morrell Creek, North Fork Blackfoot River, South Fork Lolo Creek, Cache Creek and West Fork Fish Creek) are totally or mostly located within Wilderness, proposed Wilderness, or a National Recreation Area. Although these classified areas do not grant the protection afforded by the Wild and Scenic Rivers Act, it is probably sufficient to preclude consideration of them for water-related projects unless the country was in serious need.

Alternative 4 - *Designation of "Low Risk" Rivers.*

This alternative provides Wild and Scenic River protection for those rivers that are unlikely to be impacted with water-related development projects. The alternative takes the opposite approach to Alternative 3 in recommending rivers to classify. This alternative is based on the philosophy that rivers suitable for hydropower and other water-related development should be left unencumbered so that if the need arises these rivers will be available.

Under this alternative the five rivers recommended for classification include: Morrell Creek, North Fork Blackfoot River, South Fork Lolo Creek, Cache Creek, and West Fork Fish Creek. The remaining rivers, the Clearwater River, Rattlesnake Creek, and the Clark Fork River, would no longer receive protection afforded them by Amendment 12.

Table 4.3.2. Alternative 4 Rivers

The rivers recommended for classification represent diversity in outstandingly remarkable values and would help to provide a wide spectrum of suitable rivers in the national system. The values found on the rivers not recommended for classification are represented on those that are, but to a different degree or scale.

Morrell Creek

Morrell Creek is a tributary to the Clearwater River and is on the Seeley Lake Ranger District. Almost two-thirds of the drainage is within the proposed Bob Marshall Addition Wilderness Area. The recommended classification is Scenic.

North Fork Blackfoot River

This river is a major tributary to the Blackfoot River and is also on the Seeley Lake District. The study corridor is almost entirely with the Scapegoat Wilderness Area. The recommended classification is Wild.

South Fork Lolo Creek

A tributary to Lolo Creek, this stream is south of Missoula and flows out of the Selway-Bitterroot Wilderness Area. The recommended classification is Wild.

Cache Creek

This is the southernmost large tributary to the South Fork of Fish Creek. Most of the drainage is within the proposed Great Burn Wilderness Area. The recommended classification is Wild for the upper drainage and Scenic for the lower two miles where the trailhead road is located.

West Fork Fish Creek

This is a major tributary to the North Fork of Fish Creek, with their confluence at Clearwater Crossing. It is entirely within the proposed Great Burn Wilderness Area. The recommended classification is Wild.



RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
North Fork Blackfoot River	53.5	Mainstem Dry Fork Cabin Creek Cooney Creek Dobrota Creek	20.0 16.8 8.4 5.0 3.3	Wild Wild Wild Wild Wild	Fisheries, Recreation, Scenery & Natural, all reaches	6,349 5,009 2,709 1,646 1,091		
Morrell Creek	5.8	Trailhead to headwaters	5.8	Scenic	Scenery & Recreation		1,919	
South Fork Lolo Creek	11.4	NE $\frac{1}{4}$ Sec 12 to headwaters	11.4	Wild	Recreation & Scenery		3,642	
Cache Creek	17.2	Mainstem above Montana Creek Mainstem below Montana Creek Irish Creek Pebble Creek	10.2 1.3 2.4 3.3	Wild Scenic Wild Wild	Geologic, Fishery & Natural, all reaches	3,577 560 964 1,140		
West Fork Fish Creek	20.4	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.3 7.6 3.5	Wild Wild Wild	Natural, all reaches	3,583 2,501 1,290		

Within this alternative the following management standards would be adopted for the rivers classified by Congress:

North Fork Blackfoot River, South Fork Lolo Creek, Cache Creek (above Montana Creek), & West Fork Fish Creek

Recommended classification: Wild

Visuals

Manage to protect and enhance the primitive, natural, and esthetic character of the corridor. The visual quality objective is Preservation in the Wilderness, or Retention in the foreground and Partial Retention in the middle-ground for all other areas. All management and development activities will be evaluated for their potential impacts on these attributes; intrusions will be minimized.

Vegetation

Manage to allow natural forces (vegetation maturation, revegetation, insects, disease, flood, and fire) to dominate in the development of tree, shrub, and grass communities. Management is permissible to control accelerated erosion and noxious weeds. Vegetation removal would be allowed only for facility or trail development or maintenance and for public safety.

Grazing

Grazing under existing permits may continue. New allotments will not be authorized. Federal land is not subject to open range laws and stock owners are subject to trespass for unpermitted use.

Fish

Monitoring of fish and their habitat is the only permissible management activity.

Soil and Water

Corrective action will be taken on human-induced impacts to soil and water; natural events will be allowed to run their course.

Wildlife

Those habitat activities that are allowed under the Wilderness Act will be pursued, such as prescribed natural fire.

Minerals

Valid claims and leases will not be abrogated, but occupancy may be restricted or prohibited. Activity must minimize surface disturbance and provide safeguards.



Alternatives - Description of Alternatives

against pollution of the river and unnecessary impairment of the scenery. All Federal lands which constitute the bed or bank or are situated within one-quarter mile of the bank of any river designated Wild will be withdrawn from all further forms of appropriation under the mining laws and of operation under the mineral leasing laws.

Water-Related Projects

Not allowed.

Hunting and Fishing

There are no Federal restrictions, and the State will regulate hunting, fishing, and trapping. There is no shooting in or within 150 yards of any developed site (36 CFR 261.10(d)).

Recreation Development

Campgrounds, interpretive centers, or administrative headquarters will be located outside the wild river corridor. Trailheads and simple comfort and convenience facilities such as fireplaces, shelters, or toilets may be provided as necessary within the corridor.

Public Use and Access

Although not needed at this time, provision could be made to regulate and distribute public use to protect resource values.

Motorized Use

Motorized use is prohibited in the designated and proposed Wilderness areas. Within the Wild river classification but outside Wilderness, motorized travel on land or water may be permitted but is generally not compatible with this classification. Future restrictions are permissible.

Morrell Creek and Cache Creek below Montana Creek

Recommended classification: Scenic

Visuals

Management activities that have the potential to alter the visual landscape are permissible so long as the visual quality objective of Preservation in the Wilderness or Retention in the foreground and Partial Retention in the middle-ground in all other areas is not compromised. For new activities, views from the water course or access trail will appear essentially undisturbed.

Vegetation

Manage to allow natural forces (vegetation maturation, revegetation, insects, disease, flood, and fire) to dominate in the development of tree, shrub, and grass communities. Management is permissible to control accelerated erosion and noxious weeds. Vegetation removal would be allowed

only for facility or trail development or maintenance and for public safety.

Fish

Fish habitat improvements are allowed to correct existing conditions that inhibit fish passage, spawning, or rearing, or to stop degradation of habitat. Waterway is to appear natural where this is attainable (fish passage culverts may be obvious but acceptable).

Soil and Water

Water quality will be protected by applying stringent erosion and sewage controls on Federal land. Appropriate State and local agencies will be apprised of problems arising on other ownerships. The Forest Service will cooperate with other Federal and State agencies for the purpose of eliminating or diminishing water pollution.

Wildlife

Manage to provide for wildlife with emphasis on bird habitat. Critical winter habitats, nesting trees, and snags are especially important to maintain with treatment and replacement. Habitat for threatened, endangered or sensitive species, such as the Coeur d'Alene salamander, will be protected.

Minerals

Subject to regulations (36 CFR 228) that the Secretaries of Agriculture and Interior may prescribe to protect values of rivers included in the National System, new mining claims and mineral leases are allowed, and existing operations are allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution. Mining activities outside the boundary but within the visual corridors will be managed with special emphasis on visual quality, through mitigating measures and reclamation.

Water-Related Projects

New structures such as dams and diversions are prohibited. Application of riprap for erosion control or property protection may be allowed if there is no other effective measure.

Hunting and Fishing

Hunting, fishing, and trapping will be regulated by the State. After consultation with the State, the Forest Service may prescribe no shooting of guns in limited areas of concentrated public use where user safety outweighs the need to take game.

Private Land Uses

Existing uses will be able to continue at the landowner's discretion. Future land use conversions will be monitored, and where there is potential for degradation of the outstandingly remarkable value(s), the Forest Service



will work with the landowner and/or county with the goal of modifying plans to a non-degradation effect. Acquisition of conservation (scenic) easements will only be considered if there is a willing seller. It is not anticipated that easements will be acquired or needed on all private lands within the corridor.

Dispersed or clustered residential developments are allowed. New structures are allowed for habitation and for intensive recreation use. Set-back from the river bank is desired.

Recreation Development

Campgrounds, picnic areas, and other facilities necessary to guide public use may be established in close proximity to the river, but these are not required. Set-back and screening will be provided.

Public Use and Access

Where necessary, public use will be regulated and distributed to protect and enhance (by allowing natural recovery where resources have been damaged) the resource values of the river area. Public use may be controlled by limiting access to the river, by issuing permits, or by other means available through statutory authority. Access and public use of private property is at the discretion of the property owner.

Motorized Travel

Motorized travel on land or water may be permitted, prohibited, or restricted to protect the river values. Motorized travel on private land is at the discretion of the property owner.

Alternative 5 - Designation of All Eligible Rivers.

This alternative recommends classification of all the rivers found eligible and suitable through the wild and scenic rivers studies and proposed for classification in the Eligibility Study.

This alternative is an elevation of the Eligibility Study to the next and final level (study-suitability) and for recommendation to Congress. This alternative reflects that the field inventories and assessments have determined the eligible rivers to be suitable and worthy of Congress' attention and classification.

As displayed in Figure 4.3.3 (below) the reaches of all eight rivers are classified as either wild, scenic, or recreational.

Table 4.3.3. Alternative 5 Rivers

RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
Clearwater River	19.9	Seeley Lake inlet to headwaters	19.9	Recreation	Recreation, Wildlife & Scenery	5,077	1,396	772(lake)
Morrell Creek	5.8	Trailhead to headwaters	5.8	Scenic	Scenery & Recreation	1,919		
North Fork Blackfoot River	53.5	Mainstem Dry Fork Cabin Creek Cooney Creek Dobrota Creek	20.0 16.8 8.4 5.0 3.3	Wild Wild Wild Wild Wild	Fisheries, Recreation, Scenery & Natural, all reaches	6,349 5,009 2,709 1,646 1,091		
Rattlesnake Creek	25.2	Mainstem Wrangle Creek Lake Creek	19.2 3.7 2.3	Scenic Scenic Scenic	Recreation & Fishery, all reaches	4,920 1,313 885		177
South Fork Lolo Creek	11.4	NE $\frac{1}{4}$ Sec 12 to headwaters	11.4	Wild	Recreation & Scenery	3,642		



RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
Cache Creek	17.2	Mainstem above Montana Creek Mainstem below Montana Creek Irish Creek Pebble Creek	10.2 1.3 2.4 3.3	Wild Scenic Wild Wild	Geologic, Fishery, & Natural, all reaches	3,577 560 964 1,140		
West Fork Fish Creek	20.4	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.3 7.6 3.5	Wild Wild Wild	Natural, all reaches	3,583 2,501 1,290		
Clark Fork	27.9	Slowey Cutoff	7.0 20.9	Recreation Recreation	Recreation & Scenery	849 163 (river) 4,503 792 (river)	271 868	1,057 1,335

Under Alternative 5, the same management standards as displayed for Alternatives 3 and 4 would be applied.

Alternative 6 - Change Classification (Preferred Alternative)

Alternative 6 builds upon the designation of the eligible rivers displayed in Alternative 5 and classifies an additional seven river segments. This alternative also changes classification of two of the already eligible river segments from a scenic classification to a wild classification.

During the field surveys made subsequent to the Eligibility Study it was found that certain river segments qualified for a more primitive classification or that river segments should be added. The additions are limited to the significant tributaries of eligible rivers where the tributary complements the outstandingly remarkable values. These additions will complete or make whole a headwaters river system. Some tributaries are deemed too small to be considered for water-related projects, or they are inaccessible.

Morrell Creek

The Eligibility Study recommended that this river be classified Scenic. Under this alternative that

segment above Morrell Falls will be recommended for Wild, leaving the lower two miles as Scenic.

North Fork Blackfoot River

Add Dwight and Canyon Creeks as they are major tributaries and supplement the outstandingly remarkable values in the drainage.

Rattlesnake Creek

Change the recommended classification for Wrangle Creek from scenic to wild. This creek has no formal access except in the lower end and qualifies under the criteria for Wild status. Add the following major tributaries: East Fork Rattlesnake, Spring Gulch and High Falls Creek.

South Fork Lolo Creek

Add No Name Creek and lake as these expand the outstandingly remarkable attributes of the South Fork.

Cache Creek

Add White Creek because of its important contribution to the quality of water and fisheries habitat in the Cache Creek system. Include the private land at the mouth of Cache Creek with a recommended Scenic classification.



Table 4.3.4. Alternative 6 Rivers

RIVER	STUDY LENGTH	REACH	LENGTH (miles)	POTENTIAL CLASS.	OUTSTANDING VALUE(S)	CORRIDOR ACRES		
						National Forest	Other Public	Private
Clearwater River	19.9	Seeley Lake inlet to headwaters	19.9	Recreation	Recreation, Wildlife & Scenery	5,077	772(lakes)	1,396
Morrell Creek	5.8	Trailhead to falls Falls to headwaters	3.0 2.8	Scenic Wild	Scenery & Recreation	992	927	
North Fork Blackfoot River	63.9	Mainstem Dry Fork Cabin Creek Cooney Creek Dobrota Creek Dwight Creek Canyon Creek	20.0 16.8 8.4 5.0 3.3 5.1 5.3	Wild Wild Wild Wild Wild Wild Wild	Fisheries, Recreation, Scenery & Natural, all reaches	6,349 5,009 2,709 1,646 1,091 1,449 1,524		
Rattlesnake Creek	37.9	Mainstem Wrangle Creek Lake Creek Spring Gulch High Falls Creek East Fork Rattlesnake	19.2 3.7 2.3 4.5 4.0 4.2	Scenic Wild Scenic Scenic Scenic Wild Wild	Recreation & Fishery, all reaches	4,920 1,313 885 1,370 1,096 1,301	177	86
South Fork Lolo Creek	12.5	NE 1/4 Sec 12 to headwaters No Name Creek	11.4 1.1	Wild Wild	Recreation & Scenery	3,642 311		
Cache Creek	21.9	Mainstem above Montana Creek Mainstem below Montana Creek Irish Creek Pebble Creek White Creek	10.2 1.4 2.4 3.3 4.6	Wild Scenic Wild Wild Wild	Geologic, Fishery, & Natural, all reaches	3,577 560 964 1,140 1,295		65
West Fork Fish Creek	20.4	Mainstem Cedar Log Creek Middle Fork Indian Creek	9.3 7.6 3.5	Wild Wild Wild	Natural, all reaches	3,583 2,501 1,290		
Clark Fork	27.9	Slowey Cutoff	7.0 20.9	Recreation Recreation	Recreation & Scenery	849 4,503 163 (river) 792 (river)	271 868 1,057	1,335

There are no changes to the Clearwater River, West Fork Fish Creek, and the Clark Fork. Management standards similar to those described in Alternatives 3 and 4 would be applicable here.

Table 4.3.5 provides a summary of rivers that are found suitable and recommended for classification by alternative. A summary of the acreages included in each alternative, by ownership, is shown in Table



4.3.6. Table 4.3.7 provides a comparison of alternatives in summary form.

Table 4.3.5. Suitable River Recommendation by Alternative

RIVER ALTERNATIVE

Clearwater River	1	2	3	4	5	6	
Morrell Creek				x	x	x	
North Fork Blackfoot River				x	x	x	
Rattlesnake Creek			x		x	x	
South Fork Lolo Creek				x	x	x	
Cache Creek				x	x	x	
West Fork Fish Creek				x	x	x	
Clark Fork			x		x	x	
Total River Miles	0	0	73.0	108.3	181.3	210.2	

Alternatives:

1 No Action
2 Nondesignation
3 At Risk

4 Low Risk
5 All Eligible
6 All with Additional Tributaries
(Preferred)

Table 4.3.6. Acreage by Owner by Alternative

OWNERSHIP	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
National Forest	N/A	54,516	18,547	35,369	54,516	62,862
State		--	1,139	--	1,139	1,139
Corporate	No	--	473	--	473	473
Small Private		--	3,492	--	3,492	3,643
Water	Corridors	--	1,727	11	1,738	1,738
Total	--	54,516	25,378	35,380	61,358	69,855



Table 4.3.7. Summary Comparison of Alternatives

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Intent</u></p> <p>Maintain the existing level of resource protection, allowing land uses and river management practices to continue without the protection of Forest Plan Amendment 12. No special designation for the rivers and no new mechanisms to provide additional resource protection; no special river management coordination.</p>	<p>Provide classification protection without Congressional action through the Forest Plan. This protection would apply to Federal land; private and State land opportunities, limitations, and coordination would not change from existing situation.</p>	<p>Classification is recommended only for those rivers that are prone to have a water-resource related development. This determination is made from historic requests, proposals, inventories, or approved projects.</p>	<p>Classification is recommended for those rivers unlikely to be impacted with water-related development projects. Rivers suitable for hydropower or other water-related projects would remain available for development.</p>	<p>Classification is recommended for all the rivers found suitable under the W&SR Act criteria; applies to all eight rivers determined eligible in Amend 12 to the Forest Plan.</p>	<p>Classification is recommended for all eligible rivers plus significant tributaries that contribute to the outstandingly remarkable values and a stretch of private land is added. Segments of two rivers are recommended for a more primitive class than recommended in the Eligibility Study.</p>
<p><u>Boundaries</u></p> <p>No formal definition of a river corridor management area.</p>	<p>A 1/4-mile corridor on each side of the river would be defined on National Forest System land. There would be no definition on other ownerships.</p>	<p>A 1/4-mile corridor on each side of the river would be defined across all ownerships.</p>	<p>Same as Alt. 3</p>	<p>Same as Alt. 3</p>	<p>Same as Alt. 3</p>



ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Visuals</u></p> <p>Visual quality objective will vary from Partial Retention to Retention, depending on the river and existing amount of development. Constraints on private land will be up to the owner.</p>	<p>Same as Alt. 1, except activities on National Forest land will be better screened from the river. Constraints on private land will be up to the owner.</p>	<p>Clearwater, Clark Fork: Retention and Partial Retention visual quality objectives (VQO). Alteration permissible but appearance is essentially undisturbed from watercourse.</p> <p>Rattlesnake: Preservation and Retention VQO's; protect primitive, natural, esthetic character.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Preservation, Retention and Partial Retention VQO's; protect primitive, natural, esthetic character.</p> <p>Morrell, lower Cache: Preservation, Retention and Partial Retention VQO's. Alteration permissible but appearance is essentially undisturbed from watercourse.</p>	<p>Clearwater, Clark Fork, Morrell, lower Cache: Retention and Partial Retention VQO's. Alteration permissible but appearance is essentially undisturbed from watercourse.</p> <p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish, Rattlesnake: Preservation, Retention and Partial Retention VQO's; protect primitive, natural, esthetic character.</p>	<p>Same as Alt. 5</p>
<p><u>Vegetation</u></p> <p>Use and extraction activities acceptable except in existing and proposed Wilderness and the National Recreation Area. Other constraints would reduce the visual effects of activities.</p>	<p>Use and extraction activities acceptable except in the existing and proposed Wilderness and National Recreation Area. Values identified as outstandingly remarkable would be protected.</p>	<p>Clearwater, Clark Fork: Manage for healthy communities, but prescriptions visually subordinate on the landscape.</p> <p>Noxious weed control proactive.</p> <p>Rattlesnake: Allow natural forces to dominate in vegetative development except as provided in the management direction for the Rattlesnake National Recreation Area and Wilderness.</p>	<p>All Recommended Rivers: Allow natural forces to dominate in vegetative development.</p> <p>Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety.</p>	<p>Clearwater, Clark Fork: Manage for healthy communities, but prescription visually subordinate on the landscape.</p> <p>Noxious weed control proactive.</p> <p>Morrell, N.F.Blackfoot, Rattlesnake, S.F.Lolo, Cache, W.F.Fish: Allow natural forces to dominate in vegetative development.</p> <p>Management is permissible to control noxious weeds. Vegetation removal allowed for facilities, trails, public safety.</p>	<p>Same as Alt. 5</p>



ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Fish & Wildlife</u></p> <p>There is no particular protection afforded the fish except for the State's water quality rules. In addition to wildlife protection afforded by Wilderness, there are about 4,500 acres of big game winter range and 3,000 acres of grizzly bear habitat that could be featured in management of the National Forest System land.</p>	<p>Similar to Alt. 1, except that constraints on other activities, such as water-related development, would provide additional protection to fish and wildlife habitat.</p>	<p>Clearwater, Clark Fork: Fish and wildlife habitat maintenance and improvement (including recovery) are featured, especially bird habitat.</p> <p>Rattlesnake: less management activity is permissible than on the other two rivers because of the recently completed management direction developed under the Limits of Acceptable Change process. Bird habitat is featured.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Very little in the way of direct management is available because of the existing and proposed Wilderness classification on these rivers.</p> <p>Morrell, lower Cache: Fish and animal habitat (emphasis on bird) maintenance and improvement are featured; however, there are only about 1,000 acres available because of the proposed Wilderness areas.</p>	<p>Clearwater, Clark Fork, Morrell, Rattlesnake, upper Cache: Fish and wildlife habitat maintenance and improvement is featured, especially bird habitat. See Alt. 3 for constraints in the Rattlesnake.</p> <p>Morrell, lower Cache: Fish and wildlife habitat (emphasis on bird) maintenance and improvement are featured; however, there are only about 1,000 acres available because of the proposed Wilderness areas.</p>	<p>Same as Alt. 5</p>
<p><u>Soil & Water</u></p> <p>With no prohibition on development (except in existing and proposed Wilderness) there could be short-term soil and water degradation. Sites selected for development would be completely removed from functioning naturally. State laws would be heavily relied upon for protection.</p>	<p>Constraints vary from development prohibited to allowing minor structures for hydroelectric, water supply, flood control, and utilities, depending on whether located in a primitive or developed setting.</p>	<p>Clearwater, Clark Fork, Rattlesnake: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course.</p> <p>Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: Stringent erosion and sewage controls. Objective is to eliminate or diminish water pollution.</p> <p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Corrective action will be taken on man-induced impacts; natural events will be allowed to run their course.</p>	<p>Same as Alt. 5</p>



Alternatives - Description of Alternatives

ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Recreation</u></p> <p>Recreation opportunities and public access are provided on Federal land and by counties/State where need has prompted such development. As in all alternatives, hunting and fishing is regulated by the State.</p>	<p>Development is modest and simple; unobtrusive. Private land development is encourage to follow same pattern.</p>	<p>Clearwater, Clark Fork, Rattlesnake: Campgrounds, picnic areas, and other facilities necessary to guide public use may be established within the corridor.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Campgrounds, interpretive centers, administrative buildings will be located outside the wild river corridor. Trailheads and simple comfort facilities may be provided within the corridor. Morrell, lower Cache: Campgrounds, picnic areas, and other facilities necessary to guide public use may be established within the corridor.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: Campgrounds, picnic areas and other facilities necessary to guide public use may be established within the corridor. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Campgrounds, interpretive centers, administrative buildings will be located outside of the corridor. Trailheads and simple comfort facilities may be provided within the corridor.</p>	<p>Same as Alt. 5</p>



ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Minerals</u></p> <p>Mining and minerals development are regulated by existing rules. There are no lands withdrawn from mineral entry except for developed sites and Wilderness areas. Operating plans that contain procedures to protect other resources are required.</p>	<p>Existing operations allowed to continue and new claims/leases allowable. Mineral activity must minimize surface disturbance, sedimentation, pollution, and visual effects in or outside the corridor. Option available to withdraw Federal lands for protection of outstandingly remarkable values.</p>	<p>Clearwater, Clark Fork, Rattlesnake: New mining claims and mineral leases are allowed, and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operation plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Existing valid claims will not be abrogated but occupancy may be restricted. The minerals in Federal lands within the corridor are withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws. Morrell, lower Cache: New mining claims and mineral leases are allowed and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operation plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>Clearwater, Clark Fork, Rattlesnake, Morrell, lower Cache: New mining claims and mineral leases are allowed and existing operations allowed to continue, subject to regulations that may be prescribed to protect river values. Operation plans include minimization of surface disturbance, sedimentation, and pollution; special emphasis on protecting visual quality.</p>	<p>Same as Alt. 5</p>



ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<p><u>Private Land Uses</u></p> <p>All private land uses are under local and State controls. The coordination of management activities and uses occur in ad hoc fashion. The State's various riparian area, water quality, and subdivision laws have the most influence on development.</p>	Same as Alt. 1	<p>Clearwater, Clark Fork, Rattlesnake:</p> <p>Existing uses continue at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects.</p> <p>Acquisition of conservation easements is a possibility.</p> <p>Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	<p>Lower Cache:</p> <p>Existing uses continue at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects.</p> <p>Acquisition of conservation easements is a possibility.</p> <p>Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	<p>Clearwater, Clark Fork, Rattlesnake, lower Cache:</p> <p>Existing uses continue at owner's discretion. The Forest Service will work with landowners and local officials on land use conversions that would degrade the outstandingly remarkable values to ameliorate effects.</p> <p>Acquisition of conservation easements is a possibility.</p> <p>Dispersed or clustered housing is allowed; set-back from the river is desired.</p>	Same as Alt. 5
<p><u>Public Use and Access</u></p> <p>Application of public use and access rules would be implemented as problems arose on National Forest System land. Private landowners would have control of public use and access on their lands.</p>	Same as Alt. 1, except that use and access restrictions would be anticipated ahead of the problem.	<p>Clearwater, Clark Fork, Rattlesnake:</p> <p>When necessary, public use will be dispersed to protect or enhance the resource values of the river area.</p> <p>Use may be controlled by limiting access to the river, issuing permits, or other statutory authority.</p> <p>Access and public use of private property is at the discretion of the landowner.</p>	<p>N.F.Blackfoot, S.F.Lolo, Cache, W.F.Fish, Morrell:</p> <p>When necessary, public use will be dispersed to protect or enhance the resource values of the river area.</p> <p>Use may be controlled by limiting access to the river, issuing permits, or other statutory authority.</p> <p>Access and public use of private property is at the discretion of the landowner.</p>	<p>All Rivers:</p> <p>When necessary, public use will be dispersed to protect or enhance the resource values of the river area.</p> <p>Use may be controlled by limiting access to the river, issuing permits, or other statutory authority.</p> <p>Access and public use of private property is at the discretion of the landowner.</p>	Same as Alt. 5



ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6 (Preferred)
<u>Motorized Travel</u> Travel restrictions usually made as independent action by landowner/manager. Normal travel plan procedures on National Forest.	May be permitted, but not compatible with primitive setting. Not allowed in Wilderness. Controls would be coordinated with other managers.	Clearwater, Clark Fork: Generally permitted, but will be restricted on land or water to protect the values for which the river was designated. Private land restrictions up to owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992.	N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Prohibited in designated and proposed Wilderness. Morrell, lower Cache: May be permitted or restricted to protect river values. Private land controlled by owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Prohibited in designated and proposed Wilderness.	Clearwater, Clark Fork, Morrell, lower Cache: May be permitted or restricted to protect river values. Private land controlled by owner. Rattlesnake: Controlled by Rattlesnake National Recreation Area and Wilderness Management Direction, 1992. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Prohibited in designated and proposed Wilderness.	Same as Alt. 5
<u>Water Related Projects</u> Project proposals would stand on their own. Coordination with other agencies may or may not be necessary.	Will not be permitted in primitive settings; minor structures permitted in developed settings.	Clearwater, Clark Fork: Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves. Rattlesnake: Same as above.	N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Not allowed. Morrell, lower Cache: Not allowed unless in the public interest.	Clearwater, Clark Fork: Existing developments may continue; application for enlargement will be denied. New dams/diversions prohibited. Request revocation of existing Power Site Reserves. Rattlesnake, Morrell, lower Cache: Same as above. N.F.Blackfoot, S.F.Lolo, upper Cache, W.F.Fish: Not allowed.	Same as Alt. 5





North Fork Blackfoot River, Falls above confluence with East Fork.





No Name Lake, South Fork Lolo Creek



5

Environmental

Consequences

■ 5.0 Introduction

This chapter describes the impacts of each alternative on the affected environment (the river corridor resources and land uses described in chapter II) and the issues identified internally and by the public. The information contained in this chapter provides the scientific and analytical basis for the comparison of the alternatives.

The information contained in this chapter is arranged in similar order as chapter II. In each of the sections the resources are discussed in the same order to allow cross-referencing. Section 5.1 of this chapter describes the methods that were used to assess and describe the environmental consequences of the alternatives. Section 5.2 examines impacts which are common to all of the alternatives. Resources which are not affected by implementation of any of the alternatives, including the no action alternative, are discussed within the first part of this section. Resources which are commonly impacted by all of the alternatives are discussed in the latter part.

Section 5.3 examines the effects that each alternative, individually, has on the resources found within the river corridors. Section 5.4 summarizes these impacts and describes them in relation to those issues identified during the scoping process. Section 5.5 discloses any adverse environmental effects that cannot be avoided by the alternatives. Section 5.6 examines how the alternatives would

affect local short-term uses of the environment and the maintenance of long-term productivity. Section 5.7 discusses the irreversible and irretrievable commitment of resources caused by implementation of the alternatives.

The effects analyzed in this chapter relate to the alternatives developed for including the study rivers in the National Wild and Scenic Rivers System. This analysis does not address the approval or disapproval of specific projects within the study area. The Forest Service requires an individual project analysis for each site-specific activity (e.g., a water impoundment) which might be proposed for any of the river segments. Opportunities for public comment on these proposals would be provided during project-level environmental analysis.

■ 5.1 Analysis Methods

The environmental effects focus on the lands which lie within the decision area ($\frac{1}{4}$ mile on each side of the river) and, in some cases, on surrounding lands. The methodology used to analyze each alternative was based primarily on the most current mapped resource information for the various resources that may be affected. The effects and consequences were described or grouped as follows:

Direct and Indirect Effects: Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and the effects occur



later in time or are farther removed in distance but are still reasonably foreseeable.

Cumulative Effects: Cumulative effects result from incremental change over time where the action is added to other past, present, and reasonably foreseeable future actions (regardless of what agency or person undertakes such other actions).

Possible Conflicts With Plans and Policies of other Jurisdictions: Possible conflicts may be present between the proposed action and the objectives of Federal, State, and local land use plans and policies.

Probable Environmental Effects That Cannot Be Avoided: Includes effects that will occur with implementation. These effects represent trends which would occur with alternative implementation whether mitigation was implemented or not.

The Relationship Between Short-term Use and Long-term Use: The impacts that short-term use will have on the maintenance and enhancement of long-term productivity. These may be negative or positive in terms of social, economic, or resource factors.

Irreversible and Irretrievable Commitments of Resources: An irreversible commitment describes a loss of future options. Some resources may not be renewable, or, once committed, the effects of an action are essentially forever.

An irretrievable commitment of resources can be viewed as the loss of production or use of resources because of allocation to another resource. They are irretrievable in that they are lost through the duration of conflicting use.

Consistency With the Forest Plan: This refers to the degree to which the implementation of an alternative conforms or conflicts with Forest Plan direction.

■ 5.2 Effects Common to All Alternatives

Several of the alternatives had effects, either favorable or adverse, which were common to the various resources.

Land Ownership

The effects on land ownership in the proposed river corridors would be the same for all alternatives. Designation of a river under the Wild and Scenic Rivers Act does not imply any direct effects for land ownership. While the Act permits acquisition of scenic and conservation easements on private land in some instances, it is not the intent of the Forest to obtain easements except under willing and mutual consent. The ownership pattern on the study rivers on the Lolo National Forest precludes condemnation for fee title to land.

Geology, Minerals and Soils

None of the proposed alternatives would affect the geological structure, mineral content, or soil structure of the river corridors. Opportunities to extract minerals or affect soils are covered under "Land Use and Controls" later in this chapter.

Fisheries

Under all of the action alternatives the fishery resource would have direct protection in the North Fork Blackfoot River, Rattlesnake Creek, and Cache Creek, since these are the streams that have fisheries designated as an outstanding resource value. Indirect benefits to the fishery would occur in other streams through protection of other outstanding resource values.

Federal designation, while protecting fish habitat, could attract an increased number of recreational anglers, further increasing fishing pressure. This effect may be especially important with bull trout in some of the streams, given their extreme vulnerability during the spawning period. The Forest Service would have the authority to limit surface use of the river segments designated under all action alternatives. Classification, under any action alternative, will require the Forest Service to



initiate management plans for each river, congruent with the selected alternative.

Wildlife and Vegetation Effects

Winter ranges in western Montana remain productive only as long as wildfires are allowed to burn, or prescribed fire can be introduced on a regular basis (Gruell, 1983). The Lolo Forest Plan (USDA, 1986) directs that a portion of high value winter ranges be burned periodically. Wild and Scenic Rivers designation does not limit prescribed burning as long as visual standards are met. Prescribed burning generally meets the visual quality objective of "retention," and therefore constitutes no threat to visual standards. For this reason, neither designation nor nondesignation will have any effect on ungulate winter ranges. Alternatives 1-6 will have no effect on ungulate winter ranges.

Bighorn sheep ranges are dependent on fire in the same manner as deer and elk winter ranges. For the same reasons listed above, neither designation nor nondesignation will have any effect on bighorn sheep ranges. Bighorn sheep are highly viewable and photogenic and are therefore highly sought after by wildlife viewing enthusiasts. Since designation has at least some unknown potential to increase human use, the potential for increased human disturbance on sheep was evaluated. The only river system where bighorn sheep are adjacent to the river corridor is the lower Clark Fork. Access to sheep concentration areas is available on adjacent National Forest land; however, the terrain is rugged and sheep are generally located 1,000-2,000 feet in elevation above the river. Consequently, it's assumed that most wildlife viewers will tend to view sheep from the river and not pursue them upslope. For these reasons, neither designation nor nondesignation will have any effect on bighorn sheep.

Moose tend to be concentrated along waterways, particularly in the summer. Since moose often exhibit little fear to humans, they are very vulnerable to poaching. The highest concentrations of moose within the rivers being considered for designation occur in the West Fork of Fish Creek, Cache Creek, and the South Fork of Lolo Creek. All of these streams are within wilderness or proposed wilderness areas, which makes poaching difficult because of lack of road access. The Clearwater

River has a few moose, however, the high density of roads and vehicle activity in this area (including adjacent Highway 83) makes poaching relatively risky. Consequently, even if designation were to result in increased human activity along the rivers, moose poaching shouldn't increase. For those reasons, alternatives 1-6 will have no effect on moose concentrations.

Loon populations in the Clearwater River system, currently at risk from boat-related recreational disturbance ([LNF Monitoring Reports, 1987-1991](#)), will probably receive no additional protection from designation. Hence, disturbance-related nest failures will probably continue regardless of alternative selected.

Flammulated owl habitat along the Clark Fork will not be impacted (either beneficially or negatively) by designation. Fisher, lynx, and wolverine habitat will not be impacted by designation.

None of the alternatives will have any adverse effect on grizzly bears (per Biological Evaluation in Project File). Existing regulations are considered adequate to ensure recovery of the grizzly bear in all candidate rivers.

Mountain goats are present in several candidate river systems. All populations are well-removed by both distance and steep, rugged terrain from the river corridor. Consequently, none of the alternatives will have any effect on mountain goat populations.

High summer concentrations of elk occur in some of the drainages being considered for designation. Most of these concentrations are well removed from the river corridor. The most significant issue facing these herds is the bull harvest rate, although most of the elk herds in the candidate streams maintain an adequate postseason bull carryover, consistent with Montana Department of Fish Wildlife & Park's (MDFWP) Elk Plan (1992). Elk hunting in Idaho's wild portion of the Middle Fork of the Salmon River is facilitated with Wild and Scenic River floating access. Could designation, then, somehow increase elk hunting demand and/or facilitate access into prime elk habitat to the degree that bull survival might suffer? It appears not, given the national trends for big game hunting (which have plateaued) and the availability of existing access into elk habitat. Designation will in



no way increase elk hunting demand or result in an increase in the harvest rate. Consequently, alternatives 1-6 will have no effect on elk summer range or bull carryover.

■ 5.3 Effects on River Resources

□ Land Use and Controls

Clearwater River

Under Alternatives 1 and 4, the Clearwater River would return to management that caters to concentrated public use. As recreation use increases, the private lands will likely become more intensely developed and subdivided, without comprehensive zoning. Currently, there is no grazing on National Forest System Lands in the Clearwater corridor. The status of mineral entry would not change. Dams and diversions would be possible.

With Alternative 2, timber cutting on National Forest System Lands would be permitted as long as outstandingly remarkable values (ORV's) were not degraded. Agricultural uses would need to be compatible with the natural appearance of the river. Existing mining operations would continue, and new claims and leases could occur as long as ORV's were not compromised. Hydroelectric development would not be allowed, and when the Federal Energy Regulatory Commission (FERC) is the permitting agency, a negative recommendation would be submitted by the Forest. New utility corridors would be discouraged unless no reasonable alternative was available.

With Alternatives 3, 5, and 6, the Clearwater would be designated a Recreation River. The land use effects would be very similar to those in Alternative 2. Existing private land uses would continue at the discretion of private owners.

In the case where a land use would degrade ORV's, the Forest Service would work with the private owner and the county to modify plans to prevent degradation. Scenic easements could be acquired from willing sellers.

Morrell Creek

Under Alternatives 1 and 3, land management would revert to proposed wilderness and management of grizzly bear habitat suitable for timber harvest. Any potential timber harvest in the latter would be subject to State riparian and Federal grizzly bear standards. There would be no grazing or agriculture under these alternatives.

Under Alternative 2 (nondesignation with protection), timber harvest would only be allowed for investments such as trails and for safety of users. Hydroelectric development would not be permitted. When the licensing authority is FERC, the Forest would recommend against issuance of a license. Operating plans for mineral development would have to take into consideration the need to protect the wild and scenic values of the stream. There are no existing operations. New utility construction would be discouraged.

Under Alternatives 4 and 5, timber harvest would be allowed only for trail maintenance and public safety. There are no existing mining claims, and operating plans for new claims and leases would require compatibility with the ORV's. Dams and diversions would be prohibited unless the proposal is in the public interest.

Under Alternative 6, timber cutting would be allowed only for trail maintenance and public safety. The corridor in the upper Morrell Creek drainage would be withdrawn from mineral entry as a result of the Wild river classification.(2.8 miles or 927 acres).

North Fork of the Blackfoot

The North Fork of the Blackfoot is almost entirely within a wilderness area. The corridor outside the wilderness boundary is managed for grizzly bear habitat and suitable for timber management or grazing.

The wilderness portion is already withdrawn from mineral entry, and no timber harvest is permitted. There are scattered grazing allotments in the wilderness area that coincide with outfitting permits. Under Alternatives 1 and 3, there would be no change in this management.



The portion of the corridor outside the wilderness boundary would be managed according to the existing Forest Plan. Under Alternatives 2, 4, 5, and 6, the corridor would be managed similarly, with the additional protection of ensuring the water remains free flowing under Alternatives 4, 5, and 6. Mining opportunities would be withdrawn from the corridor lands.

The corridor would be unavailable for timber harvest except for trail and facility clearing and public safety. With Alternative 2, mining activities would be permitted if not degrading to the ORV's.

Utility construction would be discouraged in the corridor under all alternatives because of existing management constraints and the availability of more suitable locations away from the corridor.

Rattlesnake Creek

Although the suitable segment of Rattlesnake Creek is in National Forest System lands and State ownership, the municipal water company for Missoula has outstanding rights for source water but not for diversion and development. Under Alternatives 1 and 4, these rights would be intact and some additional development could occur. The corridor is currently classified as unsuitable for timber harvest under the Forest Plan. The wilderness segment is closed to mineral entry; mineral potential in the National Recreation Area is low.

Under Alternative 2, diversion or water development would not be permitted. Utility corridor development would be discouraged. The timber and mining provisions that apply under Alternatives 1 and 4 would also apply here.

With Alternatives 3, 5 and 6, dams and diversions would be prohibited. Timber, mining and utility corridor construction would be the same as under Alternative 2.

South Fork of Lolo Creek

The upper nine miles of the South Fork are in Wilderness and proposed wilderness. The 2.4 miles of stream outside the area of wilderness management is in roadless management unsuitable

for timber harvest, and steep land suitable for timber harvest, or suitable timber land maintained for old growth dependent species. Under Alternatives 1 and 3, this part of the corridor could experience some selected harvest. The lower 3.5 miles would be open to mineral entry. This lower stretch could also be subject to diversion or impoundment.

Under Alternative 2, diversion or development would not be permitted. Where FERC is the licensing authority, the Forest Service would recommend against permitting development. Mining would be constrained in the lower 2.4 miles so that the operation did not degrade the ORV's. No new roads would be constructed, and timber harvest would only be permitted for public safety or trail maintenance.

With Alternatives 4, 5, or 6 in place, the corridor lands would be withdrawn from mineral entry and unavailable for hydropower development. Vegetation removal would be permitted for public safety and facilities maintenance.

Cache Creek

The Forest Service would continue to have jurisdiction over the access and activity within Cache Creek, and under Alternatives 1, 2, and 3, no additional government control is likely to be instituted. The land uses would continue to be quite similar to those that exist presently. In all alternatives the Outfitter and Guide Permit(s) that currently exist will continue in accordance with the permit stipulations. Because of the small number of priority service days and the fact that no significant changes are being considered until a Wilderness decision is made, river classification would not have any direct effect on the outfitting permits.

The most significant land use change accompanying river designation (Alternatives 4, 5, and 6) would be the preclusion mining opportunities within the Wild River corridor. This is the same effect that would be expected with Wilderness designation and would be a change from current management under the 1872 Mining Law. Although no active mining claims currently exist in Cache Creek, this would be an indirect effect on the ability to stake and hold mining claims.



West Fork of Fish Creek

The Forest Service would continue to have jurisdiction over access to and activity within the West Fork, and under Alternatives 1, 2, and 3, no additional government control is likely to be instituted. The land uses would be similar to those that exist presently. In all alternatives the Outfitter and Guide Permit that currently exists will continue in accordance with the permit stipulations. Because of the small number of priority service days and the fact that no significant changes are being considered until a Wilderness decision is made, river classification would not have any direct effect on the outfitter's permit.

The most significant land use change accompanying river designation (Alternatives 4, 5, and 6) is precluding mining opportunities within the Wild River corridor. This is the same effect that would be expected with Wilderness designation and would be a change from current management under the 1872 Mining Law. Although no active mining claims currently exist in the West Fork, this would be an indirect effect on the ability to stake and hold mining claims.

Clark Fork

Alternatives 1 and 4 will have no effect on current land use patterns. The corridor will continue to be used for forestry, agriculture, transportation (highway and rail), private residential, and recreation associated with the river. Several studies have been conducted to investigate the potential for major hydroelectric developments on the Clark Fork river. These developments would affect both the Slowey and the Cutoff reaches. These alternatives would not preclude a major hydroelectric development on the Clark Fork.

Future land use can take many paths under these alternatives. Federal land management will be guided by the Lolo Forest Plan unless preempted by a major hydroelectric dam. If land use follows current trends the Cutoff corridor will see increasing levels of recreation use of both land and water. Private lands with river frontage will continue to be subdivided, and part-time and yearlong residences constructed. Private property would be subject only to regulations that are in place at the county and State levels. Transportation

facilities will continue to be operated as they have in the past.

Agriculture and grazing will not be affected on private and State lands. Currently, no authorizations exist on National Forest lands in the Slowey and Cutoff reaches of the Clark Fork for grazing or agricultural production. These alternatives would not preclude future grazing and agricultural authorizations; however, topography, soil types, vegetative type, railroad and highway right-of-ways already limit the opportunity for grazing and agriculture on National Forest lands.

Alternatives 1 and 4 will not affect vegetation or its management on National Forest lands within the corridor area. Project planning in the Slowey and Cutoff reaches of the Clark Fork will need to consider the important recreation resources to ensure that these values are protected.

The proposed management standards contained in Alternative 2 are not significantly different than what is currently contained in the Forest Plan. This alternative would add specific standards for water supply and flood control facilities so that existing structures are allowed to remain but new structures are not allowed. For the Slowey and Cutoff reaches, there are no water supply structures on National Forest lands; however, there is some rip- rap used for flood control along Highway 135 right-of-way.

Alternative 2 applies management standards only to Lolo National Forest lands; thus, use of private property and State lands will not be affected. Use of National Forest Lands will not noticeably changed if Alternative 2 is implemented.

Under Alternatives 3, 5, and 6, implementation would serve to maintain the recreational use of the Clark Fork River through measures that are directed at protecting the recreational and scenic values of the river. Current and future land uses need to protect and maintain these values. Uses or activities on National Forest land that may degrade these values will be modified or denied in order to protect them. For land uses or activities on private land that degrade these values, negotiations to modify the use or activity will be pursued. The following are potential land uses on National Forest lands that will be denied or modified to protect the river values:



Hydroelectric diversions and dams.

Mining and quarrying operations that will degrade recreation and scenic values.

Shoreline development that degrades recreational or scenic values. The Forest Service will also be involved at the county level, encouraging them to establish zoning and to enforce existing laws that provide protection for the river values. Implementation of this alternative could result in Forest Service involvement in private property within the corridor area along the Slowey and Cutoff reaches of the Clark Fork. This involvement will most likely consist of acquisition of conservation easements on a willing buyer/seller basis necessary to protect the recreation and scenic values along the river. It is anticipated that the primary focus for conservation easements acquisition will be for shoreline development. It is estimated that for the Cutoff and Slowey reaches there are approximately 110 and 50 landowners, respectively, that could be involved in acquisition of conservation easements.

Increase in recreational use of the river to the point of user conflict or resource degradation.

New utility lines, such as gas, water, and electric, are discouraged. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are necessary, the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site.

These alternatives allow for the development of mineral deposits in a manner that minimizes surface disturbances, sedimentation, and pollution. Because of the sensitivity of the corridor area, efforts to minimize impacts from mining are viewed by some mineral developers as infringing on their right to the minerals.

Under Alternatives 3, 5, and 6, the Forest Service would strive to protect the scenic and recreational values of the river by encouraging local government land-use planning that is consistent with

designation. The Forest Service will develop management plans in cooperation with private landowners that are consistent with designation. As a result, the private property owners would be affected primarily by local zoning, partnerships/agreements, voluntary management plans, and acquired conservation easements. How these limitations are viewed is largely a matter of the individual property owner's perspective or preference.

Recreational Opportunities and Public Access

Clearwater River

The Clearwater River, under Alternatives 1 and 4, would continue to experience increased recreation pressure and use in the absence of county zoning or a community plan. The National Forest System lands would continue to be managed to prevent degradation of the remarkable values of the river.

Under Alternative 2, somewhat more restrictive management could be exercised over recreational developments on National Forest System lands.

In Alternatives 3, 5, and 6, public use and access could be regulated and distributed to afford disturbed areas an opportunity for restoration. Uses on private land would be at the discretion of the private landowner, although cooperative partnerships would be sought to prevent degradation of resources.

Morrell Creek

The effects on Morrell Creek access and recreation opportunities would be the same under Alternatives 1 and 3. Recreation use of the river will likely increase with or without designation. The upper reaches of the stream are in a proposed wilderness area and are managed as such. Nondesignation as a Wild river or as a wilderness would not impact management of the upper reaches significantly because it is also a grizzly bear management area.

Under Alternative 2, there would be some additional limitations to recreation development over what would exist with Alternatives 1 and 3. Only simple comfort facilities could be provided for health and sanitation.



With Alternatives 4, 5, and 6, there would be additional protection, if necessary, from increased use and impacts.

North Fork of the Blackfoot

The majority of the corridor of the North Fork is in the Scapegoat Wilderness area and is administered under more restrictive guidelines than a Wild river as far as recreation and public access is concerned. The Alternatives primarily affect the recreation use and public access on the two-mile segment outside the wilderness area.

Under Alternatives 1 and 3, public access and recreation opportunities would not change from current management standards. Under Alternative 2, more restrictive standards could be implemented as necessary to prevent degradation of the river resource. Under Alternatives 4, 5, and 6, the segment would be designated a Wild river, and more protective management could be implemented. New recreation developments would be constructed only outside the corridor.

South Fork of Lolo Creek

The majority of the corridor of the South Fork is in the Selway-Bitterroot Wilderness area and is administered under more restrictive guidelines than a Wild river, as far as recreation and public access is concerned. The Alternatives primarily affect the recreation use and public access on the 2.4-mile segment below the proposed wilderness.

Under Alternatives 1 and 3, public access and recreation opportunities would not change from current management standards. Under Alternative 2, more restrictive standards could be implemented, as necessary, to prevent degradation of the river resource. Under Alternatives 4, 5, and 6 the segment would be designated a Wild river, and more protective management could be implemented. Developed recreation facilities would be constructed only outside the corridor.

Rattlesnake Creek

The lower part of the Rattlesnake experiences heavy recreation use. Under Alternatives 1 and 4, the probability of further development of the water supply would impact recreation use, and the flow of

water and would alter the recreation experience. Under Alternative 2, recreation opportunities and public access would be managed as it is now. Alternatives 3, 5, and 6 would add the same protections as Alternative 2 although national designation might increase use.

Cache Creek

All of the proposed alternatives will have similar effects on the access and public use of Cache Creek and its tributaries. Regardless of river designation, the access to Cache Creek is not likely to change. The roads and trails will remain much the way they are now. It is also unlikely that the types of recreation or use levels will change as a result of any of the alternatives. The types of use (fishing, hunting, hiking, wildlife viewing) will not change. Although the use may increase slowly in Cache Creek and the entire Great Burn, this would be true regardless of designation as a Wild and Scenic River. To date, popularity has played a much smaller role in use than have management decisions such as trail/bridge construction, outfitting, trailhead development, road improvements and marketing efforts. Since no significant management changes of this kind are included in the alternatives, the impacts will be minimal.

West Fork of Fish Creek

All of the proposed alternatives will have similar effects on the access and public use of the West Fork and its tributaries. Regardless of river designation, the access to the West Fork is not likely to change. The roads and trails will remain much the way they are now. It is also unlikely that the types of recreation or use levels will change as a result of any of the alternatives. The types of use (fishing, hunting, hiking, wildlife viewing) will not change. Although the use level may increase slowly in the West Fork and the entire Great Burn, this would be true regardless of designation as a Wild and Scenic River. To date, popularity has played a much smaller role in use than have management decisions such as trail/bridge construction, outfitting, trailhead development, road improvements and marketing efforts. Since no significant management changes of this kind are included in the alternatives, the impacts will be minimal.



Clark Fork River

Under Alternatives 1 and 4, recreation opportunities and resources on Federal land will be managed according to the Lolo Forest Plan. Existing Forest Service developed campgrounds will be managed to meet health and safety requirements while providing a pleasing recreation experience. Campgrounds on private property will be managed to meet State health and safety codes as required by State law. Areas that are used for dispersed camping will be managed to maintain a low user density and a pleasing recreation experience. Public access across Federal lands to the Cutoff and Slowey reaches within the area considered for Wild and Scenic River designation will not be affected by these alternatives. It is reasonable to expect that access across private property will continue to diminish as use on the river increases, as property is subdivided, and as new owners view public access across their property as a liability. This reduced access is a not a result of implementation of this alternative; it is an existing trend which is expected to continue.

Classification under Alternatives 3, 4, or 6 could complement the effort of Mineral and Sanders Counties to promote the Clark Fork as an asset in their attempts at diversifying the economies of the two counties. If future use becomes threatening to recreational experience, then mitigation measures could include: river use permits, horsepower limitations, day use limitations at certain areas near the river, hardening (e.g., paving) of high use areas, including river access sites, and/or an aggressive education programs for use of the river and its surroundings.

Major recreation facility development is not envisioned as a result of implementing this alternative. Current planning efforts by Mineral and Sanders counties and local sportsman clubs have indicated a need for improving existing river access points. These plans will need to be analyzed to ensure that improvement will not degrade the recreational values of the river.

Socio-Economics

The landscape of Montana's river systems reflects centuries of human occupation and influence. While some exhibit the changes wrought primarily by

natural forces, a few show the impact of human endeavor quite explicitly. In the past 130 years, the settlements of European Americans have altered the character and appearance of particular rivers and streams. And on some river systems, these changes have accelerated in the last 10 years. Very few Montana residents have failed to notice the changes in their economic circumstances, environment, and communities. While changes vary across the western part of the State, there are impacts from both growing and shrinking communities. From a study entitled *Montana: Steady State in Transition*: "...as much as Montanans worry about poor jobs and declining personal income, they worry equally about the social and cultural impact of change." (Center for National Policy, 1993)

While change cannot be avoided, different individuals and communities respond in a variety of ways to manage it. Some persons understand Federal designation of rivers under the Wild and Scenic River Act as a tool for managing change. Others understand designation as a part of the change that concerns them. Different alternatives will affect the perceptions and comfort levels of individuals and groups differently, depending on their view of the Act and the consequences of designation.

Another way of looking at the eligible rivers and their users is to explore what each stream means to people and what they experience there. It is unlikely that all concerned users feel equally committed to every eligible stream because each segment provides a different quality of experience. This "Sense of Place" ties people to particular locations and is not a generic experience. This is especially true for streams as different as the South Fork of Lolo Creek and the Chain of Lakes segment of the Clearwater River. The South Fork of Lolo Creek requires a long and sometimes arduous hike or ride into a rather isolated setting. The Clearwater Chain of Lakes receives extensive recreation use from thousands of visitors and the hundreds of residents who live on or within the river corridor. Change has affected these two types of areas differently as well. The South Fork exhibits natural changes with some human touches. The Clearwater River valley is experiencing unprecedented levels of use and development.



Alternative 1 - No Action.

Under the No Action alternative, the management direction for the eligible river segments would return to the standards set in the Forest Plan before Amendment 12. Those river segments that are currently in wilderness or roadless areas would be managed according to the direction of the Forest Plan. The Clark Fork segments and the Clearwater River would be protected by such county and State regulations as are presently in place. The Rattlesnake is still available for further development as a municipal water supply, and nondesignation would preserve this opportunity.

Morrell Creek is in a proposed wilderness addition and is managed under the Forest Plan as wilderness. It is also in a major grizzly bear management area. The No Action alternative would not have any short-term effect on the management of this stream.

The North Fork of the Blackfoot is predominantly protected in the Scapegoat Wilderness and is managed under the Limits of Acceptable Change (LAC) process with the rest of the Bob Marshall Complex. The No Action alternative would have no particular effect on the river or its users. People who are concerned with the management of the Bob Marshall Complex have an opportunity to be involved in the LAC process.

Rattlesnake Creek is close to Missoula and is a very popular recreation area. The area is managed under the LAC process and has a very active constituency. Designation would limit some further uses of the drainage as a municipal water supply. Either designation or nondesignation would not alter the management process involved in LAC. Missoula residents concerned about the security of the valley's aquifer for the future are also concerned that designation would limit the options for an improved water supply. They have expressed opinions that the current National Recreation Area and upper elevation wilderness designation are an appropriate compromise between protection and potential water development. There is also a group of people who have deep personal ties to the undeveloped character of the Rattlesnake who would be disappointed at nondesignation. Some of these people are involved in the LAC process.

The South Fork of Lolo Creek lies predominantly in the Selway Bitterroot Wilderness and in a roadless area. The stream receives light to moderate use, partly because of high elevation and partly because of access. Summer hiking and fall hunting are the primary human uses. There has been interest expressed in both designation and nondesignation. Proponents would like the protection afforded by the wilderness designation extended in some fashion to the remaining section of the South Fork. They would be disappointed with this alternative. Others have expressed concern at any further restrictive designations in the Bitterroot Mountains. They would be pleased by nondesignation although it would probably not alter their perception of the Forest Service or Federal land management.

Cache Creek and the West Fork of Fish Creek are mostly contained in the proposed Great Burn Wilderness. These streams are being managed by the Forest Service as wilderness. This would not change under this alternative. Persons who have evidenced interest in additional protection for these two streams would be disappointed at nondesignation. The avenue of supporting wilderness designation for the area is open to them.

None of the above streams have significant residential development. The concerned parties are visitors to the stream for a variety of reasons and are not private property owners on the stream itself. The eligible segments of the Clark Fork River and the Clearwater River are distinct from the other six rivers in that the development along their banks represents an economic and community investment. This inherently provides a wider and more diverse base of attitudes toward river use and designation. The exercise of private property rights reflects differences in people's values and beliefs.

There are differences in the reasons people are connected to these two river systems. The Seeley Lake and Clearwater River areas have been a recreation area with more than 200 summer residents/cabin owners for decades. Pyramid Lumber sawmill has been a major employer in the valley, but like some timber-dependent Montana communities, the Seeley Swan valley is encouraging recreation visitors and retirees to invest in the area. The Clearwater River system is integral to this attraction. Some residents of the valley perceive designation as a way of managing the change



taking place, in lieu of county zoning regulations or further water quality controls. Others perceive designation as another layer of Federal intervention, and one more facet of the change in their community that affects them. This alternative would disappoint those who feel a need for focusing protection on a pressured river system. It would please those who feel that the Federal Government is already too present in their private and community life.

The Clark Fork River is a transportation and utility corridor of which the eligible segments are a part. The historical reasons for settlement along these segments are tied not only to the river but also to the timber industry, the railroad and the highway. The river may have been the major attraction for settling on the Clark Fork. There is a minor recreation industry growing on the river, and local residents view that from different perspectives, depending on how it impacts their lives. Similarly to the Clearwater River, designation is understood differently, depending on whether people view it as an effective way to manage change or a part of change that seems to be out of control. The high percentage of Federal land ownership in Mineral County probably colors the perception of residents concerning additional regulation. Furthermore, some people have expressed the concern that in an energy-dependent nation, the Clark Fork should be left available for hydro-electric development. This alternative would please these two groups. It would disappoint those who believe that the Clark Fork needs protection to stay free flowing and to enhance the development of tourism.

Alternative 2 - Nondesignation with Protection.

This alternative reflects the content of Amendment 12 of the Forest Plan for management guidelines on National Forest System lands. These standards have been in place for 3 years and would be retained in substance under another Forest Plan amendment, should this alternative be selected. At that point, the public will have considerable opportunity to express their interests and concerns. It is very likely, since this is the status quo, that the people who live and recreate on the eligible river segments would notice no change in management. Those who are supporting designation would be disappointed with this alternative.

Alternative 3 - Designation of "At Risk" Rivers.

Alternative 3 focuses attention on the three river segments that have the most interface with private lands and the most concentrated use. Two of them, the Clark Fork and the Clearwater, have no special management direction outside the Forest Plan, while the Rattlesnake is in a National Recreation Area and Wilderness.

The rivers eligible but not designated under this alternative generally have some other special status. Morrell Creek is in the proposed Bob Marshall Wilderness addition and entirely in a grizzly bear management area. The North Fork of the Blackfoot is primarily contained in existing and proposed wilderness. The South Fork of Lolo Creek is partly in the Selway Bitterroot Wilderness, partly in the proposed Lolo Creek addition to the wilderness, and the remaining portion of the stretch is in an unroaded area. Most of the reaches of Cache Creek and the West Fork of Fish Creek are in a proposed wilderness area.

Nondesignation of these rivers would have little social impact on users and supporters, although some might be disappointed at their exclusion. Some people for whom these rivers are special places may prefer nondesignation, fearing that Wild and Scenic River status may change use patterns.

The three "at risk" rivers have a higher public profile and have generated more response because of their level of development and use. They have also been subjects of formal and informal proposals for water-related developments.

The Rattlesnake drainage has high year-round recreation use, a loyal and committed constituency, and very visible management concerns. It is an important backup water source for the Missoula Valley which currently depends on an underground aquifer which is vulnerable to contamination. Many people who are opposed to designation for the Rattlesnake are not opposed to Wild and Scenic Rivers in general but wish to reserve the Rattlesnake's full potential as a municipal water supply. They point out that the stream already has the protection of being partly in a wilderness area and partly in a National Recreation Area. They would be very concerned by a designation that



prohibits further development of the water intake and/or water treatment facility.

There is also an interest group of people who have an intense "sense of place" about the Rattlesnake who want to minimize change in the drainage. They would be divided by designation, some supporting it as a tool for managing future development impacts, while others would view it as unwelcome Federal regulation.

The Clearwater Chain of Lakes area is host to a number of summer and winter recreational events, recreation cabin sites, hundreds of visitors, and growing development, mostly because of its natural resources. The river, the lakes, and the scenery are highly attractive in the region. The economy is becoming less based on wood products and more amenity oriented. Many visitors and newcomers come from areas where zoning and land use controls are commonplace. Designation of the Clearwater River as a recreation river may seem a logical step to them to protect the resource from increasing use pressure. Longtime residents have expressed frustration at the Federal Government for proposing designation and adding complexity to a situation that is changing rapidly. There is a wide range of feeling about designation, both in the local area and among seasonal visitors.

Many of the same concerns and responses apply to the Clark Fork River. Local residents that live in the corridor because that is where their job is located may view designation differently than people who live or recreate in the river corridor primarily for its natural amenities. Because of the land ownership pattern in Mineral County, there is a local sensitivity to Federal influence that is not as strong in newcomers and visitors. In addition, there is no tradition of zoning and land use controls in rural Montana. Designation because of the river being "at risk" would call forth a full spectrum of feelings in the case of the Clark Fork. Like Rattlesnake Creek, there is concern over preserving the potential of the Clark Fork for water development projects, particularly hydropower.

Alternative 4 - Designation of "Low Risk" Rivers.

Alternative 4 proposes the designation of the five streams with minimal to no development and with limited development opportunities. This would

leave the Clearwater River, Rattlesnake Creek, and the Clark Fork River open for further water-related development within existing constraints.

Designating the more primitive reaches under Wild and Scenic River Act would please those people who support broadening the diversity of outstandingly remarkable values in the nationwide Wild and Scenic River system. Designation of these five streams would produce very little conflict with parties interested in river development because most of these streamcourses are not available for significant private investment. It would also please those who have development interests in the other three rivers, or those who believe that these three rivers should be available for development, including hydro-power and other water collection/storage uses. Those people who believe that Wild and Scenic designation is specifically designed for maintaining free-flowing rivers and for protecting river corridors would be disappointed with selection of this alternative.

Alternative 5 - Designation of All Eligible Rivers.

This alternative is the result of the eligibility and suitability studies and is a combination of Alternatives 3 and 4. Both the primitive and more developed rivers would be added to the national Wild and Scenic River system under this alternative.

For people who have a generalized attachment to western Montana rivers and who believe that the WSRA is an important national process, this alternative is attractive. For those who have a more specific concern for a particular stream, one of the other alternatives (3 or 4) might suffice. For those who believe that Federal Government regulation is inappropriate for rivers or are impatient with the Federal Government presence they perceive in their environment, this alternative would be unwelcome. As observed above, some people believe that designation is a tool for managing change. And others are concerned that designation is one more change in an increasingly unfamiliar environment.

Alternative 6 - Change Classification.

This alternative expands on the eligibility study's findings that two river segments qualify for a more primitive classification than first recommended.



Other rivers have tributaries that contribute to the outstandingly remarkable values. This alternative adds those tributaries and recommends more primitive classifications where appropriate.

People who have a general interest in the national scope of the Wild and Scenic River system would support the more holistic approach of including free-flowing tributaries and river segments that add value to the system, some of which were suggested in public scoping. People who feel that designation represents Federal interference with public use and private property rights will not accept this alternative anymore than Alternative 5. The same perception of managed change would apply to this alternative as to 5.

Employment and Income Impacts

The employment and income impacts of Alternatives 1 through 6 were estimated using IMPLAN, a computerized model. IMPLAN is designed to analyze the regional economic effects of a change in commodity output resulting from an increase or decrease in the demand for that commodity. In this case, the change in demand is represented by the change in timber stumpage which is a raw material for the timber industry. Designation of a river as "Recreation" or "Scenic" would reduce the amount of timber that could be harvested from those lands in the 1/4-mile corridor on either side of the river that are currently allocated to timber harvest with modification. Designation of a river as "Wild" would preclude timber harvest from any lands in the corridor that are currently allocated as suitable for timber management. All lands in the "Wild" corridor would be withdrawn from the suitable timber base. In addition, changes in the amount of money to local counties from the Federal treasury for the Payments to States (25% fund) was included.

No attempt was made to incorporate potential changes to other resources (e.g., range, recreation, water) into the IMPLAN model because of the inability to determine just what changes in these other resources may result from the selection of each alternative. For example, it is anticipated that recreation use will increase on the segment of the Clark Fork River included in this study. It is felt that Recreation designation of this river will accelerate the increase in recreation, but there is no quantified estimate available for the increase. The

same situation exists for other resources that may be affected by wild, scenic, or recreation designation.

Table 5.3.1 shows the effects of the change in timber harvest on employment and income in Missoula, Mineral, and Sanders Counties. The income figures include property income (e.g., dividends, interest, rents, proprietary income), as well as employee compensation. Compared to the total size of the local economy in Missoula, Mineral, and Sanders Counties, the impacts associated with designation under each alternative would be minimal.

Table 5.3.1. Annual Employment and Income Impacts, by Alternative

Alternative	Number of Jobs	Total Income (Thousands of 1993 \$)
1 & 2	0	0
3	- 0.3	- \$ 6.5
4	- 2.6	- \$68.0
5 & 6	- 2.9	- \$74.5

The effects on employment and income in the three counties can be separated into direct, indirect, and induced impacts. Direct impacts are: the effects on the initial sectors, such as sawmills, trucking, harvesting and wholesale trade, experiencing a change in final demand from the timber harvesting and manufacturing activity. Indirect economic effects refer to the impacts on industries which provide inputs to the initial sectors mentioned above. Induced impacts are those that result from employees and business owners spending their income within the area. Depending upon the type of impact and the industries affected, employment generated by the timber harvest activity can be a mixture of seasonal, year-round, full-time, and part-time positions.

In addition to the effects on jobs and income, designation of rivers as Wild, Scenic or Recreation may increase the administration requirements for the Lolo forest. It is estimated that for each mile of Clark Fork or Clearwater River designation, Forest



administrative costs will increase by \$200 annually. The costs on these two rivers will be higher than other rivers on the forest because of higher levels of current and future recreation use and development. It is estimated that designation of all other rivers will increase administrative costs by \$100 annually for each mile. The estimated administrative costs by alternative are shown in Table 5.4.1. It is felt that the Forest will not receive additional monies, so this cost will have to be absorbed into existing programs. For example, if an employee is out monitoring water quality on the Clearwater River, an added responsibility might be to check use and condition of streambanks at public access points along the route of travel.

Visual Resources

The evaluation of impacts on visual resources is made at the viewshed level. Although the foreground is important, the eyes constantly span the entire viewshed as one travels along these corridors. Scenic qualities include the attractiveness of the rivers, the outstanding vegetative and avalanche patterns, distribution and type of rock formations, and the surrounding mountain peaks and glaciated valleys.

Future impacts to the aesthetic qualities of these corridors vary in significance. Low-impact levels include the increase and/or change in use patterns along the rivers. High-impact levels include the placement of housing and other developments in conspicuous locations along riverbanks and various hydropower developments which may interrupt the flow of the rivers.

During the analysis, a key issue was raised about these resources: "If aesthetics are not included in 'natural values,' are aesthetic values considered?" It is important to know that aesthetic values are considered with all projects on the Lolo National Forest and have been studied for the suitability study. It is also important to study the aesthetic effects that designation might have on the viewshed of each river. Most of the effects resulting from the alternatives in this analysis are not a direct result of designation or nondesignation. Most effects are tied to long-term indirect effects resulting from a lack of protection of the scenic qualities of these rivers. These indirect effects are discussed in more detail below.

Essentially, there will be no direct effects to the aesthetic character of any these rivers in Alternatives 1 and 2.

Alternatives 3, 4, 5, and 6 would have some direct effects. Five of the rivers that might be classified would need to have Visual Quality Objectives (VQO's) changed. In general, these 5 rivers have a VQO of Modification. This is determined to be too high a development level to adequately protect the significant scenic qualities. The VQO's of Retention and Partial Retention more adequately provide needed protection.

Clearwater River

Under Alternatives 1 and 4, the river would not be designated and the State's Best Management Practices and Streamside Management Zone Laws would constrain private lands. The National Forest System Lands are managed for Partial Retention. The visual impacts of residential development on private land would be unconstrained. Development along the shores of the river and the lakes fed by the Clearwater is growing. Except for subdivision, this growth is generally uncontrolled and scattered and will be allowed to continue under these alternatives.

The aesthetic character of the Clearwater River may also be altered by hydropower development. Hydro-development on this river has been discussed in the past and is a possibility for the future. Visual features such as water flow, lake and river water levels, and vegetation patterns could be altered by hydropower development.

Other effects to the scenic quality of the area include the possible dredging of the river to provide motorboat access from lake to lake. This would primarily affect the water quality, fisheries, and overall experience on the Clearwater.

Under Alternative 2, the protective interim management standards for the Wild and Scenic Rivers as stated in Amendment 12 would be incorporated into the Forest Plan on a permanent basis. The scenic quality of these rivers would essentially remain unchanged from the existing visual character in the area.

These protective qualities would be initiated only on public lands. Private lands would still have full rein to develop lands any way they chose within the



constraints of State laws. Effects of this would be noticed most prominently as shoreline development.

Under Alternatives 3, 5, and 6, the river would be designated as Recreation. Management activities that would alter the visual landscape would be permitted as long as the Retention VQO was maintained in the foreground and the Partial Retention VQO maintained in the middle ground. The existing scenic values of this river would be maintained as much as possible. Hydropower development or dredging the river bottom to allow for motorboat access will not be an option along the river.

Morrell Creek

Under Alternatives 1 and 3, the stretch of river that is in proposed wilderness would be unaffected. The portion outside proposed wilderness could be selectively harvested to open up viewsheds in dense lodgepole or for other reasons. Mining activities of a scale that could disturb visual qualities would be constrained by grizzly management standards.

Under Alternative 2, there would no effect on visual resources.

Under Alternatives 4 and 5, the corridor designated Scenic would be unchanged in the proposed wilderness, and would be managed under Retention or Partial Retention in the grizzly bear management area. The same constraints would apply to mining as Alternatives 1 - 3.

In Alternative 6, the upper part of the suitable river would be Wild, and the lower part Scenic. The Wild section would be withdrawn from mining activities and would retain a wilderness setting. Timber harvest in the lower Scenic end would have to be consistent with grizzly bear management as well as with Scenic designation and could be done to open viewsheds. The aesthetic characteristics of Morrell Creek would not be significantly affected as a result of designation. The only effect alternatives 4, 5, and 6 might create would be an increase in use along the trails.

North Fork of the Blackfoot

Most of the North Fork is in the Scapegoat Wilderness. The Forest Plan requires that aesthetic

values in wilderness be managed for a VQO of Preservation, where human-influenced activities will not be detectable to visitors. Under Alternatives 1 and 3, the lower two miles would be subject to visual standards of Retention or Partial Retention.

With Alternative 2, visual standards are in place that protect the identified Outstandingly Remarkable Values.

Under Alternatives 4, 5, and 6, the river corridor would be designated Wild. It would be managed to protect and enhance the primitive, natural, and aesthetic character of the corridor. The VQO is Preservation in the wilderness or Retention in the foreground and Partial Retention in the middle ground for all other areas. All management and development activities would be evaluated for their potential impacts on these attributes; intrusions will be minimized.

Rattlesnake Creek

Rattlesnake Creek is located within wilderness and the National Recreation Area. The first has an allocated VQO of Preservation and the latter a VQO of Retention. The character of these areas are not likely to change.

With Alternatives 1 and 4, no visual changes would occur in the upper Rattlesnake, at least human-caused. The aesthetic character of the lower portion of Rattlesnake Creek might be altered in the future. The lowest reaches of this river have been identified as a possible new location for the intake for Missoula's municipal water system. Nothing formal has been identified; however, future development might introduce manmade structures into and around the stream and may change the flow patterns.

Under Alternatives 2, 3, 5, and 6, the free-flowing nature of the river would be preserved. This would be accomplished by the Forest Plan under Alternative 2 and by classification under the other alternatives.

Alternative 6 would add three tributaries for designation and change the proposed classification of Wrangle Creek to Wild. This would not create a change in the Visual Quality Objectives.



South Fork of Lolo Creek

The upper 9 miles of the South Fork are in wilderness and proposed wilderness. The 2.4 miles of stream outside this are in roadless management areas unsuitable for timber management or in areas that are suitable but either maintained for old growth or on steep slopes requiring extraordinary harvest measures.

Under Alternatives 1 and 3, this part of the corridor could experience some selected harvest, and 3.5 miles would be open to mineral entry. This stretch could also be subject to diversion or impoundment. There could be future visual impacts under these alternatives. There is already some very conspicuous private logging visible from the lower stretch.

Under Alternative 2, diversion or development would not be permitted. Where FERC is the licensing authority, the Forest Service would recommend against permitting development. Mining would be permitted in the lower 3.5 miles if the operation did not degrade the Outstandingly Remarkable Values. No new roads would be constructed, and timber harvest would only be permitted for public safety or trail maintenance. This alternative would have minimal potential for visual effects.

With Alternatives 4, 5, or 6 in place, the corridor lands would be withdrawn from mineral entry and would be unavailable for hydropower development. Vegetation removal would be permitted for public safety and facilities maintenance. Foreground VQO's would be Retention and middle-ground would be Partial Retention. The addition of No Name Creek under Alternative 6 would have no impact on management of visual quality, since it is in the wilderness.

Cache Creek

The majority of the suitable segment of Cache Creek is in the proposed Great Burn Wilderness and is managed as wilderness. The lower river corridor contains a mix of management areas, all of which depend on timber harvest and ecosystem burning to gain some resource management objectives, for example, improved silviculture or winter game range. Thus, the VQO is Modification. Alternatives 1 and 3 would have no effect on this status.

Under Alternative 2, timber harvest would be precluded within the corridor, except for trails or provisions of user safety. An opportunity would exist on surrounding lands to change VQO's to protect visual qualities. In all alternatives, the vegetation within the proposed Wilderness will be unaffected and will continue to be influenced by natural processes.

Designation of the river as Wild under Alternatives 4, 5, and 6 would change the Forest Plan direction in managing the lands outside the Great Burn. The VQO would change to Retention in the foreground and Partial Retention in the middle and background viewing distances and remove these lands from the timber production base.

Alternative 6 recommends adding White Creek because of its important contribution to the quality of water and fisheries habitat in the Cache Creek system. This alternative also recommends including, at the owner's behest, the private land at the mouth of Cache Creek with a recommended Scenic classification. This alternative would have the same effect as Alternative 5.

West Fork of Fish Creek

The West Fork of Fish Creek is in the proposed Great Burn Wilderness and is managed as wilderness. Less than 300 feet of the lower West Fork passes through a management area that is an administrative site.

Under all alternatives except 1 (no action) and 3 (where this river is not included), the VQO would change from Modification to Retention and Partial Retention for the administrative site. However, this would not affect the existing situation because the administrative site is managed to reduce visual impacts.

Clark Fork River

The face of Montana is changing rapidly and with it the visual character of the valleys and waterways. "Montana's economy is changing. During the past ten years, the service industries, government and retail trade grew very rapidly. Job growth overall has exceeded population growth by a margin much greater than the national average. On the other hand, per capita income growth has been much lower than the national average" (Montana: Steady



State in Transition, 1993). Currently, new home building and developments are at a record high for the State. Some of the most desirable locations for home building are near water, particularly lakes and larger rivers. The Clark Fork River is one of the rivers in western Montana which is currently being developed and has the potential to have residences and other buildings scattered all along its edge. Under Alternative 1, uncontrolled and potentially visually obtrusive building would occur along the Clark Fork and have significant long-term effects on the aesthetic qualities in the corridor viewshed.

Hydro-development could have potential effects to the aesthetic qualities of the Clark Fork under Alternative 1. The Corps of Engineers has identified a potential dam site just downstream from the confluence with the Flathead River. Should this dam be introduced to the Clark Fork, it has the potential to flood the bottom lands for a distance in excess of 40 miles, totally changing the unique visual character of this winding river.

Alternative 2 will have little effect on vegetation or its management within the corridor area. Project planning for the Slowey and Cutoff reaches of the Clark Fork will need to consider the important recreation resources in order to protect these values.

By classifying this river under the Wild and Scenic Rivers Act (Alternatives 3, 5, and 6), it will be kept free-flowing and no hydropower developments will be allowed in the corridor. The Clark Fork flows through several National Forest management areas that have a VQO of Modification. To avoid creating discordant landscapes, the VQO would be more restrictive from sensitive viewpoints. Would be more restrictive of creating discordant landscapes. Under classification, the VQO will change to Retention in the foreground and Partial Retention in the middle and background. Timber harvest is still an option, but the silvicultural prescription for harvest will be much more sensitive to the effects on the viewshed.

Cumulative Effects

Any change in the visual resource resulting from future activities would be in addition to past and present activities along these rivers. Foreseeable actions along the rivers with potential to be developed (Clark Fork, Clearwater, and

Rattlesnake) could affect the visual resource. These effects will be dealt with on a project-by-project basis and will be further analyzed at the time of the proposed action.

All alternatives have undergone a visual resource analysis and are found to be in compliance with the management area goals and VQO's established by the Lolo Forest Plan.

Management plans would be developed for each of these classified rivers. These plans would provide management direction for the visual corridor along the rivers and would be developed cooperatively with private landowners.

Contemporary Native American Rights and Traditional Land Use

The Lolo National Forest area has been inhabited since long before recorded history. These original inhabitants developed a complex culture based on fishing, hunting, and gathering of locally available plants and animals. There are three extant Native American groups who have traditionally used this land. These groups are the Pend d'Oreille, Bitterroot Salish, and the Kootenai. The first two groups are very closely related Salish speakers. The Kootenai group is only distantly related to the Salish speaking groups. While the Kootenai and Salish are not closely affiliated, either culturally or linguistically, they share the Flathead Reservation as the Confederated Salish and Kootenai Tribes. The two tribes retain Reserved Treaty Rights from the Hellgate Treaty of 1855. These Reserved Rights include traditional land uses within their "usual and accustomed territory" outside the Reservation. These traditional land uses include hunting game, fishing, gathering plants, and grazing horses and livestock, and all are Reserved Rights are exercised on the Forest.

In addition to reserved rights, the American Indian Religious Freedom Act guarantees the right of all Native Americans to practice their religions and to access sacred areas on Federal land.

Alternative 1 would not change this situation. The level of protection of sites would remain legally mandated and expressed in the Forest Plan. Depending on which river segment is covered under a given alternative, all the other alternatives would offer an enhanced level of site protection to some or



all of the rivers. Since river courses are travel routes for human beings as well as animals, there are numerous sites in the 1/2-mile corridors that would receive additional protection, both as historic and prehistoric locations. The assurance of free-flowing water without impoundment prevents the inundation of historic structures and significant prehistoric sites. Any of the alternatives that include a river or rivers for designation will have a positive effect on cultural resources.

Wildlife and Plants

The effects on wildlife from wild and scenic rivers designation were considered for the following wildlife resources:

- Ungulate winter ranges
- Bighorn sheep ranges
- Moose concentrations
- Wetland habitats and wetland-dependent species
- Bald eagles
- Great blue herons and other cottonwood-dependent species
- R-1 sensitive animals
- Peregrine falcons
- R-1 sensitive plants and unique plant communities
- Mountain goats
- Grizzly bears
- Elk summer range

This list is not meant to represent all species, or even all species guilds occurring within the candidate rivers. It does represent, however, species for which concerns are typically raised over viability, economic importance, or Federal listing.

Effects By Alternative

Alternative 1 (No Action)

Extensive wetlands and large populations of wetlands-dependent species are present in the Clearwater River. There have been no recent proposals for large hydroelectric or irrigation impoundments in the drainage, so, presumably, there is little potential for a major impoundment. At least one micro-hydro site has been identified, although full development at that site wouldn't have significant effect on wetlands values. There is little or no mining potential in the drainage, hence

toxic chemicals or sediment poses little risk. The interspersed private lands pose a small risk of adverse impact on the wetlands resource if not regulated by protection. These adverse impacts include: 1) unregulated shoreline development that could disturb nesting birds; 2) some reduction in the beaver population resulting from increased trapping to minimize beaver damage to shade trees; 3) loss of the shrub community because of domestic livestock grazing; and 4) ripraping and/or channelization. These are not severe consequences. The Clearwater River below Rainy Lake is so sinuous and dynamic that any attempts to channel, alter the vegetation, or build within the floodplain could be rather temporary. Even so, for private lands, we should expect some loss in wetlands acres and wetlands-dependent wildlife productivity under alternative 1.

The Clearwater and North Fork of the Blackfoot both have nesting pairs of bald eagles. The lower Clark Fork has a high potential for nesting bald eagles and will presumably become occupied within a decade. The existing nests within the Clearwater and North Fork are not within river reaches considered for designation, hence, none of the alternatives will provide any protection for existing nesting pairs. All three rivers have potential for additional nesting pairs within sections considered for designation. Without protection, private land development will eventually degrade bald eagle nesting habitat potential to some degree. Because of the abundance of suitable nesting habitat on National Forest land, failure to designate these systems will not preclude full recovery of the eagle to nonthreatened status within these systems. The ultimate difference between designation (Alternatives 3, 4, 5, and 6) and nondesignation (Alternatives 1 and 2) might equate to a loss of one or two potential eagle nests out of a potential nesting population on the Lolo National Forest of 20-30.

The lower Clark Fork has a significant wintering population of bald eagles. There is approximately one bird per river mile within this reach which equals about 30 wintering eagles. Impoundments pose the only threat to wintering habitat. Any major impoundment would result in a total loss in wintering habitat (because of surface ice buildup). Since Alternative 1 allows impoundments, it does not provide adequate protection for bald eagle wintering habitat. Obviously, the risk of a major



impoundment in the lower Clark Fork is small given the current adverse public reaction to impoundments.

Nesting habitat for great blue herons and other mature cottonwood-dependent species is limited but adequate in the lower Clark Fork. All cottonwood community types would be irreversibly lost with any flood control, irrigation, or hydroelectric impoundments. Alternative 1 provides no protection from impoundments, and therefore places this habitat at risk. Cottonwood communities within the Clearwater River, conversely, are abundant and not under threat. Consequently, the protection provided by existing regulations is adequate for this species group in the Clearwater.

Rattlesnake Creek, from the existing domestic water intake pond to approximately three-quarters of a mile upstream from the Forest boundary, would eventually be dewatered, assuming that Rattlesnake Creek will be needed as the city's domestic water source and that the most appropriate location for the intake pond is upstream from private residences. The cottonwood/shrub riparian community in this dewatered zone would probably persist, based on comparable downstream reaches that were dewatered prior to 1983. Even with seasonal dewatering prior to 1983, apparently there was enough water movement in the substrate and/or surface flow during runoff to sustain those water-loving trees and shrubs. All fish, tailed frogs, dippers, and other riparian species would be eliminated. Great blue herons, pileated woodpeckers, red-eyed vireos, and veeries would still be present in the system, although at slightly lower densities within the dewatered reach.

Several species of sensitive animals are present in most of the candidate rivers. The only one at risk is the population of Coeur d' Alene salamanders in the lower Clark Fork near Cascade. Both mining activity (primarily for decorative or facing stone) and impoundments jeopardize this population. While the risk of impoundments is small, impoundments would result in the total loss of this population. Alternative 1, therefore, provides inadequate protection for this population of Coeur d' Alene salamanders.

There is some marginal peregrine falcon nesting habitat in the lower Clark Fork. Mining and impoundments pose a very minor threat to peregrine falcon recovery, although either activity wouldn't necessarily preclude falcon nesting. Alternative 1, therefore, provides a lesser level of protection for the peregrine falcon within this reach of the Clark Fork. Designation provided by Alternatives 3, 5, and 6 would provide a slightly greater level of protection.

Several unique and sensitive plant communities occur in the candidate rivers. Old growth western red cedar groves and associated sensitive species such as *Botrychium minganense* occur in several systems, although existing management regulations are adequate for protection. The only plant community possibly at risk are some of the wet meadows and bogs associated with private land in the Clearwater River. Sensitive plants that may be associated with these bogs include *Grindelia Howellii* and *Howellia aquatilis*. Cattle grazing, channelization, ripraping, and other private land activities place these populations at some risk. Designation would provide a slightly higher level of protection for these communities. Alternative 1 provides inadequate protection for these plant communities.

Alternative 2 - Nondesignation with Protection

This alternative, which relies on the Federal agencies to protect free-flowing rivers, is a difficult one for which to assess effects on wildlife. The alternative was designed to achieve a similar level of protection as that provided by Wild and Scenic Rivers designation but at the local level and without Federal legislation. No protection would be applied to private land. Mining and impoundments would be allowed where appropriate.

For analysis purposes, the effects on wildlife in the long run for Alternative 2 are considered identical to Alternative 1.

Alternative 3 - Designation of "At Risk" Rivers

Critical wetlands in the Clearwater drainage would be given maximum protection from inappropriate private land activities such as development within the floodplain, ripraping, channelization, and destruction of riparian vegetation. This would



provide maximum protection for such wetlands-dependent species as American redstarts, catbirds, mink, and beaver.

Within the lower Clark Fork, impoundments would be precluded. Habitat for great blue herons and other mature cottonwood-dependent species would receive maximum protection. Existing protection in the Clearwater is already adequate. Therefore, Alternative 3 wouldn't provide any additional protection in that system. Within Rattlesnake Creek, the intake pond would not be relocated upstream. Hence, all of Rattlesnake Creek above the existing intake pond would remain free-flowing. The riparian community in the lower three-quarters of a mile above the Forest boundary would be protected, including its full complement of riparian-dependent species.

Habitat for the colony of Coeur d' Alene salamanders in the lower Clark Fork would receive maximum protection. Designation would ensure the longterm survival of this sensitive population.

Marginal nesting habitat for peregrine falcons would be protected at a maximum level and would slightly increase the chance that a pair of peregrines would recolonize the lower Clark Fork.

The bog and vernal pond communities on private land in the Clearwater would receive maximum protection. Local building codes and covenants, designed for wildlife habitat protection, would emphasize confining livestock to uplands, avoiding structures in the floodplain, protection of shoreline vegetation, and protecting wet meadows and bogs.

The five candidate rivers not included for designation in Alternative 3 are already protected to a large degree by wilderness legislation. No habitats or populations would be placed at risk by not designating these rivers.

Alternative 4 - Designation of "Low Risk" Rivers

Since this alternative limits designation to rivers not at risk to mining or impoundment, it provides no additional protection to wildlife over Alternative 1 (no action).

Without designation, wetlands on private lands in the Clearwater will be faced with some adverse risks including: 1) unregulated shoreline development that could disturb nesting birds; 2) some reduction in the beaver population resulting from increased trapping done to minimize beaver damage to shade trees; 3) loss of the shrub community because of domestic livestock; and 4) ripraping and/or channelization. These are not large consequences. Even so, for Alternative 4, we should expect some loss in wetlands acres and wetlands-dependent wildlife productivity in the Clearwater River.

The Clearwater has three nesting pairs of bald eagles. The lower Clark Fork has a high potential for nesting bald eagles and will presumably become occupied within a decade. The existing nests within the Clearwater are not within river reaches considered for designation; existing nests are not affected by designation. Both the Clearwater and lower Clark Fork have potential for additional nesting pairs within sections considered for designation. Unregulated private land development in the Clearwater and lower Clark Fork will eventually degrade bald eagle nesting habitat potential to some degree. However, because of the abundance of suitable nesting habitat on National Forest land, failure to designate these systems will not preclude full recovery of the eagle to nonthreatened status within these systems. If this alternative were selected we might expect to have 1-2 less nests than under an alternative that designated these systems.

The lower Clark Fork has a significant density of wintering bald eagles (approximately 1 bird per river mile totaling approximately 30 eagles). Since Alternative 4 allows impoundments, and impoundments would result in a total loss in overwintering habitat because of surface ice cover, Alternative 4 provides inadequate protection for bald eagle wintering habitat. The risk of a major impoundment in the lower Clark Fork is small given the current adverse public reaction to impoundments.

Nesting habitat for great blue herons and other mature cottonwood-dependent species is limited but adequate in the lower Clark Fork. This habitat would be totally lost with flood control, irrigation, or hydroelectric impoundments. Alternative 4 provides no protection from this risk. Habitat



within the Clearwater River is abundant and not under threat. Consequently, the protection provided by existing regulations is adequate for this species in the Clearwater.

Several species of sensitive animals are present in most of the candidate rivers. The only one at risk is the population of Coeur d' Alene salamanders in the lower Clark Fork near Cascade. Either mining (primarily for decorative or facing stone) or impoundments could eliminate this population. While the risk of impoundments is small, impoundments would definitely result in the total loss of this population. Alternative 4, therefore, provides inadequate protection for this population of Coeur d' Alene salamanders.

There is some marginal peregrine falcon nesting habitat in the lower Clark Fork. Mining and impoundments pose a very minor threat to peregrine falcon recolonization. Alternative 4 provides little protection for the peregrine falcon within this reach of the Clark Fork. Designation provided by alternatives 3, 5, and 6, would provide a slightly greater level of protection.

Several unique and sensitive plant communities occur in the candidate rivers. Old-growth western red cedar groves occur in several systems, although existing management regulations are adequate for total protection. The only plant community possibly at risk are some of the wet meadows and bogs associated with private land in the Clearwater. Sensitive plants that may be associated with these bogs include *Grindelia Howellii* or *Howellia aquatilis*. Cattle grazing, channelization, ripraping, and other private land activities place these populations at some risk. Designation would provide a slightly higher level of protection for these communities. Hence, Alternative 4 provides inadequate protection for these plant communities.

Alternative 5 - Designation of All Eligible Rivers

This alternative designates all eight candidate river systems. It appears that this alternative would protect critical wildlife populations at a much higher level than Alternative 3 which limits designation to the Clearwater, lower Clark Fork, and Rattlesnake drainages. In actuality, wildlife and/or rare plant communities in the additional five river systems not protected by Alternative 3, are

already well protected by existing Forest Plan direction, wilderness legislation, and Forest policies. Thus, for all practical purposes, the wildlife effects for Alternative 5 are identical to Alternative 3.

Critical wetlands in the Clearwater drainage would be given maximum protection from inappropriate private land activities such as development within the floodplain, ripraping, channelization, and destruction of riparian vegetation. This would provide maximum protection for wetlands-dependent species such as American redstarts, catbirds, mink, and beaver.

Habitat for great blue herons and other mature cottonwood-dependent species would receive maximum protection in all drainages where this habitat occurs. Rattlesnake Creek would remain free-flowing from the Forest boundary upstream to the headwaters. All of its riparian-dependent species would be protected throughout the reach.

Habitat for the colony of Coeur d' Alene salamanders in the lower Clark Fork would receive maximum protection. Designation as described in this alternative would ensure the long-term survival of this sensitive population.

Marginal nesting habitat for peregrine falcons in the lower Clark Fork would be protected at a maximum level and would slightly increase the chance that a pair of peregrines would recolonize the lower Clark Fork.

The bog and vernal pond communities on private land in the Clearwater would receive maximum protection. Local building codes and covenants would emphasize confining livestock to uplands, avoiding structures in the floodplain, protecting shoreline vegetation, and protecting wet meadows and bogs.

Five of the eight rivers designated under this alternative (Morrell, South Fork Lolo, West Fork Fish, Cache, and North Fork Blackfoot) are already protected by various Forest Plan allocations, standards, or policies. The protection provided by designation is redundant in these river systems. Some of the wildlife populations and habitats in these rivers include: 1) old-growth cedar groves in the South Fork of Lolo, West Fork of Fish, and Cache Creeks; 2) sensitive flammulated owl habitat



along the lower Clark Fork; 3) lynx and fisher habitat in the South Fork of Lolo, Rattlesnake, West Fork of Fish, Cache, Morrell, Clearwater, and North Fork of the Blackfoot drainages; 4) the suitable Coeur d'Alene salamander habitat at Morrell and North Fork Falls; and 5) the harlequin duck nesting pair in the North Fork of the Blackfoot River.

Alternative 6 - Change Classification

This Alternative is like Alternative 5 but adds other tributaries. Many of these additional tributaries have significant wildlife values. None of them, however, are under any risks to management activities. All of these additional segments are protected by wilderness or proposed wilderness allocations. None have any significant potential for mining or impoundments. The wildlife effects for Alternative 6 are identical to Alternative 5.

One possible adverse impact of designation was considered regarding harlequin ducks in the North Fork of the Blackfoot. Harlequins are extremely sensitive to human disturbance, especially from *Table 5.3.2. Effects of Alternatives on the Wildlife Resource*

fishng or floating activity. Since floating is possible below the North Fork Falls, it was initially assumed that designation might attract additional floating traffic. Any significant level of floating traffic would probably result in loss of the nesting pair in the North Fork. After some analysis, it was determined that designation would probably not result in increased floating traffic. The reasons for that determination include: 1) the North Fork has a very short floating window; 2) access is difficult and floaters would have to hire packers to haul craft up to the North Fork falls (the upstream limit for navigation); 3) the floatable portion of the river is very short (approximately 6 miles), and floating time is only 2-3 hours which would make the float a questionable proposition given the effort required for access; and 4) the river is not particularly challenging. Consequently, it is assumed that designation will not result in increased floater use. Designation, therefore, will have no adverse impacts on the harlequin duck.

A summary table showing the effects, by alternative, is provided in Table 5.3.2.

Wildlife Resource	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Winter Range	No effect	No effect	No effect	No effect	No effect	No effect
Bighorn Sheep	No effect	No effect	No effect	No effect	No effect	No effect
Moose	No effect	No effect	No effect	No effect	No effect	No effect
Wetlands	Clearwater at risk	Clearwater at risk	100% protected	Clearwater at risk	100% protected	100% protected
Bald Eagle	Clearwater and Clark Fork at risk	Clearwater and Clark Fork at risk	100% protected	Clearwater and Clark Fork at risk	100% protected	100% protected
Great Blue Heron	Clark Fork and Rattlesnake at risk	Clearwater and Rattlesnake at risk	100% protected	Clark Fork and Rattlesnake at Risk	100% protected	100% protected
Sensitive Animals	CdA salamander at risk	CdA salamander at risk	100% protected	CdA salamander at risk	100% protected	100% protected
Peregrine Falcon	Clark Fork at risk	Clark Fork at risk	100% protected	Clark Fork at risk	100% protected	100% protected
Sensitive Plants	Clearwater at risk	Clearwater at risk	100% at risk	Clearwater at risk	100% protected	100% protected



Wildlife Resource	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Mountain Goat	No effect					
Grizzly Bear	No Effect					
Elk Summer Range	No Effect					

Fisheries

Alternative 1 - No Action

Under this alternative, there would be no proposal for Wild and Scenic River designation. Management of aquatic habitat and fisheries would continue under the Forest Plan prior to the Wild and Scenic Rivers Interim Management Standards in Amendment 12. The Forest Plan stipulates that we will maintain or improve aquatic habitat. Land management practices are to be designed to have a minimum impact on the aquatic ecosystem, free from permanent or long-term unnatural imposed stress. (A long-term stress is defined as a downward trend of indicators such as aquatic insect density or diversity, fish populations, intragravel sediment accumulations, or channel structure changes that continue for more than 1 hydrologic year as determined by procedures outlined in the Forest Plan Monitoring Requirements, Section V.).

The No Action Alternative would not provide full protection from hydropower development to any river segment. The Clark Fork and Clearwater Rivers are subject to hydroelectric development and have received speculation on this type of activity in the past. Hydroelectric development would result in a decrease in the quality of fish habitat and possible fragmentation of populations.

Excessive development in any river corridor could adversely affect the quality of the habitat for resident fish and could result in increased fishing pressure on those fish populations. The No Action Alternative would give no protection from development to any of the rivers. Cooperative management plans between all landowners, designed to protect the outstanding resource values of designated rivers, would not be developed.

This alternative would have no effect on the amount of recreational fishing pressure the streams will receive in the future. No additional attention

will be brought to the streams, and no additional authority will be given to the Forest Service to manage the amount of surface use on these streams in the future. Management of surface use in larger rivers such as the Clark Fork would likely be the responsibility of State agencies.

Alternative 2 - Nondesignation with Protection

This alternative would be similar to Alternative 1, except that the protective interim management standards for the Wild and Scenic Rivers as stated in Amendment 12 would be incorporated into the Forest Plan on a permanent basis. These management standards would apply to National Forest System lands only. Rivers would be managed based on whether they are in a primitive or a developed setting. Activities such as water supply and flood control development, timber and agricultural development, and road construction in the river corridors would be restricted in primitive settings and would be allowed to occur in developed settings provided the waterway generally remained natural in appearance. The Forest Service would have the authority to recommend that hydroelectric development licenses not be issued, but the ultimate decision on licensing would remain with the Federal Energy Regulatory Committee. This would not provide as much protection to the free-flowing nature of the rivers as a Congressional designation under the Wild and Scenic Rivers Act. Fish habitat improvement structures would be permitted in all rivers.

Under this alternative, aquatic habitat and fishery resources in primitive settings would be protected by providing, in effect, a 1/4-mile buffer strip on each side of the rivers. Water supply development restrictions would ensure that instream flows would not decrease throughout the river segment. This would directly benefit summer and fall migratory species such as bull trout that depend on adequate flows to reach their natal spawning



grounds. Sinuosity of the river channels would not decrease because of flood control development or road construction. Pool:riffle ratios and habitat quality would therefore be largely maintained. Timber harvest in primitive settings would be restricted to trail maintenance and safety, reducing the ability to manage the corridor for fire risk. This would increase the potential risk of a stand-replacing fire denuding the riparian areas and causing short-term losses in overhead cover and in sediment trapping abilities. Fish habitat improvement structures would be allowed as needed under this alternative, thus allowing mitigation for unexpected occurrences which may have deleterious effects on fishery resources. Overall, then, there are both positive and negative potential effects of this alternative to the fishery resource.

Alternative 3 - Designation of "At Risk" Rivers

Under this alternative, only those rivers that are prone to have a water-resource related development are recommended for classification. This determination is based on local knowledge of past and possible upcoming proposals to the river segments of concern. Since it is impossible to predict future political climates and public values, this alternative has the inherent risk of overlooking possible threats to some streams. It is an alternative based on a best-informed guess and should be viewed with that in mind.

The streams that would be designated under this alternative are the Clark Fork and Clearwater Rivers and Rattlesnake Creek. The Clark Fork and Clearwater Rivers have potential dam sites within the eligible segments, and Rattlesnake Creek is susceptible to relocation of Missoula's municipal water system within the eligible segment. Fishery resources in rivers not specifically addressed would be managed according to the Forest Plan.

In the Clearwater and Clark Fork Rivers, the ability to manage vegetation in the river corridor would be left intact. This would allow for management of fire risk in these areas. Forest Plan standards would protect the riparian vegetation from actions which have the potential to degrade aquatic habitat. In addition, instream habitat improvement structures would be allowed to correct existing habitat problems. Operation and maintenance of existing water-related developments would be allowed to

continue, but enlargements and applications for additional developments would be denied. This would protect instream flows and migration corridors from further degradation by maintaining them at current levels. Any opportunity to remove obsolete structures would be taken advantage of to improve overall fishery conditions. The Forest Service would be given the authority to regulate surface use of these river segments to protect and enhance outstanding resource values. This would ensure that the segments do not receive excessive use as a result of Wild and Scenic River designation.

Rattlesnake Creek, which is recommended for Scenic classification under this alternative, would be managed similarly to the Clark Fork and Clearwater Rivers, except in regard to vegetation management and fish habitat improvement opportunities. Vegetation would be managed to allow natural forces to dominate in the development of community structures, with no allowance for use or extraction. Within the Rattlesnake Wilderness, which comprises approximately 40% of the corridor, this type of management already exists. Management of fish habitat would be restricted to monitoring only. No habitat improvement structures would be allowed in the stream. This Alternative is likely to have little effect, since the majority of the stream lies in a relatively pristine and protected.

Alternative 4 - Designation of "Low Risk" Rivers

This alternative provides Wild and Scenic River protection for those rivers that are unlikely to be impacted with water-related development projects. It is based on the philosophy that rivers suitable for hydropower and other water-related development should be left available for the public benefit. It provides no protection to the river segments addressed in Alternative 3, which are susceptible to water-related development. Included in this alternative are Morrell, South Fork Lolo, Cache, and West Fork Fish Creeks and the North Fork Blackfoot River. All of these streams, except for Morrell Creek and the lower portion of Cache Creek, are recommended for Wild classification. Morrell and lower Cache Creek are recommended for Scenic classification.

The majority of the watersheds through which the streams recommended for Wild classification flow



are either currently protected by wilderness designation or are in proposed wilderness areas. Aquatic habitat and fishery resources are therefore largely protected from future unnatural degradation. Future protection of these rivers under this alternative would be similar to that provided for Rattlesnake Creek in Alternative 2. This alternative allows for corrective action on human-induced impacts to soil and water.

Morrell and lower Cache Creek would be protected similarly to other designated rivers, except with respect to fish habitat improvement and water related-projects. Fish habitat improvement projects would be allowed to correct existing conditions. This would allow flexibility in managing aquatic habitat for fisheries. New water-related structures such as dams and diversions would be prohibited, unless the proposal is in the public interest. This would protect the free-flowing character of the stream from small private developments but would probably provide little protection from larger developments, since a dam constructed for hydropower generation would likely be viewed as being in the public interest.

Alternative 5 - Designation of All Eligible Rivers

This alternative recommends that all the rivers found eligible and suitable through the analysis study be classified as proposed in the eligibility study. Management standards similar to those for designated rivers in Alternatives 3 and 4 would apply to these rivers.

Of particular importance under this alternative, with respect to the fishery resource, are those rivers that are classified with fisheries as an outstanding resource value. Many of the management standards are and would be developed to protect the outstanding resource value. While protection of any one resource generally would provide some degree of protection to many other resources, direct protection would be most beneficial. Designation of these rivers with fisheries as the outstanding resource value will give the Forest Service additional authority to regulate any activity that may directly degrade the fishery resource. Rivers which have fisheries designated as an outstanding resource value include the North Fork Blackfoot River, Rattlesnake Creek, and Cache Creek.

Alternative 6 - Change Classification

Under this alternative, the recommendation is made to change the classification found in the eligibility study. During the field surveys, it was determined that some segments qualified for a more primitive classification or that river segments should be added. This alternative includes the following streams and tributaries: Morrell Creek, Rattlesnake Creek, South Fork Lolo Creek, Cache Creek, and the North Fork Blackfoot River.

Under this alternative, additional protection would be given to certain significant tributaries of eligible rivers where the tributary complements the outstandingly remarkable values. In the North Fork Blackfoot River and Rattlesnake and Cache Creeks, the addition of tributary streams such as Dwight, Canyon, East Fork Rattlesnake, Spring Gulch, High Falls, and White Creeks would provide additional protection to fish habitat and contribute to the water quality in downstream reaches where the fishery resource was identified as an outstanding resource value. The addition of No Name Creek and No Name Lake would contribute similarly to the South Fork Lolo Creek watershed, even though the fishery resource potential was not determined to be outstandingly remarkable in that drainage. In addition to these changes, re-classifying some watersheds to a more primitive status would provide additional protection to aquatic habitat and fisheries. Management standards similar to those for designated rivers in Alternatives 3 and 4 would apply to all streams designated under this alternative.

■ 5.4 Effects on Issues

This section describes the effects that the six alternatives have on the issues used to create the alternatives. As discussed in Section 4.1, eleven major issues influenced the development of the six alternatives. These issues are as follows:

Will development and management of recreation facilities in a corridor be affected by classification?



What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?

Will Wild and Scenic River classification provide protection for threatened, endangered and sensitive species?

How will Wild and Scenic River classification affect management of wildlife and fish habitat?

Would Wild and Scenic River classification affect potential relocation of Missoula's water system intake in Rattlesnake Creek?

How will classification affect timber cutting, mining, outfitting, special use permits and future development on National Forest System lands?

Does designation allow federal control over private land? Will designation affect resource development or building?

If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?

Why aren't Lake, Wrangle and Rattlesnake Creeks above the confluence with Wrangle being considered for "Wild" classification?

Shouldn't "Wild" designation (or the most restrictive) be used wherever possible?

Would you consider including the private land at the mouth of Cache Creek in the proposed classification?

Recreation Will development and management of recreation facilities in a corridor be affected by classification?

Designation of the rivers as Wild, Scenic, or Recreation may increase the level of recreation use on the rivers and within the river drainages. It may

also impact the level of recreational development and use permitted on the rivers and therefore increase management needs.

All of the rivers are presently experiencing various levels of increase in recreational use. Because they are suitable for boating, the Clearwater and Clark Fork Rivers appear to be receiving the highest increases. It is anticipated that these trends will continue under all of the alternatives.

The No Action Alternative would not have a significant impact upon user levels. Existing trends toward an increase in use levels will continue at present rates. The development of facilities to meet user needs and protect the resources will be installed in locations which are compatible with management standards outlined in the Forest Plan. River segments which lie within wilderness will be managed under the existing Limits of Acceptable Change (LAC) process. River segments which lie outside of existing wilderness will receive resource planning and management efforts needed to protect individual river resources. For example, if improvement of existing facilities is needed to meet user numbers, the project would be analyzed on an individual basis.

Nondesignation with protection, the only action alternative which would not provide Congressional protection, would be similar to the No Action Alternative. Recreation management pertinent to management standards stated in Amendment 12 would be incorporated into the Forest Plan on a permanent basis.

Classification itself, as described by the action alternatives, is known to attract additional recreational visitors and to increase interest in guiding and outfitting. Because of their floatable nature, the Clark Fork and Clearwater Rivers will most likely receive the highest increase in pressures from floating, fishing, and shoreline recreation. The Forest Service has already received one request for guiding kayak trips down the "Wild and Scenic Segment of the Clearwater." Additional water traffic normally results in greater resource impacts (i.e., wildlife disturbance, shoreline erosion, litter, and human conflict) and therefore requires increased development to harden the sites against such impact, or requires regulation of user numbers. The other six rivers which do not offer the water-borne experience, will most likely receive



increased use pressures, but to a lesser degree. The increase in use will be associated with trail use.

On those rivers which fully or partially lie within designated or proposed wilderness, management of the recreational visitor will continue to be administered by the more restrictive guidelines for wilderness. The LAC process will be used to determine appropriate numbers and impacts for these areas. It is anticipated that the effects on recreation would be minimal on Cache Creek and the West Fork of Fish Creek. The Rattlesnake and the North Fork Blackfoot would receive similar pressures to those presently seen. Morrell Creek would receive a slight increase in recreational use but would not add significantly to the levels of increase already being witnessed.

Added Costs What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?

Table 5.4.1. Administrative Costs

RIVER	ADDITIONAL COST PER MILE OF RIVER	MILES BY ALTERNATIVE					
		1	2	3	4	5	6
Clearwater River	\$200	0	0	19.9	0	19.9	19.9
Morrell Creek	\$100	0	0	0	5.8	5.8	5.8
North Fork Blackfoot River	\$100	0	0	0	53.5	53.5	63.9
Rattlesnake Creek	\$100	0	0	25.2	0	25.2	37.9
South Fork Lolo Creek	\$100	0	0	0	11.4	11.4	12.5
Cache Creek	\$100	0	0	0	17.2	17.2	21.9
West Fork Fish Creek	\$100	0	0	0	20.4	20.4	20.4
Clark Fork	\$200	0	0	27.9	0	27.9	27.9
Total River Miles		0	0	73.0	108.3	181.3	210.2
Additional Cost to Forest		\$0	\$0	\$12.1M	\$10.8M	\$22.9M	\$25.8M



Threatened and Endangered Species Will Wild and Scenic River classification provide protection for threatened, endangered and sensitive species?

See Section 5.3, Effects on River Resources, Wildlife and Plants (page 5-18). The referenced discussion includes protection for threatened, endangered and sensitive species.

Wildlife and Fish How will Wild and Scenic River classification affect management of wildlife and fish habitat?

The river segments under consideration flow through watersheds with differing degrees of development, and instream fish habitat in most is generally of high quality. All stream segments function as integral components of their respective aquatic ecosystem. Westslope cutthroat trout are the predominant species in most of the smaller headwater streams, but other species, such as bull, rainbow, brown, and brook trout, whitefish and sculpin inhabit many of the streams and rivers during various stages of their life cycle.

Under all of the action alternatives, the rivers recommended for inclusion in the National Wild and Scenic Rivers System would have their outstanding resource values protected. The action alternatives differ in the streams designated for classification and sometimes in the level of protection offered. Classification of any river segment would provide additional protection to the free-flowing nature of the designated portion. Federal designation, while protecting fish habitat, could attract an increased number of recreational anglers, further increasing fishing pressure. Designation could affect management within the river corridor, and it may also affect management activities in the watersheds outside the defined corridor if determined to be potentially detrimental to the outstanding resource values.

The No Action Alternative would provide for management of aquatic habitat and fisheries to continue under the Forest Plan prior to the Wild and Scenic Rivers Interim Management Standards in Amendment 12. The Forest Plan stipulates that we will maintain or improve aquatic habitat. This level of protection is sufficient for protecting fishery resources in most instances but may not provide adequate protection from hydroelectric

development if public interests or socio-economic values change. Hydroelectric development would result in a decrease in the quality of fish habitat and possible fragmentation of populations. Excessive development, resulting in an increased stress to aquatic habitat and fish populations, may also result from the no action alternative. Fishing pressure would not change as a result of the alternative.

Nondesignation with protection, the only action alternative which would not provide Congressional protection, would be similar to the No Action Alternative, except that the protective interim management standards for the Wild and Scenic Rivers as stated in Amendment 12 would be incorporated into the Forest Plan on a permanent basis. This alternative would provide additional protection to the free-flowing nature of the study rivers but lacks the strength of Congressional designation. Aquatic habitat and fishery resources could be degraded through hydropower development if the Federal Energy Regulatory Committee decided licensing was warranted.

With regards to the fishery resources in the study rivers, all of the action alternatives provide varying degrees of additional protection. The most additional protection would come from Alternative 6, followed by Alternative 5. Alternative 3 would provide slightly less overall protection by only designating "at risk" rivers. Alternatives 4 and 2 provide the least amount of protection of all the action alternatives.

Effects on Current National Forest Management How will classification affect timber cutting, mining, outfitting, special use permits, and future development on National Forest System lands?

See Section 5.3, Effects on River Resources, Land Use and Controls (page 5-4). The referenced section includes a discussion of National Forest management if the rivers are classified.

Water Use and Quality Would Wild and Scenic River classification affect potential relocation of Missoula's water system intake in Rattlesnake Creek?

Alternatives 1 and 4 do not include Rattlesnake Creek for designation. Alternatives 3, 5, and 6 propose Scenic classification for the mainstem of



Rattlesnake Creek, which could have an effect on the range of possibilities for municipal water supply development. Under Scenic classification, the stream must remain free-flowing in the designated corridor. The current impoundment for the Missoula water supply is downstream from the proposed corridor.

Property Rights Does designation allow Federal control over private land? Will designation affect resource development or building?

See Section 5.3, Effects on River Resources, Land Use and Controls (page 5-4). The referenced section includes a discussion on Federal control, development and building construction.

Visuals If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?

See Section 5.3, Effects on River Resources, Visual Resources (page 5-14). The referenced section includes a discussion of this issue.

Change Preliminary Classification Why aren't Lake, Wrangle, and Rattlesnake Creeks above the confluence with Wrangle being considered for "Wild" classification? Shouldn't "Wild" designation (or the most restrictive) be used wherever possible? Would you consider including the private land at the mouth of Cache Creek in the proposed classification?

The Suitability Study and analysis included further evaluation of the rivers identified within the Eligibility Study. Additional resource values were identified, and clarification of the classifications proposed within the Eligibility Study were made to reflect actual resource conditions. Alternative 6 was developed to reflect these conditions and reflects the designation of Wrangle Creek as Wild.

Lake Creek does not qualify for wild classification because of the level of past development and an existing road which is still used for municipal watershed access. Although use of the road is very low, it is maintained to allow vehicle passage and precludes the Wild classification.

The upper reaches of Rattlesnake Creek do not qualify for wild classification because of an existing

road which follows the creek approximately two-thirds of the way up the drainage. This road detracts from the pristine setting of the wild classification.

Upon request, the private land at the mouth of Cache Creek was included within the corridor reach. An additional ½ mile was included within the original Scenic designation.

■ 5.5 Adverse Effects That Cannot Be Avoided

Some increased use resulting in user impacts could occur as a result of designation. Individual river management plans will address and mitigate environmental consequences on each river corridor specific to the demands on each river. Rivers not designated would continue to be managed under the standards of the Lolo National Forest Plan before Amendment 12.

Implementation of any of the alternatives may create social conflicts between various groups because action or lack of action are not acceptable solutions to all people.

■ 5.6 Local Short-term Uses of the Environment and Maintenance and Enhancement of Long-term Productivity.

Implementation of any alternative would continue to provide opportunities for short-term resource yields. The standards and guidelines contained in the Lolo National Forest Plan ensure that short-term resource yields do not significantly impair the long-term productivity of the land. Congressional designation of any alternative except Alternative 1 would protect some or all of the long-term free-flowing river recreational opportunities and outstandingly remarkable values on these rivers.



■ 5.7 Irreversible/Irretrievable Resource Commitments.

An irreversible commitment is one in which non-renewable resources are permanently lost. None of the alternatives result in uses or modification of resources that are considered irreversible, such as metal ore or natural gas. Designation would protect threatened, endangered and sensitive plants and animals and cultural

resources from being lost because of inundation from dam construction.

An irretrievable commitment is one in which resource production is lost while managing an area for another purpose. All of the alternatives reduce the management of some resources and emphasize the management of other resources. Those that feel commodity production is the most important aspect of National Forest management will feel that classification will be an irretrievable commitment to not produce extractive commodities on all National Forest System lands.

Looking down Wrangle Creek from near Sanders Lake, Rattlesnake drainage



6

Distribution of Statement

■ 6.0 Federal Agencies and Officials

Senator Conrad Burns

Senator Max Baucus

Representative Pat Williams

Advisory Council on Historic Preservation, Office of Architectural and Environmental Preservation, Washington, DC

Office of Equal Opportunity, Washington, DC
Office of Archeology and Environmental Preservation, Washington, DC

Rural Electrification Administration, Washington, DC

Soil Conservation Service, Washington, DC
Army Corps of Engineers, Washington, DC
US Bureau of Mines, Denver, CO
Office of Economic Opportunity, Washington, DC
US Department of Energy, Office of Environmental Compliance, Washington, DC

Environmental Protection Agency, EIS Review Coordinator, Helena, MT

Environmental Protection Agency, Resource Liaison Development Staff, Washington, DC

Federal Energy Regulatory Commission, Washington, DC

US Department of Commerce, Washington, DC
US Department of Defense, Washington, DC
US Department of Health and Human Services, Washington, DC

US Department of Housing and Urban Development, Office of Environment and Energy, Washington, DC

US Department of Interior, Environmental Project Review, Washington, DC

Office of Environmental Affairs, Washington, DC
US Department of Labor, Washington, DC
Federal Energy Regulatory Commission, Office of Hydropower Licensing

US Department of Transportation

■ 6.1 Native Americans

Confederated Salish and Kootenai Tribes

■ 6.2 State and Local Agencies

Montana Department of Fish, Wildlife & Parks
Montana State Historical Society
Montana Department of State Lands
Montana Bureau of Mines
Montana Department of Transportation
Office of State Forester
Missoula County Commissioners
Mineral County Commissioners
Sanders County Commissioners
Montana State Department of Commerce
Montana State Department of Health and Environmental Sciences

Montana State Department of Natural Resources and Conservation
Missoula County Rural Planning
Mineral County Environmental Health and Planning

■ 6.3 State and Local Officials

Governor's Office, State of Montana
Joann Bird, State Legislature
Vivian Brooke, State Legislature
Vicki Cocchiarella, State Legislature
Jim Elliot, State Legislature
Harry Fritz, State Legislature
Mike Halligan, State Legislature
Stella Jean Hansen, State Legislature
Mike Kadas, State Legislature
Terry Klampe, State Legislature
Don Larson, State Legislature

Bob Pipinich, State Legislature
Robert R. Ream, State Legislature
Tim Sayles, State Legislature
Carolyn M. Squires, State Legislature
Wayne Stanford, State Legislature
Barry Stang, State Legislature
Fred R. VanValkenburg, State Legislature
Jeff Weldon, State Legislature
Mayor, City of Missoula
City Superintendent, Thompson Falls

■ 6.4 Organizations

Alliance for the Wild Rockies
American Rivers
Clark Fork Coalition
Columbia Baptist Conference
Eastern Sanders County Sportsmen
Five Valleys Land Trust
Sanders County Economic Development Corporation
Friends of the Earth
Headwaters Paddling Association
Idaho Pine Timber Association
Inez Lake Property Owners, Inc.

Lake Inez Recreational Homeowners
Intermountain Forest Industry Association
Missoula Central Labor Council
Missoula Economic Development Corporation
Montana Audubon Council
Montana Ecosystems Defense Council
Montana Wildlife Federation
National Association RV Parks and Campgrounds
North Idaho Flycasters
Rock Creek Advisory Council
Seeley/Swan Economic Action Team

■ 6.6 Universities

University of Montana
Montana State University
Land Lindberg, School of Forestry, U of M

Steve McCool, School of Forestry, U of M

■ 6.7 Libraries

Mineral County Library
Missoula Public Library
Montana State University Library

Plains Public Library
Thompson Falls Public Library
University of Montana Mansfield Library



Morrell Lake, Morrell Creek drainage

7

List of Preparers

The Interdisciplinary Team members that performed the Wild and Scenic Rivers suitability analysis, report and environmental impact statement include:

Name	Project Responsibility	Experience
Core Team		
John Fisher	Project Coordinator and Team Leader	Forester, 36 years with the USFS. District Staff and Forest Planner
Suzanne Artley	Assistant Team Leader, field reviewer, writer and editor	Forester, 7 years with USFS and State of Montana. Lands Specialist.
Angela Farr	Field reviewer, writer and public involvement leader	Personnel Specialist, 4 years with the USFS
David Atkins	Forest vegetation and field reviewer	Forester, 16 years with the USFS. Silviculturist and Timber Planner
John Hillis	Wildlife and biological evaluations	Wildlife Biologist, 22 years with the USFS. Forest Wildlife Biologist
Christopher Partyka	Writer, editor and cartographer	Civil Engineer Technician, 7 years with the USFS

Additional Team Members

Marcia Hogan	Recreation and public information	Forester, 15 years with the USFS. Public Information Officer
Norman Smyers	Geology and minerals	Geologist, 18 years with the USFS, BLM and USGS. Geologist and Minerals Specialist.

Charles McLeod	Historic and prehistoric cultural resources	Archeologist, 20 years with the USFS
Arne Rosquist	Water quality and hydrology	Hydrologist, 20 years with the USFS
Brian Riggers	Fisheries	Fisheries Biologist, 1 year with the USFS
Fred Stewart	Economics and effects on communities	Economist, 15 years with the USFS
Paul Valcarce	Scenic and landscape analysis	Landscape Architect, 1 year with the USFS
Elizabeth Neill	Scenic and landscape analysis	Landscape Architect, 1 year with the USFS
Andy Kulla	Recreation, vegetation and lands; Missoula Ranger District	Forester, 17 years with the USFS. Resource Management Specialist
Lisa Stoeffler	Recreation, vegetation and lands; Ninemile Ranger District	Forester, 10 years with the USFS. Resource Management Specialist
Frederick Haas	Recreation, vegetation and lands; Plains Ranger District	Forester, 12 years with the USFS. Resource Management Specialist
Karen Linford	Recreation, vegetation and lands; Seeley Lake Ranger District	Forester, 12 years with the USFS. Resource Management Specialist
Roger Lindgren	Recreation, vegetation and lands; Superior Ranger District	Forester, 31 years with the USFS. Resource Management Specialist

Other personnel who contributed to the development of this study:

Victor Dupuis	Silviculturist
Jerry Deibert	Wildlife Biologist
Joan Hellen	Landscape Architect
Richard Kramer	Fisheries Biologist
Patricia Dolan	Wildlife Biologist
Kristin Whisennand	Archeologist
Marcia Cross	Anthropologist
Libby Langston	Video Technician
Anne Dalton	Botanist

Appendix A

Issues Identified During W&SR Scoping April - December 1993

RECREATION

1. Will classification change the use of motorized land vehicles and water craft?
2. Will river, trail or road access be modified by classification?
3. Will development and management of recreation facilities in a corridor be affected by classification?
4. Will the management of sport fisheries be affected by classification?
 - a. Will existing, managed fish barriers be replaced if they are washed out (applicable only to the Clearwater River)?
 - b. Can designation alter the management of game fish habitat?
5. Will designation bring more use to Wild and Scenic Rivers?
 - a. What effect will increased use have on bull trout and harlequin ducks?
6. Will the Forest Service manage recreation (or other) use of the river(s), e.g., issue outfitter-guide permits for floating?
7. If floating becomes a permitted activity, what percent of the estimated floating capacity will be made available for outfitters?
8. How will Highway 135 Scenic Byway classification be affected?

ADDED COSTS

9. What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?

WILDLIFE AND FISH

10. Will W&SR classification provide protection for threatened, endangered and sensitive species?
11. How will W&SR classification affect management of wildlife and fish habitat?
12. Will river floating and on-river recreation affect our ability to maintain woody debris and beaver dams?
13. Should the fish barriers constructed in the Clearwater River be removed or modified to provide fish passage?
14. Do we want to maintain the Morrell Lake inflow diversion, and will W&SR classification affect continuance of this diversion?
15. Are the gabions on the upper Dry Fork of the North Fork Blackfoot River effective or should they be removed?

16. Will W&SR classification affect our ability to establish fish passage to the Clark Fork tributaries?
17. Would W&SR classification affect potential relocation of Missoula's municipal water system intake in Rattlesnake Creek?

EFFECTS ON CURRENT NATIONAL FOREST MANAGEMENT

18. How will classification affect timber cutting, mining, outfitting, special use permits and future development on National Forest System Lands?

WATER USE AND QUALITY

19. How would designation affect present legal rights to the use and impoundment of water in these rivers and streams, including existing structures?
20. Can logging, road building, mining and associated activities be managed to protect water quality in designated stream corridors?
21. Will designation affect existing water quality?
22. How does current sedimentation affect designation of rivers and streams?
23. What effect will designation have on future up- or downstream impoundments or diversions?

PROPERTY RIGHTS

24. Does designation allow federal control over private land? Will designation affect resource development or building?
25. Will designation affect real estate values?
 - a. By putting more land in Federal ownership
 - b. By restricting existing or future use on private land.
26. Under what circumstances would the Federal Government use condemnation for fee title or easements in designated corridors?
27. What management responsibilities would private landowners have, if any? Can I manage my acreage for wildlife under this designation?
28. Will designation affect management on State (school trust) Lands?
 - a. Is there compensation for lost revenue if management is affected?
29. Will highway and railroad relocation or management be affected by W&SR classification?
30. What methods or options will the Forest Service use to manage a Wild and Scenic River classification? (Options include condemnation, conservation easement purchase and/or condemnation, Cooperative agreements with land owners, and encourage County zoning.)

GOVERNMENT INTERVENTION

31. Why is designation desirable in addition to the existing Federal, State, County and local laws and regulations?

WEEDS

32. Would noxious weeds be managed in the river corridors, including the use of "weed free" hay?

VISUALS

33. How does existing development and possible expansion affect potential designation?

34. If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?

CULTURAL RESOURCES

35. What effect will W&SR classification have on heritage sites?

MINERALS AND GEOLOGY

36. What effect will W&SR classification have on mineral development?

ECONOMICS

37. How will W&SR classification affect local economies?

ADD RIVERS

38. Why not include: *White Creek as part of Cache Creek?
*Wilkes, 24-mile, Big Spruce, Chipmunk, Winnemuck, Thorne, Prospect and the upper reaches of Squaw Creeks?
*West Fork of Thompson River and West Fork of Fishtrap Creek?
*St. Regis River from Lookout Pass to St. Regis?
*Straight Creek and North Fork of Fish Creek?
*Montana Creek?

39. What interim management will be in place on other rivers of interest until they can be studied?

CHANGE PRELIMINARY CLASSIFICATION

40. Why aren't Lake, Wrangle, and Rattlesnake Creeks above the confluence with Wrangle, and the Clark Fork being considered for "Wild" classification?

41. Shouldn't "Wild" designation (or the most restrictive) be used wherever possible?

42. Would you consider including the private land at the mouth of Cache Creek in the proposed classification?

43. Could the corridor area be extended to one-half mile from each bank rather than the current one-quarter mile consideration?

CONCERNS NOT WITHIN THE SCOPE OF THE PROJECT

44. Will classification provide a way to mitigate current noise levels from the highway?

Appendix B

Wild and Scenic Rivers Lolo National Forest

Summary of Public Involvement April - December 1993

The Wild and Scenic River Core Team met to strategize for public involvement in the context of regular weekly team meetings in April and May. Angela Farr headed up the effort and talked with the Forest PAO for suggestions. The Forest NEPA mailing list was acquired, and each district was asked to contribute the mailing list that they use to inform the interested public. Five open house meetings to present information and gather comments and concerns were planned, and a display was contracted from Kimberly Hester.

In addition, news releases to inform readers of the opportunity were sent to newspapers that serve the communities where the open houses would be held.

An initial mailing on June 8, 1993, of 1,500 informational newsletters included an explanation of the project. An attached return sheet to indicate varying levels of interest was included with the mailing. By July 21, 1993, 130 return sheets were received. Ten individuals asked to be removed from the mailing list and the other 120 indicated some degree of interest. A number of newsletters were returned as undeliverable, and whenever possible the mailing list was updated.

Ninety respondents asked to be sent further mailings, and several similar responses arrived over the summer and fall. A significant number of the respondents offered comments and concerns or asked specific questions. These responses are included in the issue identification process.

The open house meetings were held in late June in five different locations. A photographic and information display for each river was set up at each open house and W/S core team members as well as district personnel were available to visit with interested citizens. A flip chart for comments and questions was maintained at each open house and visitors were asked if they had comments they would like to have noted. As each comment was written, the person providing the input was asked if the written rendition accurately reflected their concern and was changed if it did not. The flip charts became a valuable source for issues identification later in the process.

The open house meetings in the rural areas attracted an average of 12 people per meeting. The Missoula open house was held in the public library and attracted both deliberate attendees and those with only a casual interest. A total of 30 attended the Missoula meeting.

The project got some unexpected publicity when a local news station did a video clip for the evening news, reporting one of the project's field study trips. No responses or concerns were raised by the news clip, but it did offer an opportunity for further public awareness.

The project display was made available to ranger district offices for visitors to see during the summer, and the display was placed in USFS booths at county fairs as well. Again, this was an informational opportunity, and it is unknown how many comments, concerns, or phone inquiries were generated by the displays. Over the summer season, inquiries and comments were collected by district representatives and core team members as occasional letters arrived or members of the public telephoned the districts or Supervisor's Office. All these comments were integrated into the issues identification process, and those requesting a response were answered.

A second newsletter was mailed to 450 individuals in October to update them on the summer field work and on overall progress of the project. A few responses and inquires continued to come in, although none specific to the second mailing. All of the later responses have been compared with the list of issues to ensure that the concerns expressed are included. A copy of the issues is included in Appendix A.

The core team leader met with the Missoula County Commissioners on November 15, 1993, to present an overview of the project to date. The Mineral and Sanders County Commissioners have been updated on the project by telephone contact and district personnel and through the newsletter mailings. Effects on other neighboring counties are negligible.

Appendix C

Lolo National Forest Management Areas

A measure of Management Areas (MA) included in the Wild and Scenic Rivers Suitability Study corridors is shown below. The total miles shown for a river may exceed the actual length of the river because both banks are counted if there is a change of MA or owner from one side to the other. The corridor acres go back from the banks 1/4 mile.

A short, one-line description of each of the Forest's Management Areas follows.

<u>MA/Owner</u>	<u>Miles of Streambank</u>	<u>Acres in Corridor</u>
<i>Clearwater River</i>		
<i>Seeley Lake Inlet to Headwaters</i>		
2	--	9
7	.02	88
9	7.05	1753
11	.77	319
13	.46	126
16	.04	93
20	5.02	1881
20a	.06	40
24	1.22	630
25	--	138
Small Pri	2.47	964
Plum Creek	.84	432
Lk Inez	1.67	291
Lk Alva	1.58	295
Rainy Lk	.55	78
Clrwtr Lk	--	108
<i>Morrell Creek</i>		
<i>Trailhead to Headwaters</i>		
11	.06	53
12	2.65	933
20	3.06	922
Lake	--	11
<i>North Fork Blackfoot River</i>		
<i>Mainstem</i>		
12	19.22	6074
14	.82	47
20	.56	204
20a	.26	24
<i>Dry Fork</i>	12	16.79
<i>Cabin Creek</i>	12	8.38
<i>Cooney Creek</i>	12	5.00
		1646

	<u>MA/Owner</u>	<u>Miles of Streambank</u>	<u>Acres in Corridor</u>
<i>Dobrota Creek</i>	12	3.29	1091
<i>Dwight Creek</i>	12	5.05	1449
<i>Canyon Creek</i>	12	5.32	1524
<i>Rattlesnake Creek</i>			
<i>Mainstem</i>	12	10.04	2929
	28	14.76	2991
	Small Pri	--	177
<i>Wrangle Creek</i>	12	3.72	1313
<i>Lake Creek</i>	12	2.27	885
<i>Spring Gulch</i>	28	4.5	1370
<i>High Falls Creek</i>	12	3.96	1096
	Small Pri	.01	86
<i>East Fork</i>	6	.12	70
	28	4.12	1231
<i>South Fork Lolo Creek</i>			
<i>Lower Terminus to Headwaters</i>			
	11	1.07	176
	12	9.04	2880
	17	1.32	233
	21	2.39	332
	25	--	21
<i>No Name Creek</i>	12	1.12	311
<i>Cache Creek</i>			
<i>Mainstem below Montana Creek</i>			
	13	.49	36
	16	.16	60
	17	.45	138
	18	.03	160
	19	--	54
	22	--	18
	23	.13	75
	24	--	10
	27	--	9
	Small Pri	.14	65

<u>MA/Owner</u>	<u>Miles of Streambank</u>	<u>Acres in Corridor</u>
<i>Mainstem above Montana Creek</i>		
12	9.79	3332
16	.37	83
17	--	13
18	--	4
19	--	83
27	--	62
<i>Irish Creek</i>	12	2,46
<i>Pebble Creek</i>	12	3.34
<i>White Creek</i>	12	4.55
<i>West Fork Fish Creek</i>		
<i>Mainstem</i>	2	.05
	12	9.30
<i>Cedar Log Creek</i>	12	7.59
<i>Middle Fork Indian</i>	12	3.49
<i>Clark Fork</i>		
<i>Slowey</i>	7	--
	13	.58
	19	.57
	22	1.64
	24	--
	Small Pri	4.08
	State	.94
	River	--
<i>Cutoff</i>	1	.48
	6	--
	9	.33
	14	7.20
	19	10.07
	21	--
	22	.55
	24	--
	27	--
	Small Pri	8.9
	State	3.61
	Plum Creek	--
	River	--

Lolo Forest Plan Management Areas

MA 1	Noncommercial forest land, scattered small parcels
2	Forest Service administrative sites
3	Cultural sites, including prehistoric and historic
4	Mining areas, in the development/extraction phase
5	Transportation and utility corridors
6	Research Natural Areas
7	Developed recreation sites (Forest Service)
8	Ski areas
9	Areas of concentrated public recreation use
10	Unroaded lands, scattered small parcels
11	Unroaded lands, large parcels
12	Wilderness
13	Riparian zones without domestic animal grazing
14	Riparian zones with domestic animal grazing
15	Cattle and horse grazing allotments
16	Timber management
17	Timber management on slopes over 60 percent
18	Winter game range with timber management
19	Winter game range with recreation management
20	Grizzly bear habitat suitable for timber harvest
20a	Grizzly bear habitat not suitable for timber management
21	Old growth tree stands
22	Retention Visual Quality Objective with winter game range
23	Partial Retention VQO with winter game range
24	Retention VQO with timber management
25	Partial Retention VQO with timber management
26	Elk summer range
27	Commercial forest land not economical or feasible to manage for timber
28	Rattlesnake National Recreation Area

Appendix D

Nine regulations exist to protect water quality within the lakes and streams which border the study rivers.

County Shoreline Construction Permit

Permit Administrator: County Commissioners

Authority: State and County statutes

Purpose: control lake pollution and quality of life

Applies to: shoreline of lakes larger than 160 acres, improvements, and new construction

404 "Dredge or Fill" Discharge Permit

Permit Administrator: Army Corps of Engineers/EPA/USF&WL

Authority: Clean Water Act 33 CFR

Purpose: Restore and maintain chemical, physical, and biological integrity of waters, no-net-loss of wetlands

Applies to: Navigable rivers and their headwaters, lakes that are navigable, and wetlands and riparian areas greater than 1 acre in size, maintenance improvements, and new construction that involves placement of material in a lake, stream, or wetland; dredging in streams, lakes, or wetlands; or modifications to same, whether permanent or temporary

Floodplain Development Permit

Permit Administrator: County Commissioners

Authority: MT Floodplain and Floodway Mgmt Act Federal Emergency Mgmt Agency regulations

Purpose: Promote health & safety, minimize flood losses, promote wise use, and minimize obstructions

Applies to: Riparian areas along streams where there's a 1% chance of flooding in a given year (100 yr floodplain whether mapped by County or not), any obstruction to flow, or object that will catch debris mobilized by flood

310 Streambed and Streambank Permit

Permit Administrator: County Conservation District

Authority: MT Streambed and Land Preservation Act

Purpose: minimize erosion & sedimentation, and to maintain water quality and channel integrity

Applies to: private individuals that plan to alter stream bed or banks on private land, or for their own benefit on public land (non-govt actions), perennial streams (USGS blueline), and any activity below bankfull flow level

"124" Stream Preservation Permit

Permit Administrator: MT Fish, Wildlife and Parks

Authority: MT Stream Protection Act and Clean Water Act

Purpose: Protect and preserve fish & wildlife resources in their existing natural state

Applies to: Bed and banks of any stream channel (perennial or otherwise) and its tributaries, and construction, modification, operation or maintenance of any structure that affects the shape, form or function of any channel below the bankfull level

"3-A" Authorization Permit

Permit Administrator: MT Water Quality Bureau

Authority: MT Surface Water Quality Regulations and Clean Water Act

Purpose: Short-term exemption from water quality standards when adverse effects are not avoidable, but only if effects are minimized and in accordance with permit conditions

Applies to: Any project that would directly or indirectly affect (unavoidably) water turbidity, total dissolved solids, or temperatures, and construction, modification, operation or maintenance activities that result in short-term increases in sediment, dissolved substances, or water temperatures

MPDES Discharge Permit

Permit Administrator: MT Water Quality Bureau

Authority: MT Water Quality Act and Clean Water Act

Purpose: Protect and preserve surface and groundwater quality for beneficial uses

Applies to: Point sources that discharge water or other substances that directly or indirectly affect surface and groundwater quality, and any activity that has a discrete outfall, pipe, drain, sprinkler, basin or other point of disposal (land- or water-based structure or facility, temporary or permanent)

Small Miner's Exclusionary Certification

Permit Administrator: MT State Lands

Authority: MT General Mining Laws

Purpose: Protect the public resource and regulate the activities of the mining industry

Applies to: Bed, banks and floodplains of perennial streams, small dredge or placer operations by non-commercial private operations

Stormwater Discharge Permit

Permit Administrator: MT Water Quality Bureau

Authority: MT Water Quality Act and Clean Water Act

Purpose: Reduce point- and non-point source discharges of sediment and other pollutants to an absolute minimum by controlling source sites affected by infrequent storm discharges

Applies to: Water quality only during storm events, construction projects that will disturb more than 5 acres, or if site is less than 100 feet from a stream, more than 1 acre

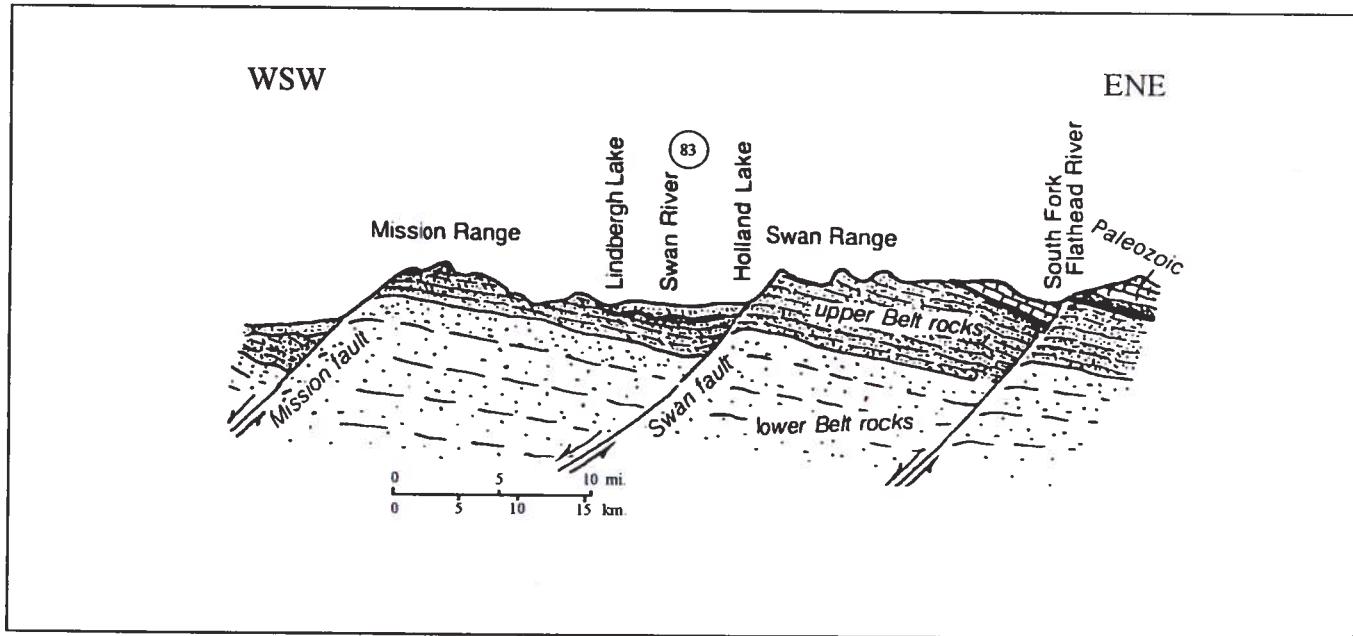
Appendix E

GEOLOGIC TIME SCALE

AGE	EON	ERA	PERIOD	EPOCH	IMPORTANT EVENTS IN MONTANA
			QUATERNARY	Holocene (Recent) Pleistocene (Glacial)	Pinedale ice age ended about 10,000 years ago Bull Lake ice age, 70,000-130,000 years ago Yellowstone volcano starts, 1.8 million years ago modern streams start to flow
		CENOZOIC		2.5 Million Years Ago	
			TERTIARY	Pliocene Miocene Oligocene Eocene	Sixmile Creek and Flaxville gravels time of wet tropical climate Renova formation Mountains form in central Montana Lowland Creek volcanics Fort Union formation
				65 Million Years Ago	extinction of the dinosaurs
		MESOZOIC	CRETACEOUS		Elkhorn Mountains volcanics Boulder batholith, Idaho Batholith Rocky Mountains form conglomerate, sandstone, shale
			JURASSIC		shale, limestone, and sandstone
			TRIASSIC		Atlantic Ocean begins to open
		PALEOZOIC	PERMIAN PENNSYLVANIAN MISSISSIPPIAN DEVONIAN SILURIAN ORDOVICIAN	210 Million Years Ago	sandstone and limestone Madison limestone limestones no rocks sandstone and limestone first animal fossils
				600 Million Years Ago	
	PROTEROZOIC				continental rifting Belt sedimentary formations
	ARCHEOZOIC			2,500 Million Years Ago	most basement rock in Montana, 2.7 billion years ago Stillwater layered intrusion oldest basement rock in Montana, 3.2 billion years ago

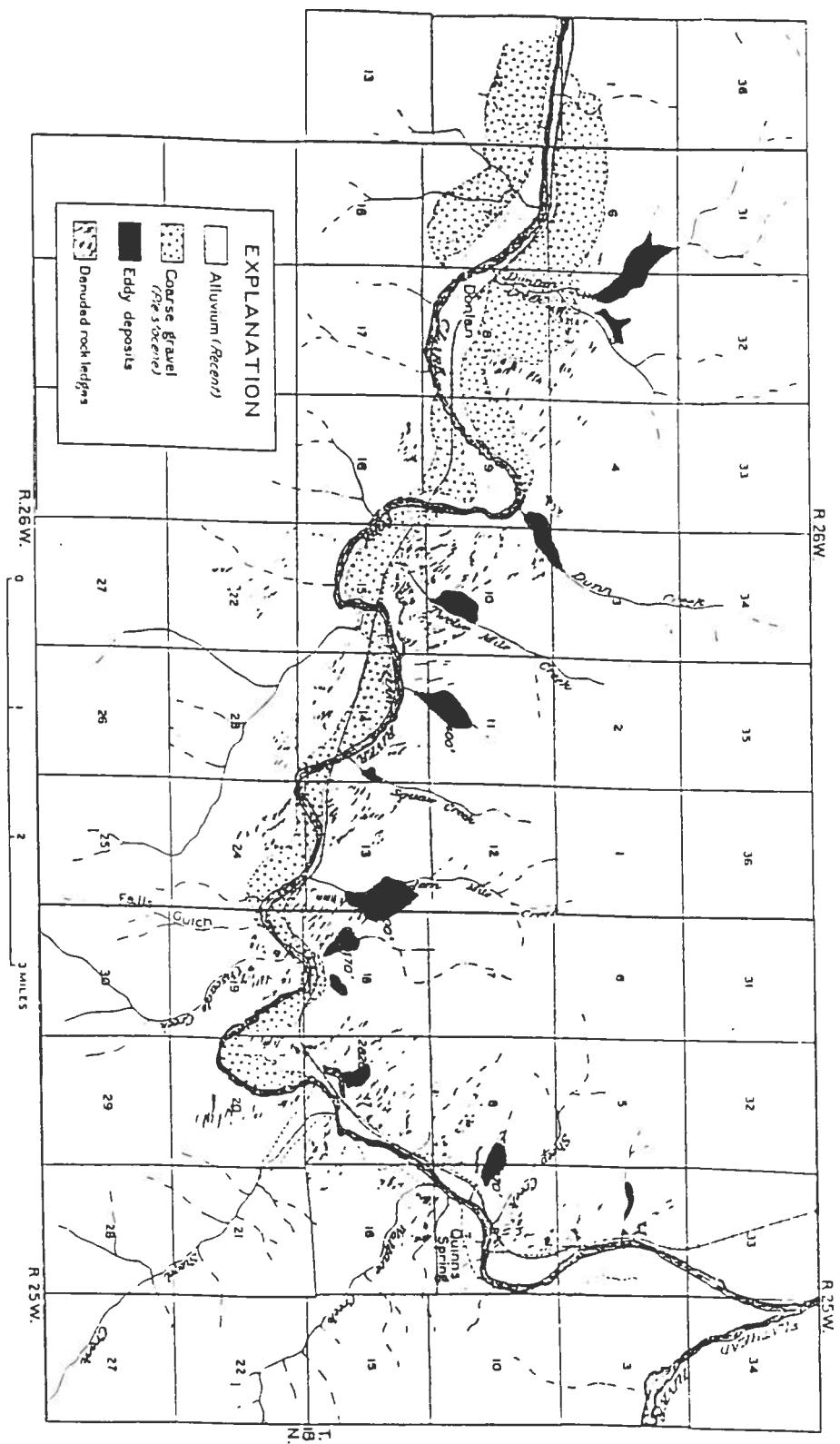
from : "Roadside Geology of Montana", David Alt and Donald W. Hyndman. 1992

Section Across the Swan Valley



from : "Roadside Geology of Montana", David Alt and Donald W. Hyndman, 1992

Clark Fork Gulch Fills



Appendix E

Geologic Features

Regional Geology and Geomorphology. The subject lands lie within the Northern Rocky Mountain physiographic province which is characterized by north-northwest trending mountain ranges. Virtually all of this area is underlain by a series of metamorphosed Precambrian sedimentary rocks known as the Belt Supergroup. Deposition of these strata took place from about 800 to 1,500 million years ago (m.y.a.), with up to 40,000 feet of sediment being laid down in the Kalispell and Thompson Falls areas (Harrison et al, 1986). The lithologies of the Belt Supergroup include argillite, quartzite, siliceous limestone, and argillaceous shales. The predominant texture is fine grained. Deposition of sediments continued intermittently throughout the Paleozoic and Mesozoic Eras; however, subsequent uplift, faulting, and erosion has removed almost all traces of these rocks.

During Late Cretaceous time (60-90 m.y.a.), a major period of mountain building took place in the Western United States. This is referred to as the Laramide Orogeny. During this period of geologic time, forces within the earth caused uplift and compression which resulted in large-scale folding and faulting. Because the Belt rocks were composed of hard, competent beds, faulting rather than folding was more prevalent, especially in western Montana. Some of the old Precambrian fault zones such as the Osburn Fault were reactivated. Thrust faults and normal faults often had several miles of displacement, and some faults were displaced up to 100 miles (Harrison et al, 1986).

Igneous activity, which was significant in the Early to Middle Tertiary period (20-60 m.y.a.) in other parts of the Rocky Mountains, was rather minor in both magnitude and extent in northwestern Montana. However, the Idaho Batholith, a large composite body of granitic rock, was emplaced along a north-south trend beginning in central Idaho and continuing north to the crest of the Bitterroot Mountains southwest of Missoula, Montana (Toth and Zilka, 1984, p. 581).

Late in the Quaternary Period, Pleistocene glaciation scoured the mountains, forming classical alpine features such as cirques, aretes or knife-edged ridges, tarns, etc. Lobes of ice also extended down into the valleys. On several occasions, ice blocked the Clark Fork River near the Idaho-Montana border and caused the formation of Glacial Lake Missoula (Perry, 1962).

Appendix F

Threatened, Endangered and Sensitive Plants Wild and Scenic Rivers Lolo National Forest

Report compiled by Anne Dalton
January 1994

This report was prepared using information from the following sources:

- a. Aerial photographs and topographic maps
- b. Montana Natural Heritage Program database records and publications
- c. Regional forester's Sensitive Plant List, including additions proposed for the list in 1993
- d. Regional floristic manuals
- e. Land Systems Inventory and TSMRS records
- f. Consultation with Steve Shelly, regional botanist
- g. Draft report on the Canyon Creek fire, Jack Losensky, Forest ecologist
- h. Consultation with Dave McElderry (Superior Ranger District) and Lisa Stoeffler (Ninemile Ranger District)
- i. District TES plant records for Lolo National Forest

Note: For easy reference, full descriptions of plants known or suspected in a river reach are included under each area heading.

Special note: Additional specific information regarding these species is available in "Sensitive, Threatened and Endangered Vascular Plants of Montana," an Occasional Publication of the Montana Natural Heritage Program, written by Peter Lesica and J. Stephen Shelly. It is in the Forest TES program papers. Explanations of the State and global rankings are described there as well.

Suitability of river corridors for sensitive plants:

In general, wetlands associated with river corridors are good places to look for rare plants. Many wet site sensitive plants have become rare in part because humans have such a propensity to drain wetlands and farm or otherwise disturb them, speeding up, or even causing the demise of, wetland plant species. Also, at least for species currently on our lists, none would grow in a river proper, but streamside or in small seeps, fens, ponds, or similar structures associated with riparian zones.

CLARK FORK RIVER

Region 1 Sensitive Plants

One sensitive plant, *Cypripedium fasciculatum* Kell. (Clustered Lady's Slipper) occurs within 1/2 mile of the Clark Fork river along the area designated for consideration as Wild and Scenic. This site is near Falls Creek west of Cascade Falls. It was discovered during sensitive plant surveys of the Muchwater Quarry project (Superior Ranger District).

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and Ponderosa pine forest with Ninebark and/or snowberry in the shrub layer. In Montana *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is **sensitive** and Washington, where it is listed as **threatened**. This species is currently listed by the state of Montana as a **threatened** species. *C. fasciculatum* ranges from Washington south to Northern California and east into Colorado, Wyoming and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* is ranked G3, **threatened**, throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list this species is listed by the U. S. Fish and Wildlife Service as "....proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Several other TES plant species could occur in wetlands associated with the proposed Wild and Scenic portions of the Clark Fork River. These plant species are listed below with a brief description of their habitat, range, and distribution.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, especially in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest. Listed as a **State sensitive** plant in Montana, this species is also listed as **endangered** in Idaho and Washington, **threatened** in North Dakota, extirpated from Oregon and **rare** in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens, and around springs and seepage areas, often near thermal waters at lower elevations. In Montana, *E. gigantea* is known to occur in Glacier National Park, on the Flathead, Lewis and Clark National Forests, and on State and private land (including 2 historic reports bordering the Lolo National Forest). In Montana and Idaho, *E. gigantea* is listed as a **State threatened** species; it is listed as **rare or sensitive** in 3 other states and in British Columbia. Its global distribution is described as sparse throughout its range, which is limited to North America.

U. S. F. S. Proposed Sensitive Species

Boisduvalia densiflora Wats. (Dense Spike-primrose) occurs in vernally wet soils, fens, and along streams in valleys and mountains. It is known from historic collections in the Flathead Valley. It is listed as **sensitive** in Montana and **rare** in British Columbia. *B. densiflora* is classified as **globally secure** in its range through the western U. S. and Canada, but it is **critically imperiled** in the State because of its extreme **rarity**.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Clark Fork segments proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

WEST FORK FISH CREEK

Region 1 Sensitive Plants

No Region 1 sensitive plants are known to occur with 1/2 mile of this stream.

Cypripedium fasciculatum occurs several miles north of the West Fork Fish Creek in the Quartz Creek drainage.

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and Ponderosa pine forest with Ninebark and/or snowberry in the shrub layer. In Montana, *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is **sensitive** and Washington, where it is listed as **threatened**. This species is currently listed by the State of Montana as a **threatened** plant. *C. fasciculatum* ranges from Washington south to Northern California and east into Colorado, Wyoming, and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* is ranked G3, **threatened** throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list, this species is listed by the U. S. Fish and Wildlife Service as "...proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Habitat for the following sensitive plants is suspected near the West Fork Fish Creek:

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices at mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana **sensitive** species, it is also listed as **rare** in British Columbia, Saskatchewan, and South Dakota. It is demonstrably secure globally with a circumboreal range.

Allium fibrillum Jones (Fringed Onion) is found in moist, shallow soils in the montane zone, especially forest openings and meadows. Listed as **threatened** in Montana, this species is apparently secure globally but is extremely rare in parts of its range. It is a regional endemic, found only in eastern Oregon and Washington, Idaho and western Montana. In Montana it is known to occur in Glacier National Park and on the Kootenai and Flathead National Forests.

Botrychium minganense Vict. (Mingan Island Moonwort) is found in moist to wet drainages with gentle slopes, in deep to spotted shade of old-growth cedar stands, often in acid to neutral soil. This species has been found on the Flathead National Forest and on private land adjacent to the Ninemile Ranger District of the Lolo National Forest. *B. minganense* is **sensitive (critically imperiled)** in Montana but is thought to be globally secure. Its range includes Canada and the northern U. S.; it is listed as **rare** in British Columbia, **endangered** in North Dakota, and **sensitive** in Washington.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is **sensitive** in Montana and Washington. A circumpolar species that extends south into Washington, Montana, and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas or hummocks in small springs; esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest.

Listed as a sensitive plant in Montana, this species is also listed as endangered in Idaho and Washington, threatened in North Dakota, extirpated from Oregon and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Cypripedium passerinum Rich. (Sparrow's-egg Lady's Slipper) is found on moist streambanks, springs, fens and bog edges, often on calcareous soils. A circumpolar plant species, Lesica (1991) reports that the only known sites for this orchid in the lower 48 states are in northwestern Montana in Glacier National Park and on the Flathead and Lewis and Clark National Forests. A State site is also reported. While apparently secure in its northern range, the species is listed as sensitive (imperiled) in Montana.

Mertensia bella Piper (Oregon Bluebell) is found on wet, seepy, open to partially shaded slopes in the upper montane or lower subalpine zone. In Montana, it is known from only one area on the Lolo National Forest. It is ranked in Montana as a critically imperiled, disjunct species. However, it is apparently secure within its known range in Oregon and Idaho.

Orchis rotundifolia Banks (Round-leaved Orchis) grows along streams and in wet woods, usually where the drainage is good on limestone. In Montana it is known to occur on the Flathead and Lewis and Clark National Forests. This species is circumpolar in North America and extends into the northern states. While it is listed as sensitive in Montana, it is secure throughout its range.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened (U. S. F. W. S.) throughout its range because it is very rare with a limited range.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the West Fork Fish Creek areas proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

CACHE CREEK

Region 1 TES Plant Species

No Forest or Montana TES plants are known to occur within 1/2 mile of this stream.

Cypripedium fasciculatum occurs several miles north in the Quartz Creek drainage.

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and Ponderosa pine forest with Ninebark and/or snowberry in the shrub layer. In Montana, *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is sensitive and in Washington, where it is listed as threatened. This species is currently listed by the State of Montana as a critically imperiled

sensitive plant. *C. fasciculatum* ranges from Washington south to Northern California and east into Colorado, Wyoming, and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* ranked G3, threatened throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list this species is listed by the U. S. Fish and Wildlife Service as "...proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Six sensitive plant species occur east of this drainage near Lolo Hot Springs. All may have habitat near Cache Creek.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is sensitive in Montana and Washington. A circumpolar species that extends south into Washington, Montana, and Colorado, *C. tetrandrum* is apparently secure globally.

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens, and around springs and seepage areas, often near thermal waters at lower elevations. In Montana, *E. gigantea* is known to occur in Glacier National Park, on the Flathead, Lewis and Clark National Forests, and on State and private land (including 2 historic reports bordering the Lolo National Forest). In Montana and Idaho, *E. gigantea* is listed as a State threatened species; it is listed as rare or sensitive in 3 other states and in British Columbia. Its global distribution is described as sparse throughout its range, which is limited to North America.

Gentianopsis simplex Iltis (Hiker's Gentian) is found in mountain bogs, wet meadows, and seepage areas, especially in warm thermal waters. Threatened in Montana, this species is known from only 3 sites in the State. It ranges through limited parts of the Cascades and Sierra Nevada mountains, into Idaho and Montana. In Montana it occurs on the Beaverhead and Custer National Forests, and on private land adjacent to the Lolo National Forest. It is also listed as threatened throughout its range.

Mertensia bella Piper (Oregon Bluebell) is found on wet, seepy, open to partially shaded slopes in the upper montane or lower subalpine zone. In Montana, it is known from only one area on the Lolo National Forest. It is ranked in Montana as a critically imperiled, disjunct species. However, it is apparently secure within its known range in Oregon and Idaho.

Orogenia fusiformis Wats. (Turkey Peas or Tapered-root Orogenia) is found in open places, along slopes and ridges, in woods and meadows, from valleys to the mid-montane zone. In Montana it is listed as imperiled in the State

because its rarity (less than 20 occurrences) makes it vulnerable to extirpation from the State. The species is secure throughout its range in the western U. S., although it is rare in parts of this range.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened throughout its range because it is very rare, with a limited range.

In addition to the six plants listed above, habitat for the following sensitive plants is suspected in or near Cache Creek:

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices at mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana sensitive species, it is also listed as rare in British Columbia, Saskatchewan, and South Dakota. It is demonstrably secure globally with a circumboreal range.

Allium fibrillum Jones (Fringed Onion) is found in moist, shallow soils in the montane zone, especially forest openings and meadows. Listed as threatened in Montana, this species is apparently secure globally, but is extremely rare in parts of its range. It is a regional endemic, found only in eastern Oregon and Washington, Idaho and western Montana. In Montana it is known to occur in Glacier National Park and on the Kootenai and Flathead National Forests.

Allotropa virgata T. & G. (Candystick) survives only in tripartite symbiosis with a mycorrhizal fungus and mature conifers. This species occurs in mature lodgepole pine forests in Region 1; it could occur with other mature conifers as well. While threatened in Montana and Idaho, the species appears globally secure. The local population is apparently disjunct from the main population, which ranges from the southern Sierra Nevada mountains and coastal California to British Columbia and the Cascades. In Montana it is known to occur on the Lolo, Deerlodge, and Bitterroot National Forests.

Athyrsanus pusillus Greene (Sandweed) occurs in vernally moist, shallow soil on open, rocky shelves and along small drainages, in the foothill and lower montane zones. In Montana it is critically imperiled because it is extremely rare and exists only in very limited habitats. It appears secure in other parts of its range which includes the Pacific Northwest and portions of Montana, Idaho, and Utah. The known sites for this species in Montana are on the Bitterroot National Forest.

Botrychium minganense Vict. (Mingan Island Moonwort) is found in moist to wet drainages with gentle slopes, in deep to spotted shade of old-growth cedar stands, often in acid to neutral soil. This species has been found on the Flathead National Forest and on private land adjacent to the Ninemile Ranger District of the Lolo National Forest. *B. minganense* is sensitive (critically imperiled) in Montana, but is thought to be globally secure. Its range includes Canada and the northern U. S.; it is listed as rare in British Columbia, endangered in North Dakota, and sensitive in Washington.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai, and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest. Listed as a State sensitive plant in Montana, this species is also listed as endangered in Idaho and Washington, threatened in North Dakota, extirpated from Oregon, and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Orchis rotundifolia Banks (Round-leaved Orchis) grows along streams and in wet woods, usually where the drainage is good on limestone. In Montana it is known to occur on the Flathead and Lewis and Clark National Forests. This species is circumpolar in North America and extends into the northern states. Sensitive in Montana, it is secure throughout its range.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened throughout its range because it is very rare with a limited range.

U. S. F. S. Proposed Sensitive Species

Boisduvalia densiflora Wats. (Dense Spike-primrose) occurs in vernally wet soils, fens and along streams in valleys and mountains. It is known from historic collections in the Flathead Valley. It is listed as sensitive in Montana and rare in British Columbia. *B. densiflora* is classified as globally secure in its range through the western U. S. and Canada, but it is critically imperiled in the State due to its extreme rarity.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Cache Creek areas proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

NORTH FORK BLACKFOOT RIVER

Region 1 TES Plant Species

On forest TES plant maps, only one sensitive plant, *Grindelia howellii*, is known in the vicinity of the North Fork Blackfoot river. *G. howellii* is likely to occur in natural openings along and above the river system.

Little sensitive plant work has been done in the Scapegoat Wilderness. The most recent plant-related records describe limited plant surveys conducted by J. Losensky, Forest ecologist, in the years following the Canyon Creek fire and a limited sensitive plant survey done by Rebecca White (Seeley Lake Ranger District) in 1993, during grazing allotment examination in the North Fork Cabin/Cooney Creek areas.

Habitat for several additional species appears to exist along the river system:

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana sensitive species, it is also listed as rare in British Columbia, Saskatchewan, and South Dakota. It is demonstrably secure globally with a circumboreal range.

Allium fibrillum Jones (Fringed Onion) is found in moist, shallow soils in the montane zone, especially forest openings and meadows. Listed as threatened in Montana, this species is apparently secure globally, but is extremely rare in parts of its range. It is a regional endemic, found only in eastern Oregon and Washington, Idaho and western Montana. In Montana it is known to occur in Glacier National Park and on the Kootenai and Flathead National Forests.

Allotropa virgata T. & G. (Candystick) survives only in tripartite symbiosis with a mycorrhizal fungus and mature conifers. This species occurs in mature lodgepole pine forests in Region 1; it could occur with other mature conifers as well. While threatened in Montana and Idaho, the species appears globally secure. The local population is apparently disjunct from the main population which ranges from the southern Sierra Nevada mountains and coastal California to British Columbia and the Cascades. In Montana it is known to occur on the Lolo, Deerlodge and Bitterroot National Forests.

Athyrsanus pusillus Greene (Sandweed) occurs in vernally moist, shallow soil on open, rocky shelves and along small drainages, in the foothill and lower montane zones. In Montana it is critically imperiled because it is extremely rare and exists only in very limited habitats. It appears secure in other parts of its range which includes the Pacific Northwest and portions of Montana, Idaho and Utah. The known sites for this species in Montana are on the Bitterroot National Forest.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is sensitive in Montana and Washington. A circumpolar species that extends south into Washington, Montana and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, esp. in shade of forest ecotones. In Montana this species is

known to occur on the Flathead, Lewis and Clark, Kootenai, and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest. Listed as a State **sensitive** plant in Montana, this species is also listed as **endangered** in Idaho and Washington, **threatened** in North Dakota, extirpated from Oregon, and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Cypripedium passerinum Rich. (Sparrow's-egg Lady's Slipper) is found on moist streambanks, springs, fens, and bog edges, often on calcareous soils. A circumpolar plant species, Lesica (1991) reports that the only known sites for this orchid in the lower 48 states are in northwestern Montana in Glacier National Park and on the Flathead and Lewis and Clark National Forests. A State site is also reported. While apparently secure in its northern range, the species is listed as **sensitive (imperiled)** in Montana.

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins, and in moist woods and thickets in the mountains. This species is **sensitive (imperiled)** in Montana but demonstrably secure throughout its range in Canada and the northern U. S. In Montana it is found on the Flathead Indian Reservation, the Flathead and Lolo National Forests, and on private land.

Orchis rotundifolia Banks (Round-leaved Orchis) grows along streams and in wet woods, usually where the drainage is good on limestone. In Montana it is known to occur on the Flathead and Lewis and Clark National Forests. This species is circumpolar in North America and extends into the northern states. **Sensitive** in Montana, it is secure throughout its range.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as **threatened** in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to the Lolo National Forest. Globally, it is listed as **threatened** throughout its range because it is very rare with a limited range.

U. S. F. S. Proposed Sensitive Species

Boisduvalia densiflora Wats. (Dense Spike-primrose) occurs in vernally wet soils, fens and along streams in valleys and mountains. It is known from historic collections in the Flathead Valley. It is listed as **sensitive** in Montana and rare in British Columbia. *B. densiflora* is classified as globally secure in its range through the western U. S. and Canada, but it is critically imperiled in the State due to its extreme rarity.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the North Fork Blackfoot River segments proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

CLEARWATER RIVER

Region 1 Sensitive Plant Species

One Forest Service sensitive plant species, *Grindelia howellii* Steyermark (Howell's gumweed), is known to occur on private land near the lakeshore of Seeley Lake. *G. howellii* exists in various disturbed and natural habitats, including roadsides, grazed pastures, pine plantations, forest openings, river terraces, and native grasslands. Recent Forest policy has been to concentrate protective and maintenance efforts on plants occurring in natural habitat, while noting its presence in disturbed sites.

Known in the vicinity of the Clearwater River (and possible in wetlands associated with it) are three sensitive plants:

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins and in moist woods and thickets in the mountains. This species is **sensitive (imperiled)** in Montana but demonstrably secure throughout its range in Canada and the northern U. S. In Montana it is found on the Flathead Indian Reservation, the Flathead and Lolo National Forests and on private land.

Potamogeton obtusifolius Mert. & Koch (Blunt-leaved Pondweed) grows in muddy shallows of ponds, sloughs, lakes and fens in mid to low elevations. While listed as **sensitive (imperiled)** in Montana, *P. obtusifolius* is globally secure. Its range includes Canada and portions of the northern U. S.

Howellia aquatilis Gray (Water Howellia) is proposed for Federal listing as a **threatened** plant. It is known to occur just north of the headwaters of the Clearwater River. It grows in vernal glacial pothole ponds and oxbow sloughs which dry by late summer. To date, searches of suitable *H. aquatilis* habitat on the Seeley Lake Ranger District have revealed no occurrences of that species along the Clearwater River (see district and Forest TES plant survey files). However, these examinations were all limited in scope, so *H. aquatilis* cannot be excluded as a potential vegetative component in wetlands associated with the Clearwater River.

Habitat for a number of Forest Service sensitive plant species exists in the Clearwater riparian zone (no sensitive plants are likely to grow *in* the river):

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana **sensitive** species, it is also listed as rare in British Columbia, Saskaskatchewan and South Dakota. It is demonstrably secure globally with a circumboreal range.

Allium fibrillum Jones (Fringed Onion) is found in moist, shallow soils in the montane zone, especially forest openings and meadows. Listed as **threatened** in Montana, this species is apparently secure globally, but is extremely rare in parts of its range. It is a regional endemic, found only in eastern Oregon and Washington, Idaho and western Montana. In Montana it is known to occur in Glacier National Park and on the Kootenai and Flathead National Forests.

Carex livida Willd. (Pale Sedge) grows in undisturbed bogs and fens in foothills and mountains. It is circumboreal, ranging south in the U. S. across the northern tier of states. In Montana this species is listed as **imperiled** and **peripheral**; in Idaho it is listed as **endangered**. It is also under review in Oregon. In Montana it is reported in Glacier Park, private and State lands and on the Flathead, Helena and Lolo National Forests.

Carex paupercula Michx. (Poor Sedge) grow in fens, peat bogs and swampy woods at low elevations, often with other *Carex* species. While **imperiled** in Montana, this species is demonstrably secure throughout its range. It is circumboreal, ranging in the U. S. through parts of Washington, Idaho, Utah and Colorado. In Montana, it occurs on the Lolo and Flathead National Forests and on some private lands.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is **sensitive** in Montana and Washington. A circumpolar species that extends south into Washington, Montana and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas or hummocks in small springs; esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai and Bitterroot National Forests; it also occurs

on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest.

Listed as a State sensitive plant in Montana, this species is also listed as endangered in Idaho and Washington, threatened in North Dakota, extirpated from Oregon and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas-fir and ponderosa pine forest with ninebark and/or snowberry in the shrub layer. In Montana *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is sensitive and Washington, where it is listed as threatened. This species is currently listed by the State of Montana as a (critically imperiled) threatened plant. *C. fasciculatum* ranges from Washington south to northern California and east into Colorado, Wyoming and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* ranked is G3, threatened throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list this species is listed by the U. S. Fish and Wildlife Service as "...proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens and around springs and seepage areas, often near thermal waters at lower elevations. In Montana, *E. gigantea* is known to occur in Glacier National Park, on the Flathead, Lewis and Clark National Forests, and on State and private land (including 2 historic reports bordering the Lolo National Forest). In Montana and Idaho *E. gigantea* is listed as a State threatened species; it is listed as rare or sensitive in 3 other states and in British Columbia. Its global distribution is described as sparse throughout its range, which is limited to North America.

Eriophorum viridicarinatum Fern. (Green-keeled Cottongrass) grows in cold sphagnum bogs, fens and springy seeps in the foothill and montane zones. Its range is limited to boreal North America including the northern tier of states in the U. S. In Montana the species has been found in the northwestern part of the State on private and State lands, in Glacier National Park and on the Flathead National Forest. Listed as an imperiled sensitive plant in Montana, *E. viridicarinatum* is under review in Idaho, and is listed as sensitive in Washington and threatened in North Dakota. It is listed as secure within its range.

Orchis rotundifolia Banks (Round-leaved Orchis) grows along streams and in wet woods, usually where the drainage is good on limestone. In Montana it is known to occur on the Flathead and Lewis and Clark National Forests. This species is circumpolar in North America and extends into the northern states. Sensitive in Montana, it is secure throughout its range.

Scirpus subterminalis Torr. (Water Bulrush) is found in shallow, fresh water and boggy margins of ponds, lakes and sloughs in the valley, foothill and montane zones. It ranges throughout the U. S. and Canada, although it is absent from the Great Plains. Although it is thought to be secure within its range, in Montana it is listed as a critically imperiled sensitive plant. Within the State *S. subterminalis* is found in Glacier National Park, on private land and on the Flathead, Lewis and Clark and Lolo National Forests.

Viola renifolia Gray (Kidney-leaved Violet) grows in swampy or boggy forest, (especially spruce swamps) in the montane zone. This species is listed as globally secure, but is a critically imperiled sensitive plant in Montana. *V. renifolia* ranges from British Columbia and Washington to the eastern U. S. and south in the Rocky Mountains to Colorado. In Montana, the species is found on private land, on the Flathead National Forest and in Glacier National Park.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known

only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened throughout its range because it is very rare with a limited range.

U. S. F. S. Proposed Sensitive Species

Boisduvalia densiflora Wats. (Dense Spike-primrose) occurs in vernal wet soils, fens and along streams in valleys and mountains. It is known from historic collections in the Flathead Valley. It is listed as sensitive in Montana and rare in British Columbia. *B. densiflora* is classified as globally secure in its range through the western U. S. and Canada, but it is critically imperiled in the State due to its extreme rarity.

Scheuchzeria palustris L. (Scheuchzeria) is found in *Sphagnum* bogs, fens and on lake margins, often with *Carex* species. No official status is available for this species description; it is still under review.

Carex chordorrhiza L. (Rope-root or Creeping Sedge) is known from two sites on the Flathead National Forest. It is found in *Sphagnum* bogs in the montane zone. In Montana it is listed as critically imperiled. However, it is demonstrably secure in its range. *C. chordorrhiza* is circumboreal, ranging in the U. S. into New York, Iowa, and Indiana.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Clearwater River proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

MORRELL CREEK

Region 1 Sensitive Plant Species

Grindelia howelli Steyermark (Howell's Gumweed) is known to occur at the confluence of the Clearwater River and Morrell Creek, somewhat below the area proposed for status as a Wild and Scenic river. *G. howellii* exists in various disturbed and natural habitats, including roadsides, grazed pastures, pine plantations, forest openings, river terraces, and native grasslands. Recent Forest policy has been to concentrate protective and maintenance efforts on plants occurring in natural habitat, while noting its presence in disturbed sites.

Known in the vicinity of Morrell Creek (and possible in wetlands associated with it) are the following sensitive plants:

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins, and in moist woods and thickets in the mountains. This species is imperiled in Montana but demonstrably secure throughout its range in Canada and the northern U. S. In Montana it is found on the Flathead Indian Reservation, the Flathead and Lolo National Forests and on private land.

Howellia aquatilis Gray (Water Howellia) is proposed for Federal listing as a threatened plant. It is known to occur just north of the headwaters of the Clearwater river. It grows in vernal glacial pothole ponds and oxbow sloughs which dry by late summer. To date, searches of suitable *H. aquatilis* habitat on the Seeley Lake Ranger District have revealed no occurrences of that species along Morrell Creek (see District and Forest TES plant survey files). However, these examinations were all limited in scope, so *H. aquatilis* cannot be excluded as a potential vegetative component in wetlands associated with Morrell Creek.

Habitat for a number of Forest Service sensitive plant species exists in the Morrell Creek riparian zone (no sensitive plants are likely to grow *in* the creek):

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana sensitive species, it is also listed as rare in British Columbia, Saskaskatchewan, and South Dakota. It is demonstrably secure globally with a circumboreal range.

Allium fibrillum Jones (Fringed Onion) is found in moist, shallow soils in the montane zone, especially forest openings and meadows. Listed as threatened in Montana, this species is apparently secure globally, but is extremely rare in parts of its range. It is a regional endemic, found only in eastern Oregon and Washington, Idaho and western Montana. In Montana it is known to occur in Glacier National Park and on the Kootenai and Flathead National Forests.

Carex livida Willd. (Pale Sedge) grows in undisturbed bogs and fens in foothills and mountains. It is circumboreal, ranging south in the U. S. across the northern tier of states. In Montana this species is listed as imperiled and peripheral; in Idaho it is listed as endangered. It is also under review in Oregon. In Montana it is reported in Glacier Park, private and State lands and on the Flathead, Helena and Lolo National Forests.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is sensitive in Montana and Washington. A circumpolar species that extends south into Washington, Montana and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai, and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest. Listed as a State sensitive plant in Montana, this species is also listed as endangered in Idaho and Washington, threatened in North Dakota, extirpated from Oregon, and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Cypripedium passerinum Rich. (Sparrow's-egg Lady's Slipper) is found on moist streambanks, springs, fens and bog edges, often on calcareous soils. A circumpolar plant species, Lesica (1991) reports that the only known sites for this orchid in the lower 48 states are in northwestern Montana in Glacier National Park and on the Flathead and Lewis and Clark National Forests. A State site is also reported. While apparently secure in its northern range, the species is listed as imperiled in Montana.

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and Ponderosa pine forest with Ninebark and/or snowberry in the shrub layer. In Montana *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is sensitive and Washington, where it is listed as threatened. This species is currently listed by the State of Montana as a (critically) imperiled threatened plant. *C. fasciculatum* ranges from Washington south to Northern California and east into Colorado, Wyoming and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* ranked G3, threatened throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list this species is listed by the U. S. Fish and Wildlife Service as "...proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens and around springs and seepage areas, often near thermal waters at lower elevations. In Montana, *E. gigantea* is known to occur in Glacier National Park, on the Flathead, Lewis and Clark National Forests, and on State and private land (including 2 historic reports bordering the Lolo National Forest). In Montana and Idaho *E. gigantea* is listed as a State threatened species; it is listed as rare or sensitive in 3 other states and in British Columbia. Its global distribution is described as sparse throughout its range, which is limited to North America.

Eriophorum viridicarinatum Fern. (Green-keeled Cottongrass) grows in cold sphagnum bogs, fens and springy seeps in the foothill and montane zones. Its range is limited to boreal North America including the northern tier of states in the U. S. In Montana the species has been found in the northwestern part of the State on private and State lands, in Glacier National Park and on the Flathead National Forest. Listed as an imperiled sensitive plant in Montana, *E. viridicarinatum* is under review in Idaho, and is listed as sensitive in Washington and threatened in North Dakota. It is listed as secure within its range.

Orchis rotundifolia Banks (Round-leaved Orchis) grows along streams and in wet woods, usually where the drainage is good on limestone. In Montana it is known to occur on the Flathead and Lewis and Clark National Forests. This species is circumpolar in North America and extends into the northern states. Sensitive in Montana, it is secure throughout its range.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened throughout its range because it is very rare with a limited range.

Scirpus subterminalis Torr. (Water Bulrush) is found in shallow, fresh water and boggy margins of ponds, lakes and sloughs in the valley, foothill and montane zones. It ranges throughout the U. S. and Canada, although it is absent from the Great Plains. Although it is thought to be secure within its range, in Montana it is listed as a critically imperiled sensitive plant. Within the State *S. subterminalis* is found in Glacier National Park, on private land and on the Flathead, Lewis and Clark and Lolo National Forests.

U. S. F. S. Proposed Sensitive Species

Boisduvalia densiflora Wats. (Dense Spike-primrose) occurs in vernal wet soils, fens and along streams in valleys and mountains. It is known from historic collections in the Flathead Valley. It is listed as sensitive in Montana and rare in British Columbia. *B. densiflora* is classified as globally secure in its range through the western U. S. and Canada, but it is critically imperiled in the State due to its extreme rarity.

Note: Portions of this area were examined in 1993 during TES plant survey work for the Rice/Morrell project.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of Morrell Creek segments proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

SOUTH FORK LOLO CREEK

Region 1 TES Plant Species

No Threatened, Endangered, Proposed or Sensitive Plants are known to occur in the South Fork of Lolo Creek or on its banks.

Two sensitive plants are known to occur in the vicinity of this creek:

Allotropa virgata T.& G. (Candystick) survives only in tripartite symbiosis with a mycorrhizal fungus and mature conifers. This species occurs in mature lodgepole pine forests in Region 1; it could occur with other mature conifers as well. While threatened in Montana and Idaho, the species appears globally secure. The local population is apparently disjunct from the main population which ranges from the southern Sierra Nevada mountains and coastal California to British Columbia and the Cascades. In Montana it is known to occur on the Lolo, Deerlodge and Bitterroot National Forests.

Mertensia bella Piper (Oregon Bluebell) is found on wet, seepy, open to partially shaded slopes in the upper montane or lower subalpine zone. In Montana, it is known from only one area on the Lolo National Forest. It is ranked in Montana as a critically imperiled, disjunct species. However, it is apparently secure within its known range in Oregon and Idaho.

Habitat for six additional sensitive plants occurs in the area surrounding the South Fork of Lolo Creek:

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana sensitive species, it is also listed as rare in British Columbia, Saskatchewan and South Dakota. It is demonstrably secure globally with a circumboreal range.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is sensitive in Montana and Washington. A circumpolar species that extends south into Washington, Montana and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai, and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Ninemile Ranger District on the Lolo National Forest. Listed as a State sensitive plant in Montana, this species is also listed as endangered in Idaho and Washington, threatened in North Dakota, extirpated from Oregon, and rare in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Orogenia fusiformis Wats. (Turkey Peas or Tapered-root Orogenia) is found in open places, along slopes and ridges, in woods and meadows, from valleys to the mid-montane zone. In Montana it is listed as imperiled in the State because its rarity (less than 20 occurrences) makes it vulnerable to extirpation from the State. The species is secure throughout its range in the western U. S., although it is rare in parts of this range.

Phlox kelseyi Britt. v. *missoulensis* Cronq. (Missoula Phlox) is endemic to Montana. It is found on open, windswept slopes at a wide range of elevations. The U. S. Fish and Wildlife Service currently lists this species as not subject to any identifiable threat within its range. However, Montana lists the species as an imperiled

plant to watch. It is known to occur on the Deerlodge, Helena and Lewis and Clark National Forests, and on private land adjacent to the Lolo National Forest.

Waldsteinia idahoensis Piper (Idaho Barren Strawberry) grows in open sun to shade in meadows and moist woods along streams and seeps. Listed as threatened in Montana, it is a regional endemic, known only in Idaho and Montana. The only confirmed site in Montana for this species is near Lolo Hot Springs on private land adjacent to Lolo National Forest. Globally, it is listed as threatened throughout its range because it is very rare with a limited range.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the South Fork Lolo Creek proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

UPPER RATTLESNAKE CREEK

Region 1 Sensitive Plants

One sensitive plant, *Dryopteris cristata* (Crested shield-fern), is known to occur on the banks of upper Rattlesnake Creek. No Threatened, Endangered, or Proposed plants are known to occur in Rattlesnake Creek or on its banks.

Dryopteris cristata Gray (Buckler or Crested Shield-fern) occurs on the edges of bogs, fens, peaty lake margins and in moist woods and thickets in the mountains. This species is imperiled in Montana but demonstrably secure throughout its range in Canada and the northern U. S. In Montana it is found on the Flathead Indian Reservation, the Flathead and Lolo National Forests and on private land.

Two sensitive plants are known to occur in the vicinity of this creek:

Carex paupercula Michx. (Poor Sedge) grow in fens, peat bogs and swampy woods at low elevations, often with other *Carex* species. While imperiled in Montana, this species is demonstrably secure throughout its range. It is circumboreal, ranging in the U. S. through parts of Washington, Idaho, Utah and Colorado. In Montana, it occurs on the Lolo and Flathead Natioanl Forests and on some private lands.

Phlox kelseyi Britt. v. *missoulensis* Cronq. (Missoula Phlox) is endemic to Montana. It is found on open, windswept slopes at a wide range of elevations. The U. S. Fish and Wildlife Service currently lists this species as not subject to any identifiable threat within its range. However, Montana lists the species as an imperiled plant to watch. It is known to occur on the Deerlodge, Helena and Lewis and Clark National Forests, and on private land adjacent to the Lolo National Forest.

Habitat for seven additional sensitive plants occurs in the area surrounding Rattlesnake Creek:

Adoxa moschatellina L. (Moschatel or Muskroot) is found in moist, mossy places in wood and rock crevices mid to high elevations. *A. moschatellina* is known to occur on the Deerlodge and Lolo National Forests. A Montana sensitive species, it is also listed as rare in British Columbia, Saskaskatchewan and South Dakota. It is demonstrably secure globally with a circumboreal range.

Carex livida Willd. (Pale Sedge) grows in undisturbed bogs and fens in foothills and mountains. It is circumboreal, ranging south in the U. S. across the northern tier of states. In Montana this species is listed as imperiled and peripheral; in Idaho it is listed as endangered. It is also under review in Oregon. In

Montana it is reported in Glacier Park, private and State lands and on the Flathead, Helena and Lolo National Forests.

Chrysosplenium tetrandrum Fries (Northern Golden Carpet) is found in the splash zone and seepage areas of small streams. *C. tetrandrum* is known to occur on the Lolo and Bitterroot National Forests. It is **sensitive** in Montana and Washington. A circumpolar species that extends south into Washington, Montana and Colorado, *C. tetrandrum* is apparently secure globally.

Cypripedium calceolus L. (Small Yellow Lady's Slipper) is found in shade and sunspots in fens, bogs, seep areas, or hummocks in small springs, esp. in shade of forest ecotones. In Montana this species is known to occur on the Flathead, Lewis and Clark, Kootenai, and Bitterroot National Forests; it also occurs on State and private land, including one recently discovered site on private land very near Nine-mile Ranger District on the Lolo National Forest. Listed as a State **sensitive** plant in Montana, this species is also listed as **endangered** in Idaho and Washington, **threatened** in North Dakota, extirpated from Oregon, and **rare** in Wyoming and British Columbia. Its global distribution is sparse throughout its range in northern North America and northern Europe.

Cypripedium fasciculatum Kell. (Clustered Lady's Slipper) grows in dry to moist forests in the montane zone, especially with mature Douglas fir and Ponderosa pine forest with Ninebark and/or snowberry in the shrub layer. In Montana *C. fasciculatum* occurs on the Lolo National Forest and the Flathead Indian Reservation. *C. fasciculatum* is known to occur in Idaho, where it is **sensitive** and Washington, where it is listed as **threatened**. This species is currently listed by the State of Montana as a **critically imperiled** sensitive plant. *C. fasciculatum* ranges from Washington south to Northern California and east into Colorado, Wyoming and Idaho. The population in Region 1 is one of three major population centers in the U.S. Globally, *C. fasciculatum* ranked G3, **threatened** throughout its range. However, in the 1993 proposed status changes to the Region 1 sensitive plant list this species is listed by the U. S. Fish and Wildlife Service as "....proven to be more abundant or widespread than was previously believed, and not subject to any identifiable threat."

Epipactis gigantea Dougl. ex Hook. (Giant Helleborine) is found along streambanks, lake margins, bogs, fens and around springs and seepage areas, often near thermal waters at lower elevations. In Montana, *E. gigantea* is known to occur in Glacier National Park, on the Flathead, Lewis and Clark National Forests, and on State and private land (including 2 historic reports bordering the Lolo National Forest). In Montana and Idaho *E. gigantea* is listed as a State **threatened** species; it is listed as **rare or sensitive** in 3 other states and in British Columbia. Its global distribution is described as sparse throughout its range, which is limited to North America.

Orogenia fusiformis Wats. (Turkey Peas or Tapered-root Orogenia) is found in open places, along slopes and ridges, in woods and meadows, from valleys to the mid-montane zone. In Montana it is listed as **imperiled** in the State because its rarity (less than 20 occurrences) makes it vulnerable to extirpation from the State. The species is secure throughout its range in the western U. S., although it is rare in parts of this range.

Montana TES Plant Species

The Nature Conservancy/Montana Natural Heritage Program database map shows a number of Montana's proposed, threatened, endangered or sensitive plants near the reaches of the Upper Rattlesnake Creek proposed for Wild and Scenic designation. Maps and descriptions of these plant species are available in Forest files or from the Regional Office.

Appendix G

WILDLIFE INCIDENCE in Wild & Scenic Rivers Habitats

Terrestrial habitats found in the candidate areas were inventoried by field surveys and review of Forest Plan Data Base material on file on the Forest. Species occurrence was determined by field observation and review of appropriate literature. Species with special status were identified as [E] endangered, [T] threatened, [S] sensitive, or [M] management indicator species. Occurrence is indicated as "S = summer resident; M = migrant; A = accidental; P = probable; R = year-long resident (summer and winter resident may be different individuals).

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
AMPHIBIANS (11)								
Tiger Salamander (<i>Ambystoma tigrinum</i>)	P	P						
Long-toed Salamander (<i>Ambystoma macrodactylum</i>)	R	R	R	R	R	R	R	R
Leopard Frog (<i>Rana pipiens</i>)	R	R	R	R	R	R	R	R
Tailed Frog (<i>Ascaphus truei</i>)	R	R	R	R	R	R	R	R
Western Toad (<i>Bufo boreas</i>)	R	R	R	R	R	R	R	R
Boreal Striped-Chorus Frog (<i>Pseudacris triseriata maculata</i>)	P	P	P	P	P	P	P	P
Pacific Treefrog (<i>Hyla regilla</i>)	P	R	R		R	P		
Wood Frog (<i>Rana sylvatica</i>)	P	P						
Coeur d'Alene Salamander [S] (<i>Plethodon vandykei idahoensis</i>)	P	P	R		P			P
Bullfrog (<i>Rana catesbeiana</i>)			P					
Spotted Frog (<i>Rana pretiosa</i>)	R	R	R	R	R	R	R	R
REPTILES (9)								
Western Painted Turtle (<i>Chrysemys picta</i>)			R					
Western Skink (<i>Eumeces skiltonianus</i>)	R	R	R					
Northern Alligator Lizard (<i>Elgaria coerulea</i>)	R	R	R	P				
Rubber Boa (<i>Charina bottae</i>)	R	R	R	R	R	R	R	R
Racer (<i>Coluber constrictor mormon</i>)	R	R	R	R	R	R		
Bull Snake (<i>Pituophis melanoleucus</i>)	R	R	R	R	R	R		
Common Garter Snake (<i>Thamnophis sirtalis</i>)	R	R	R	R	R	R		
W. Terrestrial Garter Snake (<i>Thamnophis elegans vagrans</i>)	R	R	R	R	R	R		
Western Rattlesnake (<i>Crotalus viridis</i>)	R	R	R	R	R	R	R	R

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor rell
BIRDS (205)								
Common Loon [S] (<i>Gavia immer</i>)			M		S			
Pied-billed Grebe (<i>Podilymbus podiceps</i>)			M		M			
Horned Grebe (<i>Podiceps auritus</i>)			M		M			
Eared Grebe (<i>Podiceps nigricollis</i>)			M		M			
Red-necked Grebe (<i>Podiceps grisegena</i>)			M		S			
Western Grebe (<i>Aechmophorus occidentalis</i>)			M		S			
Double-crested Cormorant (<i>Phalacrocorax auritus</i>)			S		M			
Tundra Swan (<i>Cygnus columbianus</i>)				M	S			
Canada Goose (<i>Branta canadensis</i>)				S	S			
Gadwall (<i>Anas strepera</i>)	M		M		S			
Mallard (<i>Anas platyrhynchos</i>)	S	S	S	S	SS	S	S	S
Northern Pintail (<i>Anas acuta</i>)			M		SS			
American Wigeon (<i>Anas americana</i>)	M	M	M		SS			
Wood Duck (<i>Aix sponsa</i>)	S		S		SS			
Northern Shoveler (<i>Anas clypeata</i>)			M		M			
Blue-winged Teal (<i>Anas discors</i>)			M		M			
Green-winged Teal (<i>Anas crecca</i>)	S		S		S			
Cinnamon Teal (<i>Anas cyanoptera</i>)	M		M		S			
Harlequin Duck [S] (<i>Histrionicus histrionicus</i>)	P	P	P	P	P	P	S	
Canvasback (<i>Aythya valisineria</i>)			M		M			
Redhead (<i>Aythya americana</i>)	M	M	M		M			
Ring-necked Duck (<i>Aythya collaris</i>)	M	M	M		S			
Lesser Scaup (<i>Aythya affinis</i>)	M		M		M			
Common Goldeneye (<i>Bucephala clangula</i>)	M	M	M	S	S			S
Barrow's Goldeneye (<i>Bucephala islandica</i>)	M	M	M		M			M
Bufflehead (<i>Bucephala albeola</i>)	M		M		M			
Common Merganser (<i>Mergus merganser</i>)	S	S	S	S	S	S		
Hooded Merganser (<i>Lophodytes cucullatus</i>)	M		S		S			
American Coot (<i>Fulica americana</i>)			M		S			
California Gull (<i>Larus californicus</i>)			S		S			
Ring-billed Gull (<i>Larus delawarensis</i>)			S		S			
Great Blue Heron (<i>Ardea herodias</i>)	R	R	R	S	S	S		
American Bittern (<i>Botaurus lentiginosus</i>)			S					
Sandhill Crane (<i>Grus canadensis</i>)					M			
Sora (<i>Porzana carolina</i>)	S		S		S			
Virginia Rail (<i>Rallus limicola</i>)	M		S					
American Avocet (<i>Recurvirostra americana</i>)			M					
Semipalmated Sandpiper (<i>Calidris pusillus</i>)			M					
Killdeer (<i>Charadrius vociferus</i>)			S		S			
Greater Yellowlegs (<i>Tringa melanoleuca</i>)			M		S			

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Lesser Yellowlegs (<i>Tringa flavipes</i>)	S	S	M		M			
Solitary Sandpiper (<i>Tringa solitaria</i>)	M	S	S		M			
Wilson's Phalarope (<i>Phalaropus tricolor</i>)	M	M	M					
Red-necked Phalarope (<i>Phalaropus lobatus</i>)			M					
Common Snipe (<i>Gallinago gallinago</i>)	S	S	S		S			
Long-billed Dowitcher (<i>Limnodromus scolopaceus</i>)			M				S	S
Spotted Sandpiper (<i>Actitis macularia</i>)	S	S	S	S	S	S	S	S
Western Sandpiper (<i>Calidris mauri</i>)	S	S	S					
Baird's Sandpiper (<i>Calidris bairdii</i>)			M					
Least Sandpiper (<i>Calidris minutilla</i>)			M					
Wild Turkey (<i>Meleagris gallopavo</i>)			R					
Ruffed Grouse (<i>Bonasa umbellus</i>)	R	R	R	R	R	R	R	R
Spruce Grouse (<i>Dendragapus canadensis</i>)	R	R	R	R	R	R	R	R
Blue Grouse (<i>Dendragapus obscurus</i>)	R	R	R	R	R	R	R	R
Gray Partridge (<i>Perdix perdix</i>)			R					
Northern Harrier (<i>Circus cyaneus</i>)	S	R	S		S			
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	R	R	R	R	R	R	R	R
Cooper's Hawk (<i>Accipiter cooperii</i>)	R	R	R	R	R	R	R	R
Northern Goshawk [M] (<i>Accipiter gentilis</i>)	R	R	R	R	R	R	R	S
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	S	S	S	S	S	S	S	S
Swainson's Hawk (<i>Buteo swainsoni</i>)	M	M	M					
Rough-legged Hawk (<i>Buteo lagopus</i>)	M	M	R					
Bald Eagle [E] (<i>Haliaeetus leucocephalus</i>)			R					
Golden Eagle (<i>Aquila chrysaetos</i>)	R	R	R					
Turkey Vulture (<i>Cathartes aura</i>)	S	S	S	S	S	S		
Osprey (<i>Pandion haliaetus</i>)	S	P	S	S				
Merlin (<i>Falco columbarius</i>)	M	M	M					
American Kestrel (<i>Falco sparverius</i>)	S	S	S	S	S	S	S	S
Peregrine Falcon [E] (<i>Falco peregrinus</i>)	M	M	M					
Prairie Falcon (<i>Falco mexicanus</i>)	M	M	M					
Barred Owl (<i>Strix varia</i>)	S	S	S	S	S	P	P	P
Great Gray Owl (<i>Strix nebulosa</i>)	S	S	S	S	S	S	S	S
Short-eared Owl (<i>Asio flammeus</i>)			S					
Western Screech Owl (<i>Otus kennicottii</i>)	R	R	R	R	R	R	R	R
Long-eared Owl (<i>Asio otus</i>)	R	R	R	R	R	R	R	R
Great Horned Owl (<i>Bubo virginianus</i>)	R	R	R	R	R	R	R	R
Boreal Owl [S] (<i>Aegolius funereus</i>)	S	S	S	S	S	P	P	P
Northern Saw-whet Owl (<i>Aegolius acadicus</i>)	S	S	S	S	S	S	S	S
Flammulated Owl [S] (<i>Otus flammeolus</i>)	S	S	S	S	S	S	S	S
Northern Pygmy-Owl (<i>Glaucidium gnoma</i>)	S	S	S	S	S	S	S	S
Belted Kingfisher (<i>Ceryle alcyon</i>)	S	S	S	S	S	S	S	S
Mourning Dove (<i>Zenaida macroura</i>)	S	S	S	S	S	S	S	S

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Rock Dove (<i>Columba livia</i>)								
Common Nighthawk (<i>Chordeiles minor</i>)	S	S	R	S	S	S	S	S
Rufous Hummingbird (<i>Selasphorus rufus</i>)	S	S	S	S	S	S	S	S
Calliope Hummingbird (<i>Stellula calliope</i>)	S	S	S	S	S	S	S	S
Black-chinned Hummingbird (<i>Archilochus alexandri</i>)	S	S	S				R	R
Pileated Woodpecker [M] (<i>Dryocopus pileatus</i>)	S	S	S	S	S	S	R	R
Lewis's Woodpecker (<i>Melanerpes lewis</i>)	S	S	S	S	S	S	S	S
Downy Woodpecker (<i>Picoides pubescens</i>)	S	S	S	S	S	S	S	S
Hairy Woodpecker (<i>Picoides villosus</i>)	S	S	S	S	S	S	S	S
Three-toed Woodpecker (<i>Picoides tridactylus</i>)	S	S	S	S	S	S	S	S
Black-backed Woodpecker (<i>Picoides arcticus</i>)	S	S	S	S	S	S	S	S
Northern Flicker (<i>Colaptes auratus</i>)	R	R	R	R	R	R	R	R
Williamson's Sapsucker (<i>Sphyrapicus thyroideus</i>)	S	S	S	S	S	S	S	S
Red-naped Sapsucker (<i>Sphyrapicus nuchalis</i>)	S	S	S	S	S	S	S	S
Eastern Kingbird (<i>Tyrannus tyrannus</i>)	S	S	S					
Western Kingbird (<i>Tyrannus verticalis</i>)	S	S	S	S	S	S	S	S
Western Wood-Pewee (<i>Contopus sordidulus</i>)	S	S	S	S	S	S	S	S
Olive-sided Flycatcher (<i>Contopus borealis</i>)	S	S	S	S	S	S	S	S
Willow Flycatcher (<i>Empidonax traillii</i>)	S	S	S	S	S	S	S	S
Hammond's Flycatcher (<i>Empidonax hammondii</i>)	S	S	S	S	S	S	S	S
Dusky Flycatcher (<i>Empidonax oberholseri</i>)			S	S	S	S		S
Least Flycatcher (<i>Empidonax minimus</i>)	S	S	S	S	S	S		P
Cordilleran Flycatcher (<i>Empidonax occidentalis</i>)	S	S	S	S	S	S		
Horned Lark (<i>Eremophila alpestris</i>)	M	M	M	M	M	M		M
American Pipit (<i>Anthus rubescens</i>)	M	M	M	M	M	M		M
Vaux's Swift (<i>Chaetura vauxi</i>)	S	S	S	S	S	S		S
White-throated Swift (<i>Aeronautes saxatalis</i>)	M	M	S					
Tree Swallow (<i>Tachycineta bicolor</i>)	S	S	S	S	S	S	S	S
Bank Swallow (<i>Riparia riparia</i>)	S	S	S					
Violet-green Swallow (<i>Tachycineta thalassina</i>)	S	S	S	S	S	S	S	S
Northern Rough-wing Swallow (<i>Stelgidopteryx serripennis</i>)			S					
Cliff Swallow (<i>Hirundo pyrrhonota</i>)	S		S	S	S	S	S	S
Barn Swallow (<i>Hirundo rustica</i>)			S					

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Common Crow (<i>Corvus brachyrhynchos</i>)	R	R	R	R	R	R	R	R
Common Raven (<i>Corvus corax</i>)	R	R	R	R	R	R	R	R
Steller's Jay (<i>Cyanocitta stelleri</i>)	R	R	R	R	R	R	R	R
Clark's Nutcracker (<i>Nucifraga columbiana</i>)	R	R	R	R	R	R	R	R
Gray Jay (<i>Perisoreus canadensis</i>)	R	R	R	R	R	R	R	R
Black-billed Magpie (<i>Pica pica</i>)	R	R	R	R	R	R	R	R
Mountain Chickadee (<i>Parus gambeli</i>)	R	R	R	R	R	R	R	R
Black-capped Chickadee (<i>Parus atricapillus</i>)	R	R	R	R	R	R	R	R
Chestnut-backed Chickadee (<i>Parus rufescens</i>)	S	S		S				
White-breasted Nuthatch (<i>Sitta carolinensis</i>)	S	S	S	S	S	S	S	S
Red-breasted Nuthatch (<i>Sitta americana</i>)	R	R	R	R	R	R	R	R
Pygmy Nuthatch (<i>Sitta pygmaea</i>)			S	S	S	S	S	
Brown Creeper (<i>Certhia familiaris</i>)	S	S	S	S	S	S	S	S
House Wren (<i>Troglodytes aedon</i>)	S	S	S	S	S	S	S	S
Winter Wren (<i>Troglodytes troglodytes</i>)	S	S	S	S	S	S	S	S
Marsh Wren (<i>Cistothorus palustris</i>)	P	S	S	S	S	S		
Rock Wren (<i>Salpinctes obsoletus</i>)	S	S	S	S	S	R		
American Dipper (<i>Cinclus mexicanus</i>)	R	R	R	R	R	R		
Ruby-crowned Kinglet (<i>Regulus calendula</i>)	S	S	S	S	S	S		S
Golden-crowned Kinglet (<i>Regulus satrapa</i>)	S	S	S	S	S	S		
Gray Catbird (<i>Dumetella carolinensis</i>)			S	S	S	S	S	S
American Robin (<i>Turdus migratorius</i>)	S	S	S	S	S	S	S	S
Varied Thrush (<i>Ixoreus naevius</i>)	S	S	M	S	S	S	S	S
Townsend's Solitaire (<i>Myadestes townsendi</i>)	S	S	S	S	S	S	S	S
Veery (<i>Catharus fuscescens</i>)	M	S	M	S	M	M		
Swainson's Thrush (<i>Catharus ustulatus</i>)	S	S	S	S	S	S	S	S
Hermit Thrush (<i>Catharus guttatus</i>)	S	S	S	S	S	S	S	S
Western Bluebird (<i>Sialia mexicana</i>)	S	S	S	S	S	S	S	S
Mountain Bluebird (<i>Sialia currucoides</i>)	S	S	S	S	S	S	S	
Northern Shrike (<i>Lanius excubitor</i>)	M	S	M					
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	M	S	M					
European Starling (<i>Sturnus vulgaris</i>)			S		S			
Cedar Waxwing (<i>Bombycilla cedrorum</i>)	S	S	R	S	S			
Bohemian Waxwing (<i>Bombycilla garrulus</i>)	S	S	R	S	S			
Solitary Vireo (<i>Vireo solitarius</i>)	S	S	S	S	S	S	S	S
Red-eyed Vireo (<i>Vireo olivaceus</i>)	S	S	S	S	S	S	S	S
Warbling Vireo (<i>Vireo gilvus</i>)	S	S	S	S	S	S	S	S
Yellow-rumped Warbler (<i>Dendroica coronata</i>)	S	S	S	S	S	S	S	S

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Townsend's Warbler (<i>Dendroica townsendi</i>)	S	S	S	S	S	S	S	S
American Redstart (<i>Setophaga ruticilla</i>)	S		S		S			
Nashville Warbler (<i>Vermivora ruficapilla</i>)			S		S	S	S	S
MacGillivray's Warbler (<i>Oporornis tolmiei</i>)	S	S	S	S	S	S	S	S
Yellow Warbler (<i>Dendroica petechia</i>)	S	S	S	S	S	S	S	S
Orange-crowned Warbler (<i>Vermivora celata</i>)	S	S	S	S	S	S	S	S
Tennessee Warbler (<i>Vermivora peregrina</i>)	S		S		S			
Common Yellowthroat (<i>Geothlypis trichas</i>)		S	S		S			
Wilson's Warbler (<i>Wilsonia pusilla</i>)	S	S	S	S	S			
Northern Waterthrush (<i>Seiurus noveboracensis</i>)			S		S			
Brewer's Blackbird (<i>Euphagus cyanocephalus</i>)			S		S			
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)			S		S			
Bobolink (<i>Dolichonyx oryzivorus</i>)			S		S			
Western Meadowlark (<i>Sturnella neglecta</i>)			S		S			
Brown-headed Cowbird (<i>Molothrus ater</i>)			S		S			
Northern Oriole (<i>Icterus galbula</i>)			S		S			
Western Tanager (<i>Piranga ludoviciana</i>)	S	S	S	S	S	S	S	S
White-Crowned Sparrow (<i>Zonotrichia leucophrys</i>)	S	S	S	S	S	S	S	S
Lark Sparrow (<i>Chondestes grammacus</i>)	S		S		S			
Chipping Sparrow (<i>Spizella passerina</i>)	M	S	M	S	M	S	S	S
American Tree Sparrow (<i>Spizella arborea</i>)								
Brewer's Sparrow (<i>Spizella breweri</i>)			S					
Fox Sparrow (<i>Passerella iliaca</i>)	S	S	S					
Song Sparrow (<i>Melospiza melodia</i>)			S					
Lincoln's Sparrow (<i>Melospiza lincolni</i>)			S					
Vesper Sparrow (<i>Pooecetes gramineus</i>)			S					
Savannah Sparrow (<i>Passerculus sandwichensis</i>)			S					
Rufous-sided Towhee (<i>Pipilo erythrrophthalmus</i>)	S	S	S	S	S	S	S	S
Dark-eyed Junco (<i>Junco hyemalis</i>)	S	S	R	R	R	S	S	S
Snow Bunting (<i>Plectrophenax nivalis</i>)	M	M	M		M			M
Rosy Finch (<i>Leucosticte arctoa</i>)	M	M	M	M	M	M	M	M
Black-headed Grosbeak (<i>Pheucticus melanocephalus</i>)	S	S	S					
Lazuli Bunting (<i>Passerina amoena</i>)	S	S	S	S	S	S	S	S
Red Crossbill (<i>Loxia curvirostra</i>)	S	S	S	S	S	S	S	S

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
White-winged Crossbill (<i>Loxia leucoptera</i>)	M	M	M	M	M	M	M	M
Redpoll (<i>Carduelis flammea</i>)		M	M	M	M	M	M	M
House Finch (<i>Carpodacus mexicanus</i>)	S	S	S	S	S	S	S	S
Cassin's Finch (<i>Carpodacus cassini</i>)	S	S	S	S	S	S	S	S
Pine Grosbeak (<i>Pinicola enucleator</i>)	S	S	S	S	S	S	S	S
Evening Grosbeak (<i>Coccothraustes vespertina</i>)	S	S	S	S	S	S	S	S
American Goldfinch (<i>Carduelis tristis</i>)	S	S	S	S	S	S	S	S
Pine Siskin (<i>Carduelis pinus</i>)	S	S	S	S	S	S	S	S
MAMMALS (72)								
Masked Shrew (<i>Sorex cinereus</i>)	R	R	R	R	R	R	R	R
Vagrant Shrew (<i>Sorex vagrans</i>)	R	R	R	R	R	R	R	R
Dusky Shrew (<i>Sorex obscurus</i>)	R	R	R	R	R	R	R	R
Northern Water Shrew (<i>Sorex palustris</i>)	R	R	R	R	R	R	R	R
Montane Shrew (<i>Sorex monticola</i>)	R	R	R	R	R	R	R	R
Pygmy Shrew (<i>Sorex hoyi</i>)	R	R	R	R	R	R	R	R
Little Brown Myotis (<i>Myotis lucifugus</i>)	R	R	R	R	R	R	R	R
Yuma Myotis (<i>Myotis yumanensis</i>)	R	R	R	R	R	R	R	R
Long-eared Myotis (<i>Myotis evotis</i>)	R	R	R	R	R	R	R	R
Fringed Myotis (<i>Myotis thysanodes</i>)	R	R	R	R	R	R	R	R
Long-legged Myotis (<i>Myotis volans</i>)	R	R	R	R	R	R	R	R
California Myotis (<i>Myotis californicus</i>)	R	R	R	R	R	R	R	R
Small-footed Myotis (<i>Myotis leibii</i>)	R	R	R	R	R	R	R	R
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	R	R	R	R	R	R	R	R
Big Brown Bat (<i>Eptesicus fuscus</i>)	R	R	R	R	R	R	R	R
Hoary Bat (<i>Lasius cinereus</i>)	R	R	R	R	R	R	R	R
Western Big-eared Bat [S] (<i>Plecotus townsendii</i>)	R	R	R	R	R	R	R	R
Black Bear (<i>Ursus americanus</i>)	R	R	R	R	R	R	R	R
Grizzly Bear [T] (<i>Ursus arctos</i>)	R	R	R	R	R	R	R	R
Raccoon (<i>Procyon lotor</i>)	R	R	R	R	R	R	R	R
Marten (<i>Martes americana</i>)	R	R	R	R	R	R	R	R
Fisher [S] (<i>Martes pennanti</i>)	R	R	R	R	P	R	R	R
Ermine (<i>Mustela erminea</i>)	R	R	R	R	R	R	R	R
Least Weasel (<i>Mustela nivalis</i>)	R	R	R	R	R	R	R	R
Long-tailed Weasel (<i>Mustela frenata</i>)	R	R	R	R	R	R	R	R
Mink (<i>Mustela vison</i>)	R	R	R	R	R	R	R	R
River Otter (<i>Lutra canadensis</i>)	R	R	R	R	R	R	R	R
Wolverine (<i>Gulo luscus</i>)	R	R	R	R	R	R	R	R
Badger (<i>Taxidea taxus</i>)	R	R	R	R	R	R	R	R
Striped Skunk (<i>Mephitis mephitis</i>)	R	R	R	R	R	R	R	R
Coyote (<i>Canis latrans</i>)	R	R	R	R	R	R	R	R
Gray Wolf [E] (<i>Canis lupus</i>)	R	R	R	R	R	R	R	R
Red Fox (<i>Vulpes vulpes</i>)	R	R	R	R	R	R	R	R

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Mountain Lion (<i>Felis concolor</i>)	R	R	R	R	R	R	R	R
Lynx [S] (<i>Lynx canadensis</i>)	R	R	R	R	R	R	R	R
Bobcat (<i>Lynx rufus</i>)	R	R	R	R	R	R	R	R
Yellow-bellied Marmot (<i>Marmota flaviventris</i>)			R					
Hoary Marmot (<i>Marmota caligata</i>)	P	P			R	R	R	R
Golden-mantled Squirrel (<i>Spermophilus lateralis</i>)	R	R	R	R	R	R	R	R
Columbian Ground Squirrel (<i>Spermophilus columbianus</i>)	R	R	R	R	R	R	R	R
Least Chipmunk (<i>Eutamias minimus</i>)	R	R	R	R	R	R	R	R
Yellow-pine Chipmunk (<i>Eutamias amoenus</i>)	R	R	R	R	R	R	R	R
Redtail Chipmunk (<i>Eutamias ruficaudus</i>)	R	R	R	R	R	R	R	R
Red Squirrel (<i>Tamiasciurus hudsonicus</i>)	R	R	R	R	R	R	R	R
Northern Flying Squirrel (<i>Glaucomys sabrinus</i>)	R	R	R	R	R	R	R	R
Idaho Pocket Gopher (<i>Thomomys idahoensis</i>)	R	R						
Northern Pocket Gopher (<i>Thomomys talpoides</i>)	R	R	R	R	R	R	R	R
Beaver (<i>Castor canadensis</i>)	R	R	R	R	R	R	R	R
Deer Mouse (<i>Peromyscus maniculatus</i>)	R	R	R	R	R	R	R	R
Northern Grasshopper Mouse (<i>Onychomys leucogaster</i>)	R	R	R					
Bushy-tailed Woodrat (<i>Neotoma cinerea</i>)	R	R	R	R	R	R	R	R
Northern Bog Lemming [S] (<i>Synaptomys borealis</i>)	P	P	R	R	P	R	R	R
Heather Vole (<i>Phenacomys intermedius</i>)	R	R	R	R	R	R	R	R
Boreal Red-back Vole (<i>Clethrionomys gapperi</i>)	R	R	R	R	R	R	R	R
Meadow Vole (<i>Microtus pennsylvanicus</i>)	R	R	R	R	R	R	R	R
Montane Vole (<i>Microtus montanus</i>)	R	R	R	R	R	R	R	R
Long-tailed Vole (<i>Microtus longicaudus</i>)	R	R	R	R	R	R	R	R
Water Vole (<i>Microtus richardsoni</i>)	R	R	R	R	R	R	R	R
Muskrat (<i>Ondatra zibethicus</i>)	R	R	R					
Western Jumping Mouse (<i>Zapus princeps</i>)	R	R	R					
Porcupine (<i>Erethizon dorsatum</i>)	R	R	R	R	R	R	R	R
Pika (<i>Ochotona princeps</i>)	R	R		R	R	R	R	R
Snowshoe Hare (<i>Lepus americanus</i>)	R	R	R	R	R	R	R	R
Mountain Cottontail (<i>Sylvilagus nuttallii</i>)	R	R	R	R	R	R	R	R
Elk (<i>Cervus elaphus</i>)	R	R	R	R	R	R	R	R
Mule Deer (<i>Odocoileus hemionus</i>)	R	R	R	R	R	R	R	R
White-tailed Deer (<i>Odocoileus virginianus</i>)	R	R	R	R	R	R	R	R
Moose (<i>Alces alces</i>)	R	R	R	R	R	R	R	R

Common Name/Scientific Name	Cache	W.Fk. Fish	Clark Fork	Rattl snake	Clear water	Black Foot	So.Fk Lolo	Mor- rell
Mountain Goat (<i>Oreamnos americanus</i>) Bighorn Sheep (<i>Ovis canadensis</i>)	R	R	R	R	R O	R R	R	R
FISHES (21)								
Northern Pike (<i>Esox lucius</i>)			R					
Largescale Sucker (<i>Catostomus macrocheilus</i>)			R		R			
Longnose Sucker (<i>Catostomus catostomus</i>)			R		R			
Northern Squawfish (<i>Ptychocheilus oregonensis</i>)			R		R			
Peamouth (<i>Mylocheilus caurinus</i>)			R	R				
Redside Shiner (<i>Richardsonius balteatus</i>)			R		R			
Longnose Dace (<i>Rhinichthys cataractae</i>)			R		R			
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	R	R	R	R	R			
Brown Trout (<i>Salmo trutta</i>)			R		R			
Westslope Cutthroat Trout [S] (<i>Oncorhynchus clarki lewisi</i>)	R	R	R	R	R	R	R	R
Brook Trout (<i>Salvelinus fontinalis</i>)		R	R					
Bull Trout [S] (<i>Salvelinus confluentus</i>)	R	R	R	R	R	R	R	R
Mountain Whitefish (<i>Prosopium williamsoni</i>)	R	R	R					
Black Bullhead (<i>Ictalurus melas</i>)			R					
Pumpkinseed (<i>Lepomis gibbosus</i>)			R					
Largemouth Bass (<i>Micropterus salmoides</i>)			R					
Shorthead Sculpin (<i>Cottus confusus</i>)								
Slimy Sculpin (<i>Cottus cognatus</i>)								
Yellow Perch (<i>Perca flavescens</i>)			R		R			

Appendix H

Resolution of Issues

Addressed in one or more alternatives (Chap IV)
 Addressed in mgt. standards (Chap IV)
 Addressed in Envion. consequences (Chap IV)
 Will be addressed in mgt. plan (Chap V)

Recreation

1. Will classification change the use of motorized land vehicles and water craft?	✓		✓
2. Will river, trail or road access be modified by classification?	✓	✓	✓
3. Is development and management of recreation facilities in a corridor affected by classification?	✓	✓	✓
4. Will the management of sport fisheries be affected by classification? <ul style="list-style-type: none"> a. Will existing, managed fish barriers be replaced if washed out? (Clearwater River only) b. Can designation alter the management of game fish habitat? 			✓
5. Will designation bring more use to Wild and Scenic rivers? <ul style="list-style-type: none"> a. What effect will increased use have on bull trout and harlequin ducks? 			✓
6. Will the Forest Service manage recreation (or other) use of the rivers, e.g., issue outfitter-guide permits for floating?		✓	✓
7. If floating becomes a permitted activity, what percent of the estimated floating capacity will be available for outfitters?			✓
8. How will Highway 135 Scenic Byway classification be affected?			✓

Added Cost

9. What will be the cost of implementation and administration of the Wild and Scenic Rivers program on the Lolo National Forest?	✓		✓
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Wildlife and Fish

10. Will W&SR classification provide protection for threatened, endangered and sensitive species?	✓	✓	✓
11. How will W&SR classification affect management of wildlife and fish habitat?		✓	✓
12. Will river floating and on-river recreation affect our ability to maintain woody debris and beaver dams?		✓	✓
13. Should the fish barriers constructed in the Clearwater River be removed or modified to provide fish passage?		✓	✓
14. Do we want to maintain the Morrell Lake inflow diversion, and will W&SR classification affect continuance of this diversion?	✓	✓	✓
15. Are the gabions on the upper Dry Fork of the North Fork Blackfoot River effective or should they be removed?	✓	✓	✓

Addressed in alternatives (one or more)
 Addressed in mgt. standards (Chap IV)
 Addressed in mgt. standards (Chap V)
 Addressed in Environ. consequences (Chap V)
 Will be addressed in mgt. plan

Wildlife and Fish

16. Will W&SR classification affect our ability to establish fish passage to the Clark Fork tributaries?			✓	✓	✓
17. Would potential relocation of Missoula's municipal water system intake in Rattlesnake Creek affect potential W&SR classification?	✓		✓		

Effects on Current Forest Management

18. How will classification affect timber cutting, mining, outfitting, special use permits and future development on National Forest System Lands?	✓	✓	✓	✓
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Water Use and Quality

19. Can logging, road building, mining and associated activities be managed to protect water quality in designated stream corridors?		✓		✓
20. Will designation affect existing water quality?			✓	
21. How does current sedimentation affect designation of rivers and streams?		✓	✓	
22. What effect will designation have on future upstream or downstream impoundments or diversions?				✓

Property Rights

23. Does designation allow federal control over private land? Will designation affect resource development or building?	✓	✓	✓	✓
24. Will designation affect real estate values? a. By putting more land in Federal ownership b. By restricting existing or future use on private land.				✓
25. Under what circumstances would the Federal Government use condemnation for fee title or easements in designated corridors?		✓	✓	✓
26. What management responsibilities would private landowners have, if any? Can I manage my acreage for wildlife under this designation?	✓			✓
27. Will designation affect management on State (school trust) Lands? a. Is there compensation for lost revenue if management is affected?			✓	
28. Will highway and railroad management be affected by W&SR classification?	✓	✓	✓	
29. What methods or options will the Forest Service use to manage a Wild and Scenic River classification? (Options include condemnation, conservation easement purchase and/or condemnation, cooperative agreements with land owners, and encourage County zoning.)	✓	✓	✓	

Addressed in alternatives (Chap IV)
 Addressed in one or more mgt. standards (Chap IV)
 Addressed in consequences in Environ. in mgt. plan (Chap V)

Weeds

30. Would noxious weeds be managed in the river corridors, including the use of "weed free" hay?			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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Government Intervention

31. Why is designation desirable in addition to the existing Federal, State, County and local laws and regulations?	See Purpose and Need, Chapter 1
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Visuals

32. How does existing development and possible expansion affect potential designation?			<input checked="" type="checkbox"/>	
33. If aesthetics are not included in "natural values," are aesthetic values considered? Is spirituality included?	<input checked="" type="checkbox"/>			

Cultural Resources

34. What effect will W&SR classification have on heritage sites?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
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Minerals and Geology

35. What effect will W&SR classification have on mineral development?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
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Economics

36. How will W&SR classification affect local economies?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
--	--	-------------------------------------	-------------------------------------	--

Change Preliminary Classification

37. Why aren't Lake, Wrangle, and Rattlesnake Creeks above the confluence with Wrangle being considered for "Wild" classification?	<input checked="" type="checkbox"/>			
38. Shouldn't "Wild" designation (or the most restrictive) be used wherever possible?	<input checked="" type="checkbox"/>			
39. Would you consider including the private land at the mouth of Cache Creek in the proposed classification?				
40. Could the corridor area be extended to one-half mile from each bank rather than the current one-quarter mile consideration?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Concerns not within the scope of or affected by the project

1. Will classification provide a way to mitigate current noise levels from the highway?
2. How would designation affect present legal rights to the use and impoundment of water in these rivers and streams, including existing structures?
3. What interim management will be in place on other rivers of interest until they can be studied?
4. Why not include:
 - Wilkes, 24-mile, Big Spruce, Chipmunk, Winnemuck, Thorne, Prospect and the upper reaches of Squaw Creeks?
 - West Fork of Thompson River and West Fork of Fishtrap Creek?
 - St. Regis River from Lookout Pass to St. Regis?
 - Straight Creek and North Fork of Fish Creek?
 - Montana Creek?
5. Why isn't the Clark Fork being considered for "Wild" classification?

Appendix I

Series of Feature Maps, All Rivers

	The term "occupied" when used to define forest land, will be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land will be 1 acre or greater. Unimproved roads, trails, stream and clearings in forest areas are classified as forest if they are less than 120 feet in width.
FOREST SYSTEM ROADS	A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration and utilization of the National Forest System and the use and developments of its resources.
FREE-FLOWING	As applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: <i>Provided</i> , That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

G

GAME SPECIES	Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under State or Federal laws, codes, and regulations.
GRAZING ALLOTMENT	See Range Allotment.

H

HABITAT TYPE	An aggregation of all land areas potentially capable of producing similar plant communities at climax.
HABITAT TYPE GROUP	A logical grouping of habitat types to facilitate resource planning and public presentations.

I

INDICATOR SPECIES	Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.
INDIRECT OUTPUTS	Outputs caused by the action but which are later in time or farther removed in distance but still reasonably foreseeable.

INSTREAM FLOWS	The minimum water volume (cubic feet per second) in each stream necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality, recreational opportunities and other uses.
INTERDISCIPLINARY TEAM (ID TEAM)	A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.
INTERMITTENT STREAM	A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow.
INVENTORY DATA	Recorded measurements, facts, evidence, or observations on Forest resources such as soil, water, timber, wildlife, range, geology, minerals, and recreation which was used to determine the capability and opportunity of the Forest to be managed for those resources.
ISSUE	See Public Issue.

K

KEY SUMMER RANGE	An area that is potentially capable of supporting big game during the summer use period.
KEY WINTER RANGE	The portion of the yearlong range where big game find food and/or cover during severe winter weather.

L

LANDTYPE	An inventory map unit with relatively uniform potential for a defined set of land uses. Properties of soils, landform, natural vegetation and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.
LANDTYPE GROUP	A logical grouping of landtypes that facilitate resource planning.
LEASABLE MINERALS	See Minerals, Leasable.
LIMITED SURFACE USE STIPULATION	A mineral lease clause, which, if attached to a mineral lease, prohibits surface disturbing activities on the lease pending submission of a surface use and operations plan which is satisfactory to the BLM and the surface management agency for protection of special existing or planned uses. This stipulation may, when site-specific operations are proposed and analyzed, be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

**LOCATABLE
MINERALS**

See Minerals locatable.

M

**MANAGEMENT
AREA**

An aggregation of similar land areas which have common management goals and standards. The areas do not have to be contiguous. It is the smallest land unit upon which Forest-level management decisions are based.

**MANAGEMENT
CONCERN**

An issue, problem, or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

**MANAGEMENT
DIRECTION**

A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

**MANAGEMENT
EFFECTS**

Physical, biological, social and economic responses to management practices.

**MANAGEMENT
EMPHASIS**

A management practice or combination of management practices designed to stress production of a particular type of output or mix of outputs.

**MANAGEMENT
INTENSITY**

A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.

**MANAGEMENT
OPPORTUNITY**

A statement of general actions, measures, or treatments that address a public issue or management concern.

**MANAGEMENT
PRACTICE**

A specific activity, measure, course of action, or treatment. Proposed management practices are those scheduled in the first decade of Forest Plan implementation. Probable management practices are those scheduled in the second decade of Forest Plan implementation.

**MANAGEMENT
PRESCRIPTION**

Management practices and intensities selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

MARKET VALUE

The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

MASS MOVEMENT

Downslope movement of a portion of the land's surface, i.e., a single landslide or the gradual simultaneous, downhill movement of the whole mass of loose earth material on a slope face.

MINERAL ENTRY

The filing of a mining claim on Federal land to obtain the right to mine any locatable minerals it may contain. Also the filing for a mill site on Federal land for the purpose of processing off-site locatable minerals.

**MINERAL
WITHDRAWAL**

A formal designation by the Secretary of Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.

MINERAL EXPLORATION	The search for valuable minerals.
MINERAL PRODUCTION	The extraction of mineral deposits.
MINERALS, COMMON VARIETY	Deposits of sand, stone, gravel, etc. of widespread occurrence and not having distinct or special value. These deposits are used generally for construction and decorative purposes and are disposed of under the Materials Act of 1947.
MINERALS, LEASABLE	Those minerals which are disposed of under authority of the various mineral leasing acts. Minerals include coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur (in Louisiana and New Mexico), and geothermal steam.
MINERALS, LOCATABLE	Those minerals which are disposed of under the general mining laws. Included are minerals such as gold, silver, lead, zinc and copper which are not classed as leasable or salable.
MINIMUM STREAMFLOW	A specified level of flow through a channel that must be maintained by the users of a stream for biological, physical, or other purposes.
MINING CLAIMS	A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit. Includes lode claims, placer claims, mill sites and tunnel sites.
MITIGATE	To lessen the severity.
MITIGATION	Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.
MODIFICATION VQO	See Visual Quality Objective (VQO).
MONITORING AND EVALUATION	The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

N

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	An act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.
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NATIONAL FOREST LANDSCAPE MANAGEMENT SYSTEM	The planning and design of the visual aspects of multiple use land management in such ways that the visual effects maintain or upgrade man's psychological welfare.
NATIONAL FOREST MANAGEMENT ACT (NFMA)	A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.
NATIONAL FOREST SYSTEM	All national forest lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under Title III.
NATIONAL REGISTER OF HISTORIC PLACES	A listing maintained by the National Park Service of areas which have been designated as being of historical significance. The Register includes places of local and State significance as well as those of value to the Nation as a whole.
NATIONAL WILD AND SCENIC RIVER SYSTEM	Rivers with outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.
NATIONAL WILDERNESS PRESERVATION SYSTEM	All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.
NO ACTION ALTERNATIVE	The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.
NONGAME	Species of animals which are not managed as a sport hunting resource.
NONPOINT SOURCE POLLUTION	Sources from which the pollutants discharged are: (1)induced by natural processes, including precipitation, seepage, percolation, and runoff; (2)not traceable to any discrete or identifiable facility and (3)better controlled through the utilization of Best Management Practices, including process and planning techniques. This includes natural pollution sources not directly or indirectly caused by man.
NONSTOCKED	A stand of trees or aggregation of stands that have a stocking level below the minimum specified for meeting the prescribed management objectives.
NO-SURFACE OCCUPANCY STIPULATION	A mineral lease clause which, if attached to a mineral lease prohibits the lessee from constructing roads, well pads or otherwise occupying the land surface unless, upon site-specific review, it is determined by the authorized officer that the requirements of the stipulation can be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

O

OLD GROWTH TIMBER	Old growth forests encompass the late stages of stand development and are distinguished by old trees and related structural attributes. Specific attributes vary by forest type.
OUTSTANDINGLY REMARKABLE (VALUE)	A value that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary. Rare, unique within a region, State or Nation; or superior example of values that may be found elsewhere. A professional judgement.
OVERMATURE TIMBER	Individual trees or stands of trees that in general are past their maximum rate in terms of the physiological processes expressed as height, diameter and volume growth.
OVERSTORY	That uppermost canopy of the forest when there is more than one level of vegetation.
OVERTHRUST BELT	A complex geologic feature, extending from Alaska to Mexico, which resulted from compressional stresses within the earth, and which is characterized by abundant thrust faults. This zone passes through and includes all of western Montana.

P

PARTIAL RETENTION VQO	See Visual Quality Objective (VQO).
PATENTED MINING CLAIMS	A patent is a document which conveys title to land. When patented, a mining claim becomes private property and is land over which the United States has no property rights, except as may be reserved in the patent. After a mining claim is patented, the owner does not have to comply with requirements of the General Mining Law or implementing regulations.
PERENNIAL STREAMS	Streams that flow continuously throughout most years.
PERMITTED GRAZING	Use of a National Forest range allotment under the terms of a grazing permit.
PRESERVATION VQO	See Visual Quality Objectives (VQO).

PRIMITIVE RECREATION SETTING	A classification of the recreation opportunity spectrum that characterizes an essentially unmodified natural environment of a size or remoteness that provide significant opportunity for isolation from the signs and sounds of man and a feeling of vastness of scale. Visitors have opportunity to be part of the natural environment, encounter a high degree of challenge and use a maximum of outdoor skills but have minimum opportunity for social interaction.
PRIMITIVE ROADS	Roads that came into existence with little regard for grade or drainage control, or were abandoned facilities from some prior use. They are sometimes created merely by repeated driving over an area. Such roads are rarely, if ever, maintained and then only by users. These roads are single lane, usually with native surfacing, and sometimes passable with four-wheel drive vehicles only, especially in wet weather.
PUBLIC ISSUE	A subject or question of widespread public interest identified through public participation relating to management of National Forest System lands.

R

RANGE ALLOTMENT	A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.
RECORD OF DECISION	A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.
RECREATION EXPERIENCE LEVEL	A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from primitive" to "highly developed" is planned for the National Forest System.
RECREATION VISITOR DAY (RVD)	One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).
RESEARCH NATURAL AREA	An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.
RETENTION VQO	See Visual Quality Objectives (VQO).
RIGHT-OF-WAY	Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project facility passing over, upon, under, or through such land.

RIPARIAN AREAS	Areas with distinctive resource values and characteristics that are comprised of an aquatic ecosystem and adjacent upland areas that have direct relationships with the aquatic system. This includes floodplains, wetlands, and all areas within a horizontal distance of approximately 100 feet from the normal high water line of a stream channel, or from the shoreline of a standing body of water.
RIPARIAN ECOSYSTEM	A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. It is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.
RIVER	A flowing body of water or estuarary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, rills, and small lakes.
S	
SCENIC EASEMENT	The right to control the use of land (including the air space above such land) within the authorized boundaries of a component of the wild and scenic rivers system, for the purpose of protecting the natural qualities of a designated wild, scenic or recreational river area, but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement.
SCOPING PROCESS	An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly. (Ref. CEQ regulations, 40 CFR 1501.7).
SEDIMENT	Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.
SOCIAL VARIABLE	A variable that measures the social impact of Forest Service management alternatives. Examples include population statistics, types of institutions, and personal opinion as reflected in attitudes or as demonstrated by behavior.
STREAM ORDER	<p>A measure of the position of a stream in the hierarchy of tributaries. (Stream as referenced here refers to perennial streams.)</p> <p class="list-item-l1">a. First-order streams are unbranched streams, that is they have no tributaries.</p> <p class="list-item-l1">b. Second-order streams are formed by the confluence of two or more first-order streams. They are considered second-order until they join another second-order or larger stream.</p> <p class="list-item-l1">c. Third-order streams are formed by the confluence of two or more second-order streams. They are considered third-order until they join another third-order or larger stream.</p>

SUBDIVISIONS	Areas of previously undeveloped land divided into individual homesites and/or blocks of lots with streets or roads and open spaces.
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T

THERMAL COVER	Cover used by animals to ameliorate chilling effects of weather; for elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more.
THREATENED AND ENDANGERED SPECIES	Any species, plant or animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.
TIERING	Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.
TRAILHEAD	The parking, signing, and other facilities available at the terminus of a trail.

U

UNSUITABLE LAND	Lands not selected for timber production during the development of the Forest Plan due to (1) the multiple-use objectives for the alternative preclude timber production, (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met and (3) the lands are not cost-efficient over the planning horizon in meeting Forest objectives that include timber production. Land not appropriate for timber production shall be designated as unsuitable in the Forest Plan.
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V

VISUAL QUALITY OBJECTIVE (VQO)	A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape. Preservation: In general, human activities are not detectable to the visitor. Retention: Human activities are not evident to the casual Forest visitor. Partial Retention: Human activities may be evident, but must remain subordinate to the characteristic landscape.
---------------------------------------	--

Modification: Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in middle-ground or background.

Maximum Modification: Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

Enhancement: A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.

VISUAL RESOURCE

The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

W

WALLOW	A depression, pool of water, or wet area produced or utilized by elk or moose during the breeding season.
WATER YIELD	The measured output of the Forest's streams.
WATER YIELD INCREASE	Additional water released to the Forest streams as a result of Forest management activities.
WAY	A marked route or primitive foot trail through the forest.
WETLANDS	Those areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.
WILDERNESS	Federal land retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is managed to preserve its natural conditions which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude; (3) has at least 5,000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition; and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.
WITHDRAWAL	An order removing specific land areas from availability for certain uses.

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