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McCLOUD RIVER CRMP
McCloud River Coordinated Resource Management Group, Inc.
A 501(c)(3) Public Benefit Corporation

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16 Miller Avenue, Suite 202
Mill Valley, California 94941

Comments on Draft Programmatic EIS/EIR CALFED Bay-Delta Program

On May 14, 1998, the McCloud River CRMP membership (see below) voted unanimously to authorize the preparation and submittal of the enclosed comments expressing the CRMP's opposition to the proposal to expand Shasta Reservoir. The comments express the reasons for opposition and include comments on the plan and the environmental review.

McCLOUD RIVER CRMP SIGNATORIES

ENVIRONMENTAL GROUPS
AUDUBON SOCIETY
CALIFORNIA-TROUT, INC.
FRIENDS OF THE RIVER
THE NATURE CONSERVANCY
SIERRA CLUB

INDUSTRY
CRANE MILLS
PACIFIC GAS & ELECTRIC
SIERRA PACIFIC INDUSTRIES

PRIVATE LANDOWNERS
BOLLIBOKKA CLUB
THE HEARST CORPORATION
McCLOUD FLY FISHING CLUB

GOVERNMENT
STATE OF CALIFORNIA (DEPT. OF FISH & GAME)
SHASTA COUNTY, BOARD OF SUPERVISORS
U.S. DEPT. OF AGRICULTURE (FOREST SERVICE)

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June 29, 1998

CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Attention: Lester Snow, Executive Director

Reference: Comments on Draft (March 1998) Programmatic Environmental Impact Statement/Environmental Impact Report, CALFED Bay-Delta Program

Ladies and Gentlemen:

Thank you for the opportunity to submit comments and questions regarding the above referenced draft programmatic EIS/EIR. In short, we believe the EIS/EIR alternatives that call for additional water storage by enlarging Shasta Reservoir should not be pursued, and the reasons are set out below.

THE IMPACT WE SEEK TO HAVE CALFED AVOID

As shown on the table on the next page, we already have a before-and-after depiction of the obliterating effect that Shasta Reservoir has had on one of the major tributaries to the reservoir, the McCloud River. Further pursuit of this enlargement option will forever destroy more of this precious and protected resource.

The table presents an evaluation and comparison prepared by Jones & Stokes Associates, Inc. for the Resources Agency of California. The evaluation was part of a comprehensive study that resulted in special protection being afforded the McCloud River through the passage of California Wild and Scenic Rivers Act, Public Resources Code § 5093.50 et seq. For photographs of the existing grandeur of the McCloud River (and of a fly-fishing club located thereon), please refer to Exhibit 1. The Wild and Scenic Rivers Act legislation is attached as Exhibit 2.

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SIERRA CLUB

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SIERRA PACIFIC INDUSTRIES

PRIVATE LANDOWNERS
BOLLIBOKKA CLUB
THE HEARST CORPORATION
McCLOUD FLY FISHING CLUB

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SHASTA COUNTY, BOARD OF SUPERVISORS
U.S. DEPT. OF AGRICULTURE (FOREST SERVICE)

The McCloud Now	The Adjacent Shasta Reservoir (Formerly the McCloud River)
Steep, heavily forested, mountain slopes, picturesque cascading whitewater, and deep, long, green- or turquoise-colored pools characterize the river corridor. Most of the river corridor is lined with large Douglas-fir or beautiful black and canyon oaks, which add to the grandeur of the setting. **Vivid views, unique water color, and the pristine viewscape result in the McCloud's visual resources worthy of the rating extraordinary**.	Water surface elevations on Shasta Reservoir fluctuate 60-120 vertical feet. This fluctuation moves the mouth of the river up and down the arm of the reservoir. At low levels, the mouth moves downriver, and **a bathtub ring of steep, treeless slopes with mostly barren soil and rock is evident along the banks of the river**. **The river has lost most of its past scenic features** because of the dominant, sterile, visual impact of the bathtub ring. For this reason, the visual quality is rated as only poor to fair.

WHAT IS THE MCCLOUD RIVER CRMP?

CRMP BACKGROUND

The McCloud River and its adjoining forests have survived many of the effects of California's growth, with two notable exceptions. One, 1945 saw the completion of the 602' high Shasta Dam, the backup from which obliterated 15 spectacular miles of the McCloud River. Two, in 1961, the construction of the McCloud Dam was authorized, resulting in the bifurcation of the McCloud River into two distinct segments, separated by a 5-mile long reservoir.

In 1988, however, an effort began to accomplish watershed-wide planning and legislative protection for the McCloud River. On the legislative front, the California legislature determined that the remaining natural resources of the McCloud were outstandingly remarkable enough to warrant legislative protection from any further water projects. The successfully enacted legislation appears as Exhibit 2. On the watershed planning front, a lengthy series of discussions commenced among all the diverse organizations having an interest in the McCloud watershed. The purpose of the discussions was to develop a customized protection plan, tailored to the specific circumstances of the McCloud, in order to best preserve and manage the natural resources of the McCloud. These discussions culminated in the signing, on July 23, 1991, of the Memorandum of Understanding Between Agencies and Individuals Concerned with the McCloud River Drainage Coordinated Resource Management Planning Area, which served to ***contractu-***

ally adopt the terms and provisions of the McCloud River Coordinated Resource Management Plan ("CRMP"). The McCloud CRMP now serves as the primary land management tool for the 46,000 acres surrounding the McCloud River from its headwaters to its terminus at Shasta Reservoir.

Unlike other CRMP's, the McCloud River CRMP goes beyond the traditional structure of the voluntary pursuit an objective, and is structured as a federal – state – private contract, with specific terms and provisions that the parties are bound to observe. The McCloud River CRMP Agreement is attached as Exhibit 3.

CRMP SIGNATORIES

The McCloud River CRMP is evidence of a coalition approach to environmental management and protection. Environmental groups, industry, private landowners, and government have joined together to manage and protect the resources of the McCloud River. Signatories to the CRMP are:

ENVIRONMENTAL GROUPS	INDUSTRY	PRIVATE LANDOWNERS	GOVERNMENT
AUDUBON SOCIETY	CRANE MILLS	BOLLIBOKKA CLUB	STATE OF CALIFORNIA (DEPT. OF FISH & GAME)
CALIFORNIA-TROUT, INC.	PACIFIC GAS & ELECTRIC	THE HEARST CORPORATION	SHASTA COUNTY, BOARD OF SUPERVISORS
FRIENDS OF THE RIVER	SIERRA PACIFIC INDUSTRIES	MCCLOUD FLY FISHING CLUB	U.S. DEPT. OF AGRICULTURE (FOREST SERVICE)
THE NATURE CONSERVANCY			
SIERRA CLUB			

The Nature Conservancy holds the McCloud River Preserve, three miles of which are open to fly-fishing and three miles of which remain a true nature study area. The Nature Conservancy has been a long-term advocate of the need for watershed-wide planning for the McCloud, and of legislative protection for the resources of the McCloud. In 1973, the McCloud Fly Fishing Club gave extensive property to The Nature Conservancy, leading to the formation of the McCloud River Preserve, and today remains an active fly-fishing club devoted to protection and stewardship of the McCloud since the Club's founding on August 17, 1900. The Bollibokka Club is a similar fly-fishing organization whose members have contributed to the preservation and protection of the McCloud River resources for close to 100 years. Representatives of Bollibokka have been active participants in and proponents of the CRMP process. The Hearst Corporation has extensive long-term land holdings on the McCloud and forest land ownership surrounding the McCloud, including the Hearst family's Wyntoon estate, and has contributed actively to the planning, management and protection of the McCloud. Hearst representatives were active in the formation of the CRMP, and have since been active in the management of the CRMP. Sierra Pacific Industries and Crane Mills are timber companies, which as part of the CRMP, agreed to practice the least-intensive prescription of timber harvesting in the McCloud watershed. Each has been supportive of efforts by the Forest Service and other landowners to pursue special protective designations for the McCloud. The U.S. Dept. of Agriculture (Forest Service) administers the largest land holding in the McCloud

watershed, the Shasta National Forest. The Forest Service was a lead sponsor of the McCloud River CRMP, and has steadfastly pursued watershed-wide planning and protection for the McCloud River. The State of California (Dept. of Fish & Game) has long known the merits of the McCloud River fishery, and has included the McCloud waters in the earliest stages of the California Wild Trout Program, a program designed to maintain and enhance the habitat required for optimal wild trout conditions. The Shasta County, Board of Supervisors has played in key role in facilitating passage of state legislation prohibiting dams or reservoirs on the McCloud River, and has been an active proponent of the coalition management approach exhibited by the McCloud River CRMP. California-Trout, Inc. has served as a watchdog for potentially damaging threats to the McCloud fishery, and was an active proponent of the California Wild Trout Program designation. The Audubon Society takes a special interest in the McCloud because of the benefits of region's sparse human population and concurrent pristine state, and the key role that the McCloud geography plays in connecting the Cascade Range with the Sierra Nevada Range. Pacific Gas & Electric operates a diversion dam on the McCloud, which diverts the peak and surplus flows over to the Pit River, where power production takes place, rather than through the construction of environmentally damaging generating facilities on the McCloud River. The Sierra Club has a strong interest in ensuring that the public interest is adequately represented when actions are being contemplated that affect public access or public use of natural resources. Friends of the River participates actively in discussions involving recreational uses of the McCloud by the California public, as well as for long term planning direction and legislation to avoid destructive effects of dams, reservoirs and other water projects.

In sum, the McCloud CRMP represents a diverse group of interests that have come together to manage and protect the McCloud River for the long-term. Remarkably, each of the parties has been extremely active in demonstrating its commitment to protection of the McCloud River.

RECORD OF THE CRMP

A listing of accomplishments of the McCloud River CRMP effort:

- Key CRMP participants worked with Senator Byron Sher to facilitate the passage of Wild and Scenic Rivers Act, Public Resources Code § 5093.542 affording legislative protection of the free-flowing condition of the McCloud River. The Governor signed the bill into law on July 26, 1989.
- The CRMP succeeded in having all affected parties in the McCloud watershed join together and sign a consensus protective document for the watershed. All participants agreed to manage their lands or administer their agency duties in manners consistent with the specific terms and provisions of the document. The document was signed on July 23, 1991.

- Management of the McCloud Watershed via the McCloud River CRMP was selected as the preferred alternative for the long-term Land Management Plan of the Shasta-Trinity National Forests. On April 28, 1995, the preferred alternative was adopted by the Regional Forester for the Western Region, and included final authorization for the CRMP. The Forest Service played a key role in crafting the contractual protections afforded via the CRMP, and, as specified in the Land Management Plan, crafted back-up protections via the Federal Wild and Scenic Rivers Act for the natural resources of the McCloud River.
- On April 9, 1992, the McCloud CRMP incorporated as a nonprofit public benefit corporation, the McCloud River Coordinated Resource Management Group, Inc., and, on September 30, 1993, official 501(c)(3) status was granted by the Internal Revenue Service.
- On March 23, 1993, the CRMP adopted a mission statement, planning objectives, and agreed upon intermediate term goals.
- The CRMP conducted twelve months of hearings to facilitate production of a comprehensive watershed recreational plan, ultimately adopted on February 1, 1995, settling issues that had previously lead to years of controversy among the parties in the watershed. The plan guides the implementation of comprehensive recreational policies over the next decade.
- The CRMP intervened in an effort underway to limit the rights of state governments to participate in the processing of hydroelectric projects by the Federal Energy Regulatory Commission.
- The CRMP prepared and submitted a grant proposal for development of a digital Geographical Information System (GIS) mapping database for the McCloud watershed (now complete), which now serves as the core for the development now underway (in concert with the U.S. Forest Service) of a comprehensive fire management plan for the watershed.

DRAFT PROGRAMMATIC EIS/EIR

PROBLEM WITH "PROGRAMMATIC" NATURE OF EIS/EIR RELATIVE TO SHASTA STORAGE OPTION

The draft EIS/EIR asserts that only a programmatic level of detail is appropriate for this document because the actions evaluated are not yet precisely defined. However, the decision making underway relative to storage options is, in practice, very specific.

For instance, the Los Banos Grande project has been essentially removed from further consideration, even though it is capable of storage of 2 million acre-feet, and is "among the most economical of prospective surface storage options." The reason given is that "some CALFED agencies do not think environmentally significant impacts associated with the project can be mitigated." The issues and process that led to that decision

are not specified in the EIS/EIR. By contrast, the Shasta Alternative remains under active consideration, primarily, we assert, because the draft report assessing the feasibility of the Shasta Lake Enlargement fails to review some extremely relevant information. After reviewing the section of the draft report entitled "Environmental Considerations" and the bibliography attached to the report, we are unable to find anything that points to a review of two important and relevant studies of the McCloud River.

The two studies that should be considered are (1) the State evaluation of the McCloud River that provided the basis for the qualification of the McCloud River for inclusion in the California Wild and Scenic Rivers System (1988), and (2) the Federal evaluation of the McCloud River (as well as of a second major tributary to Shasta Reservoir, the Upper Sacramento River) that provided the basis for qualification of the McCloud River (and Upper Sacramento) for inclusion in the Federal Wild and Scenic Rivers System (1994). As you know, **wild and scenic evaluation studies seek to determine if the resource values of a river are outstandingly remarkable enough to warrant the legislative prohibition of dams, reservoirs and other water projects. What could be more relevant to even a preliminary or cursory feasibility review?**

The California evaluation was conducted in 1988 by Jones & Stokes Associates, Inc., and subsequently found qualified for designation by the Resources Agency of California. The U. S. Dept. of Agriculture–Forest Service subsequently conducted the federal study and similarly found the river possessive of "Outstandingly Remarkable Resource Values" and qualified for designation. The state study (in its entirety, Volumes 1 and 2) are included as a separate enclosure to this submittal; the executive summary of the study is attached as Exhibit 4. The federal document appears as an appendix to the Forest Service Land Management Plan, entitled "Appendix E, Wild and Scenic Rivers Evaluation, Final Environmental Impact Statement, Land and Resource Management Plan, Shasta Trinity National Forests, 1994," and should be readily available to you since the USDA Forest Service is one of the CALFED Agencies. To ignore these studies is an important omission in the draft EIS/EIR, and one that very likely results in an erroneous and premature narrowing of prospective storage options.

Not only is this omission important from the standpoint of making a premature decision to no longer consider the Los Banos Project or other now tabled storage options when the Shasta Alternative <u>may be even more ecologically destructive</u>, but it leads to the following problem as well. If approval is obtained for the CALFED programmatic storage option calling for 3 million acre-feet of new storage from locations north of the Delta (as is being considered), there are really only two projects that can provide that level of storage: Shasta Reservoir Enlargement and the Sites/Colusa Reservoir Project. Had the State and Federal wild and scenic evaluations been reviewed and considered even at a programmatic level of review, it appears very likely that CALFED would have become aware of the feasibility limitations, and structured its storage options differently. The

present structure for additional water storage (3 million acre-feet from projects north of the Delta) in essence seeks "programmatic" approval from a single project or, perhaps, from two projects. With that level of project specificity, the programmatic level of review would be by no means appropriate.

We urge that the next draft EIS/EIR fully utilize these important studies in making a determination of the relative levels of feasibility for new water storage projects available for review by CALFED. We further urge that the storage options contained in the next draft EIS/EIR be structured on an overall basis, not prematurely segmenting north-of-the-Delta storage projects from south-of-the-Delta storage projects.

With the present structure of the north-of-the-Delta storage option (which, as mentioned, would result in "programmatic" approval for only one or two projects, including the Shasta Alternative), we are forced to provide a number of comments that would otherwise be provided at the site-specific level of review. Nevertheless, we think it is important that CALFED be aware of the total lack of feasibility of the Shasta Alternative, before it seeks programmatic approval for something that is not realistically able to be implemented.

PREHISTORIC WINTU TRIBE VILLAGE AND BURIAL GROUND IMMEDIATELY ABOVE PRESENT LEVEL OF RESERVOIR

On September 9, 1988, the Bureau of Reclamation and the Department of Water Resources produced a report entitled, "***Enlarged Shasta Wrap-up Report***." Under key findings (which led to the tabling of the Shasta issue), the report found:

> The Shasta area ... has known or suspected very high archeological (prehistoric site) sensitivity. [T]erraces near the mouths of tributary streams ... are considered high in potential for both prehistoric and historic site occurrence.

In fact, this turns out to be the case. In comments on this draft EIS/EIR submitted by the Bollibokka Land Company, a landowner and McCloud River CRMP member that owns the property at the mouth of the McCloud River tributary to Shasta Reservoir, it describes an important cultural resource at that very location. It would be destroyed by enlargement of Shasta Reservoir, even at the lowest considered option for increase, 17 vertical feet.

Situated partly on the Bollibokka property and partially on National Forest property, at a location adjacent to and 5 vertical feet above the existing maximum surface elevation of Shasta Reservoir, is an ancient Wintu Tribe village and burial ground. The Wintu built bark covered igloo-type huts that were partially excavated into the ground. A

bench was carved around the perimeter of the excavation, and a fire would be built in the center. The center of the roof was left open for smoke venting. To this day, the sites have not been disturbed. The private property status has been a primary factor in their preservation. The excavations are still evident as gradual depressions in the ground, marking the exact locations of these prehistoric residences. Also part of this Native American village is an ancient Wintu burial ground.

According to Jones & Stokes Associates, a Wintu village would have been "composed of at least one large subterranean earth lodge, between 5 and 15 semi-subterranean bark houses, storage houses, and sweat houses."

The Jones & Stokes study highlights the relevance of these resources to the California public:

> The archaeological record of northcentral California is only beginning to be understood, and the McCloud River area is likely to contain significant information pertaining to the last 7,000 years of human history in California. Unlike other areas in California, modern economic development along the McCloud River has been minimal, and **public access to the area has always been limited, with the result that archaeological sites along the McCloud River tend to be well preserved, retaining their research potential.**

These facts are relevant to the cultural and archeological analysis mandated by CEQA and NEPA.

We agree with the CALFED Environmental Consequences Technical Report, "Cultural Resources" that notes: "An impact on undeveloped land would be greater than an impact on land that had been farmed or developed." In the case of the McCloud, by 1875, Jones & Stokes note, "Only 3 homesteads were located along [28 miles of] the lower McCloud River." Since then, the very low intensity ownership by fly-fishing clubs has kept the sites in perfectly preserved and undisturbed conditions.

Contrast this with the CALFED depiction of many other California locations:

> The massive agricultural development of the valley floor has significantly damaged many archeological sites. Prehistoric mounds have been leveled, sites have been repeatedly disced and plowed in agricultural fields. As a result, artifacts have been broken and features destroyed.

The CALFED Cultural Resources document then states that the most significant negative impact that can occur to cultural resources are activities which cause their total loss, such as through ground disturbance or through inundation.

To move forward with the Shasta Alternative would put CALFED in the position of first classifying an archeological resource with the highest level of significance (prehistoric, human remains, well preserved, sacred location), and then proposing the action (inundation) classified by CALFED as being most harmful and least able to be mitigated.

CEQA applies to effects on historic and prehistoric archeological resources and public agencies are required to avoid damaging effects on an archeological resource. (See CEQA, Appendix K, 14 Cal. Code Regs. §15387). Preservation of a site is the preferred manner of avoiding damage to archeological resources. If the lead agency determines that a project may affect an archeological resource, the agency shall determine whether the effect may be a significant effect on the environment. If a project may cause damage to an important archeological resource, the project is considered to have a significant effect on the environment. Assuming the McCloud River site is important, the State must have a plan for mitigating the effect of the project on the resource. NEPA requires a similar analysis.

The California Health and Safety Code (§7052) prohibits the disturbance of human remains, except under certain circumstances. It also specifies procedures, including consultation with the California Native American Heritage Commission to be followed in the event that Native American human remains are found. (See also 14 Cal. Code Regs. §155387, Appendix K.)

Where an appropriate historical or archeological authority advises the Secretary of the Interior or proponent agency of activities which may cause irreparable loss or destruction of significant historical resources, the proponent agency may request that the Secretary initiate the recovery, protection or preservation of the resources. (16 U.S.C. §469 a-2).

The provisions of the Archeological Resources Protection Act (16 U.S.C. §470aa – 470mm) also must be observed. ARPA's stated purpose is to "secure, for the present and future benefit of the American people, the protection of archeological resources and sites which are on public lands and Indian lands." Please note that in 1993, the Seventh Circuit Court of Appeals held that ARPA's provisions also apply to activities on private land. The supplement to the Affected Environment Technical Report declares otherwise.

Further, the CALFED Cultural Resources report notes that when a property is or comes under federal control (as is a portion of this prehistoric archeological site) that specific additional legal steps are required by federal law.

In the case of the McCloud River site, the location of a burial ground itself is believed to be sacred. There are Wintu Tribe representatives available for consultation and should be contacted as part of the programmatic review of feasibility of various important storage options. In addition, Larry Meyer, located in Sacramento, is an important representative for Indian Affairs. He also should be contacted to learn of the Native Americans' desired outcome. It appears that the programmatic EIS/EIR is deficient in describing what sort of mitigation measures could be taken when significant, undisturbed, and sacred locations are discovered. Please let us know what you propose. Is the good of the public best served by removing the human remains, excavating the artifacts, and proceeding with the total destruction of the sacred site? Many members of the California public would think not.

HISTORIC STRUCTURES ELIGIBLE FOR NATIONAL REGISTER ARE WITHIN 17 VERTICAL FEET OF EXISTING RESERVOIR LEVEL

In 1945, the completion of Shasta Dam brought the reservoir level up to but not over the aforementioned Wintu Village and Burial Ground, and also spared, barely, an historic log cabin dining room that was then 85 years old, having been built in 1860. It has since survived to reach an age of 138 years. The log cabin serves as the historic dining room for the Bollibokka Fly-fishing Club. The cabin would be lost by increasing the height of Shasta Reservoir by even the lowest 17 foot option.

Nearby also on the Bollibokka property is the so-called Rock House, a fishing lodge constructed entirely of river rocks taken from the McCloud River. Dating from 1920, the Rock House serves to illustrate a unique architectural style, of a significance not unlike the architectural significance of the Adirondack fishing camps and lodges utilizing the natural forms of branches and tree trunks. Perched at the edge of the river, the setting of the Rock House is as important as the architectural material itself. The concrete grouted river rocks would not at all be conducive to relocation of the structure, and as mentioned, the setting is key to its significance. The Rock House would be lost by increasing the height of Shasta Reservoir by even the lowest 17 foot option.

The Bollibokka structures meet the criteria for inclusion on the National and California Registers. (See National Historic Preservation Act at 16 U.S.C. §470 et. seq., and California equivalent legislation at Public Resources Code §5024 et. seq.) Under each of the various scenarios proposed for the Shasta Alternative, increases ranging from 17 to 200 feet would cause the loss of the structures. The 1945 construction stopped just short of destroying the structures.

Inundation is obviously deemed to be a significant adverse impact on an historic resource. We agree with the description of the process entitled "Regulatory Context"

noting the multiple federal, state, and local processes for preservation of historic structures, as it appears in the CALFED Supplement to the Affected Environment Technical Report.

Please see photographs of these historic structures as part of Exhibit 1.

SHASTA ENLARGEMENT VIOLATES SPECIFIC STATE LEGISLATION PROTECTING THE MCCLOUD RIVER

The primary purpose of wild and scenic programs is to determine when the natural resources of a river are outstandingly remarkable enough to warrant foregoing the benefits that could accrue to the public through development of a water project such as a reservoir or hydroelectric dam. It was with excellent reason that the California Legislature blessed the McCloud River with special protection when they passed the California Wild and Scenic Rivers Act, Public Resources Code §5093.542 (Exhibit 2). In recognizing the need for preserving the McCloud's unique wild trout fishery, habitat and beauty, the Legislature clearly intended to protect it from further inundation and destruction.

One might ask, "What is the harm in taking just a portion of the river." The answer is, "Where will it end, and what is important to Californians today?" Shasta Dam obliterated 15 spectacular miles of the McCloud River in 1945. If we destroy two to eight more miles now in spite of the legislative protections and widespread interest in preserving natural and cultural resources, what will keep the environmental harm from being repeated again, and again?

There are also certain impacts that are not strictly linear. At present, the McCloud River fishery is extremely healthy ("the lower McCloud River represents one of the finest wild trout streams in California, and is rated extraordinary" (Jones & Stokes)). By increasing the level of the reservoir enough to allow the non-native reservoir fish to by-pass certain important natural barriers (such as at Tuna "Falls"), however, the entire wild trout fishery would be severely degraded. The McCloud River is in reality a world-class fishery. The December 1997 issue of *Fly Fisherman* in its article, *California's McCloud River*, (attached as Exhibit 5) noted:

> The river holds a key place in American angling history. It was from the McCloud in 1874 that the first rainbow-trout eggs were collected and shipped to pioneer fish culturist Seth Green and others in the East and Midwest. These eggs ... have been distributed worldwide. Anglers in New Zealand [New Zealand's world renowned trout streams have no native trout – they all came from the McCloud], Argentina,

> the British Isles, and across the United States fish over trout with McCloud genes.

One might also ask, "What was the purpose of the wording in the legislation that permitted technical and economic studies related to expansion of Shasta Lake?" At the time the bill was being drafted and considered, the Dept. of Water Resources was concluding years of study of a proposal to consider enlargement of Shasta Reservoir. The study was in its final stages of consideration, the conclusion to not proceed had been announced, and that subsequent environmental review would not be sought. DWR was granted the exception appearing in the legislation to finalize its then existing technical and economic studies, but nothing further. In fact, the bill is worded such that notwithstanding the results of the Shasta studies – one way or the other – that no dam, reservoir or any other water impoundment is permitted on the McCloud or which could affect the existing free-flowing condition of the McCloud.

As you probably now know, Senator Byron Sher's staff person who participated in the drafting of the legislation, Mr. Jeff Shellito, asserts that CALFED's present activities involving the Shasta Alternative violate the legislation. To continue its current direction with regard to the Shasta Alternative, CALFED must assess the likelihood of passage and then pass legislation to override the protections afforded the McCloud River ten years ago via the California Wild and Scenic Rivers Act. Please let us know how you intend to proceed on this issue. If the issue remains unresolved by the time of the next draft, we believe that any revised draft EIS/EIR should fully present this aspect of the legal infeasibility of the Shasta Alternative.

SHASTA ENLARGEMENT BREACHES CONTRACTUAL PROVISIONS CONTAINED IN THE MCCLOUD RIVER CRMP

As discussed in the section of this submittal entitled CRMP Background, the McCloud River CRMP is different from other CRMP's in that is a contractual agreement among the parties, with a remedy of specific performance available from the courts. The contractual aspect of the CRMP is contained in the Memorandum of Understanding wherein the parties agree to observe Part 5, Plan Area Objectives and Allowable Practices.

The contractual terms include, among many, provision for management for preservation of the pristine quality of the McCloud resources, as well as for preservation of the natural character of the streamside environment. The governmental agencies which participate in the McCloud CRMP are also CALFED agencies. As a result, the present activities of these agencies through CALFED (involving the Shasta Alternative) are in breach of these contractual terms and provisions.

In addition, the increase in size of the reservoir would require the use of eminent domain to condemn private lands that would be flooded as well as buildings and other improvements on Bollibokka property. The contractual provisions of the McCloud CRMP specifically forbid the use of the power of eminent domain to acquire private property in the McCloud River drainage area. Implementation of the Shasta Alternative would make use of the eminent domain authority unavoidable.

It appears that implementation of the Shasta Alternative would violate the existing obligations of the state and federal government to McCloud River CRMP. Please let us know your position on this matter, especially in light of the concurrent asserted violation of the state legislation.

Aside from the legalities of the situation, the McCloud CRMP has been recognized as a good idea, and has been a prime example of effective coalition management of an environmentally important resource. Each member has been asked to make some real concessions via the CRMP agreement in an effort to cooperatively manage a watershed in an environmentally responsible manner.

THE POTENTIAL FOR TRANSFORMATION OF THE WILD TROUT FISHERY INTO ANOTHER HATCHERY-STOCKED RIVER

The fishery of the McCloud is managed for wild trout habitat "in contrast to the majority of California's accessible waters, which are managed by planting catchable-sized hatchery trout on a put-and-take basis." (Jones & Stokes Study) This is able to occur on the McCloud and still produce high catch rates for fishermen for the following reason. According to the Wild Trout Program study prepared by the CA Dept. of Fish & Game, the relatively light fishing pressure on the stretches of river held by the fishing clubs provide a recovery buffer for the fish. The Shasta Alternative would alter this balance in two important ways. One, this buffer zone would be transformed from a free-flowing cold-water wild trout fishery into a warm-water reservoir environment inhabited by warm-water reservoir fish – an environment hostile to the native trout. Second, the inundation would allow houseboats and the motorboats into the upper reaches of the McCloud River Canyon, resulting in high-impact bait-type fishing being practiced in large numbers in areas now accessible only by foot for low-impact fly fishing. A substantial portion of this buffer would no longer function as it does now, and one of the rare, highly productive, wild-trout fisheries in California would be transformed into yet another river stocked with hatchery fish.

SHASTA RESERVOIR ALREADY CAPTURES 2-YEARS WORTH OF RAINFALL

There is a useful story to help make this point. At Peet's Coffee in Mill Valley, several people in line each morning would order a "smarge" coffee. Nothing like that appears on the menu board. After a few mornings, I asked what this smarge coffee is, and was told, "It's a small coffee in a large cup." We would suggest that increasing the size of Shasta Reservoir does nothing in terms of changing the amount of annual rainfall available. It simply increases the size of the cup that is already big enough to hold what falls each year. According to one of our CRMP members involved in dam planning and operation, making Shasta bigger buys Californians very little in terms of increased reliable water availability.

It takes many many years for the reservoir to fill to a level beyond 2 years worth of rainfall, and then there are a host of new issues related to storing water for extended periods. These extended water storage issues include stagnation, temperature increases, and incredible amounts of water lost to evaporation (and never available to the watershed below the dam).

By contrast, water projects that are further down the valley (and have a much larger effective watershed), are much better suited for capturing and subsequently producing useful amounts of water annually. The Sites/Colusa Reservoir project has access to all of the untapped water that is available from the massive portion of the watershed "up river" from its location. It, in fact, could capture the occasionally surplus flows that escape from Shasta Reservoir, the flows that go untapped from politically difficult storage projects such as Cottonwood Creek and Battlecreek, and the annual flows from the myriad of other small creeks that exist in the north-of-the-Delta watershed. What Sites/Colusa lacks from the standpoints of mechanical efficiency (size of conveyance channels, pumping costs—see the following heading, however) it more than makes up in terms of sheer location efficiency.

Moreover, Sites/Colusa utilizes an area for its water storage that neither has an existing world-class fishery, nor outstandingly remarkable resource values. Contrast the description by CALFED of the Sites/Colusa landscape (below) with the depiction of the McCloud River on page 2 of this submittal that found the McCloud environment worthy of the rating "extraordinary."

CALFED Description of Sites/Colusa

Vegetation at the Sites/Colusa Reservoir Project **consists primarily of grasslands** (23,065 acres) comprised of wild oat, brome grass, and fescues. About 10 percent of the land

> is planted in barley (1,300 acres of agriculture). Some valley needlegrass grassland communities may be found in the area. The woodlands (1,345 acres) are comprised mostly of blue oaks and can be found throughout the area, particularly in the western upland areas. Riparian vegetation (220 acres) occurs along Antelope, Stone Corral, Funks, and Grapevine Creeks; however, these **areas have been severely degraded** as a result of overgrazing and extensive cultivation to the stream edges. The majority of the riparian vegetation found in this area consists of sycamore, willow, and cottonwood. Aquatic plant species found in the drainage areas include bulrush, cattail, rush and smartweed. Approximately 120 acres of disturbed area exists within the reservoir area.

We believe that CALFED's analysis of the benefits of developing useful amounts of water would be greatly enhanced by adding information for each storage project about the relationship between the amount of water annually available and the amount of water already captured annually. To go forward without this information is simply equivalent to ordering a smarge – a small coffee in a large cup.

ELECTRIC DEREGULATION HAS MADE PUMPED STORAGE MUCH MORE FEASIBLE TODAY THAN PREVIOUSLY

The use of pumped storage is just recently become much more feasible, in part because of the deregulation of electric power (used for pumping the water to the storage sites), and the various CALFED water storage projects should be reassessed.

According to a CRMP member familiar with state-of-the-industry economics regarding water storage and hydroelectric projects, deregulation of the electric industry has recently made many pumped storage projects feasible on the merits of hydroelectric generation alone, even without giving consideration to the benefits of water storage as well. For instance, the electric costs for pumping water from the Sacramento to a relatively low head storage location such as Site/Colusa would be extremely low because of extremely low electric costs during the winter, especially at night. Costs would be less than 1 cent per kilowatt-hour. Since water would then be released from the reservoir back into the river during the summertime, the value of the electricity regenerated would be orders of magnitude higher. California is a summer-peaking electric market (in part due to air conditioning) and electricity during the summer is regarded as a precious commodity.

In addition, reservoir economics tend to be much more feasible than on-stream storage because:

(1) the construction occurs outside of an existing river environment and utilizes primarily earthmoving equipment,

(2) the locations can utilize geographic features such as existing natural basins with a minimum of supplementation,

(3) supplemental dams can be of conventional earthen dam technology, and

(4) there are few multi-use issues that arise (and then of a greatly reduced intensity), such as managing a on-stream reservoir for fish maintenance, recreational boating use, and flood control.

Accordingly, projects such as the Sites/Colusa Reservoir Project, utilizing off-stream pumped storage should be reassessed utilizing the new economics now present in the deregulating electric industry. In the next draft EIS/EIR, please answer how deregulation of the electric industry has affected the economics and feasibility of the pumped storage projects identified by CALFED as potential storage options, as well as a review of other pumped storage opportunities that may now have become feasible projects.

HOW DOES SHASTA FARE BASED ON CALFED'S GUIDING PRINCIPLES?

As you know, CALFED developed several guiding principles to assist it in selecting solutions to California's water problems.

Two important principles would be grossly violated through by of the Shasta Alternative.

Have No Significant Redirected Impacts. "Solutions will not solve problems ... by redirecting significant negative impacts, when viewed in their entirety, ... to other regions of California."

We understand that in implementing this principle there is necessarily a balancing of impacts. However, the tradeoffs here involve such a gross violation of this principle:

At best a marginal benefit would accrue to the already degraded Delta system while, in exchange, there would be a complete destruction and loss of resource values in the absolutely pristine McCloud River environment. It is equivalent to transplanting vital organs from a perfectly healthy child (the McCloud), at a risk to the child's life, for insertion in an aging degraded patient (the Delta) whose body has not been taken care of and whose prospects for full recovery are nil. It wouldn't be done with humans, and for the same reason, it shouldn't be done with the environment.

Be Implementable. "Solutions will have broad public acceptance and legal feasibility, and will be timely and relatively simple to implement compared with other alternatives."

Californians today do not believe that anyone, including the state, should be able to completely consume natural resources, resulting in their total obliteration, or to destroy archeological sites sacred to the few remaining Native Americans and important to us all.

The California Legislature believes that it should be able to evaluate and determine when natural resources are outstandingly remarkable enough to warrant granting special protection from the obliterating effects of water projects. It makes no sense to put protective legislation on the books, only to later repeal it when a water project is proposed. The declarations of an elected legislature are a key indicator of the level of public acceptance.

The Shasta County Board of Supervisors strenuously opposes the Shasta Alternative.

In summary, by every measure of public acceptance, the individual members of the public, the federal government as represented through the CRMP, the local county government, and the elected members of the state legislature, the level of public acceptance by which CALFED agrees it should be guided is, in fact, a high level of public opposition to the Shasta Alternative.

From the standpoint of legal feasibility, the project would violate a law which is unambiguously there solely to protect the McCloud. The Shasta Alternative would also violate the contractual provisions of the McCloud CRMP, as well as violate the intent of the National and State environmental protection laws, as well as violate the intent of the nation's wild and scenic protection laws. Again, by every measure of legal feasibility, the Shasta Alternative would be, in fact, a violation of the law.

Please let us know how you plan to address the conflict between these CALFED guiding principles and the level of opposition and of legal infeasibility.

CONCLUSION

CALFED has an unenviable problem to solve. How to serve the public good relative to water. The real answer involves not satiating an insatiable appetite for water, but rather absolutely insisting upon implementation of tough water conservation controls that truly underscore just how important water is in this state. The fact that many users in the Central Valley have water connections with no meters is absolutely unconscionable and is just one example of how far public attitudes have to change. This submittal relates the potentially horrific costs to the environment from one single water project. Before CALFED can go forward in good conscience, it needs to pause and first insist upon specification of tough water conservation policies and goals, and actually achievement of measurable objectives. In this regard, CALFED is in the enviable position of being the first powerful water-czar type agency with the means and ability to pull off a lasting change in public attitudes toward water in the state of California.

After measurable conservation results are achieved, which without question will take several years to accomplish, CALFED should come back to assess the need for more water. While this seems like forever in terms of present day politics, it is dwarfed by the comparative importance of obliterating ageless features of the physical natural environment, the eons of time taken by nature to develop a wild trout fishery, the thousands of years spent by Native Americans developing human culture, and a century of time exemplifying how architecture of early California developed and is shown today in important historic structures.

This submittal highlights the importance and commitment that the state legislature and many important well-respected organizations and agencies demonstrate toward protecting the McCloud. We have tried to examine the project closely and highlight the impacts and effects with a goal of rationally clarifying the potential of a colossal mistake being made through the continued pursuit of an enlargement of Shasta Reservoir. We believe this document succeeds.

After considering the impacts of the two previous water projects on the McCloud (Shasta Dam and McCloud Diversion Dam), and the potential for California's growth to continue to chip away at the remaining pristine and outstandingly remarkable resources of California's McCloud River, the legislature declared, "Enough!" The McCloud River CRMP members are similarly and unanimously committed to protecting the McCloud. The members have connections with the McCloud spanning to the beginning of this century, and, in essence, have a lasting love for the natural beauty of the McCloud. We remain committed to ensuring that mistakes not be made involving the McCloud and that the protections remain intact.

This submittal has also explored some of the aspects of alternatives to enlargement of Shasta Reservoir, such as pumped off-stream storage options further down the watershed, and the comparative benefits of those alternatives in terms of environmental costs and efficiencies in accomplishing their purpose, storing and supplying reliable amounts of water. The public good, especially today in California, is not best served by reverting to the favored methods of an earlier era. Californians expect more creative and responsible solutions, and are willing to pay for good solutions. The alternatives exist. Use them, please.

Respectfully submitted,

McCloud River Coordinated Resource
Management Group, Inc.

By _____
Leighton J. Hills, Chairman

by and on behalf of the McCloud River CRMP
and each of its signatories

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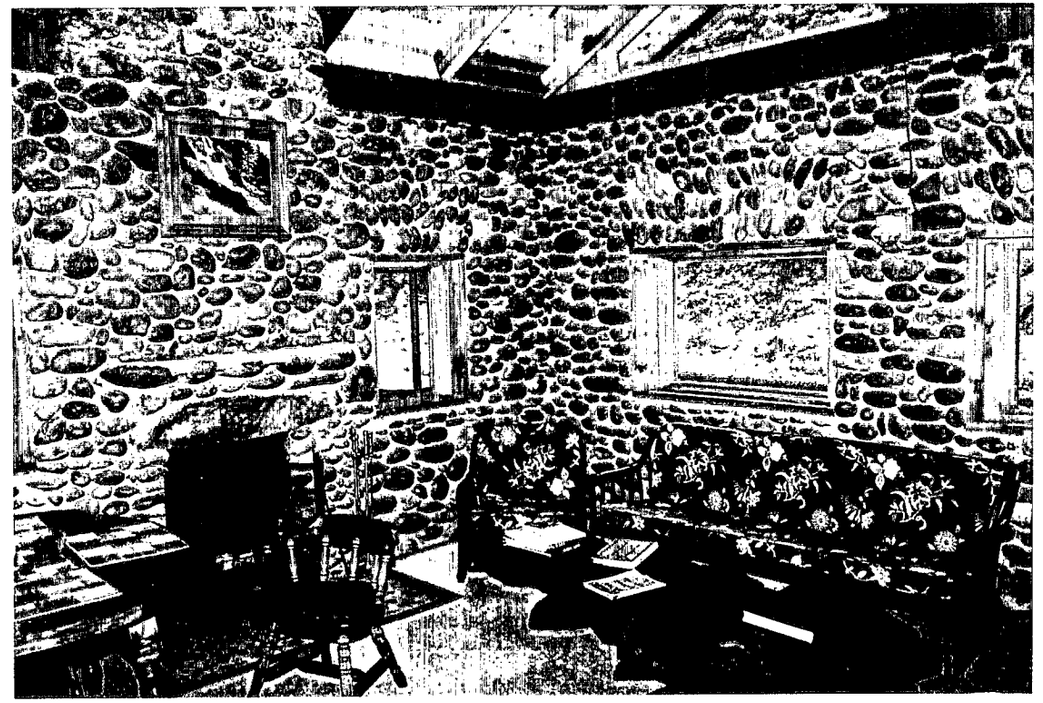
Mt. Shasta

McCloud River

C—014637

C-014637

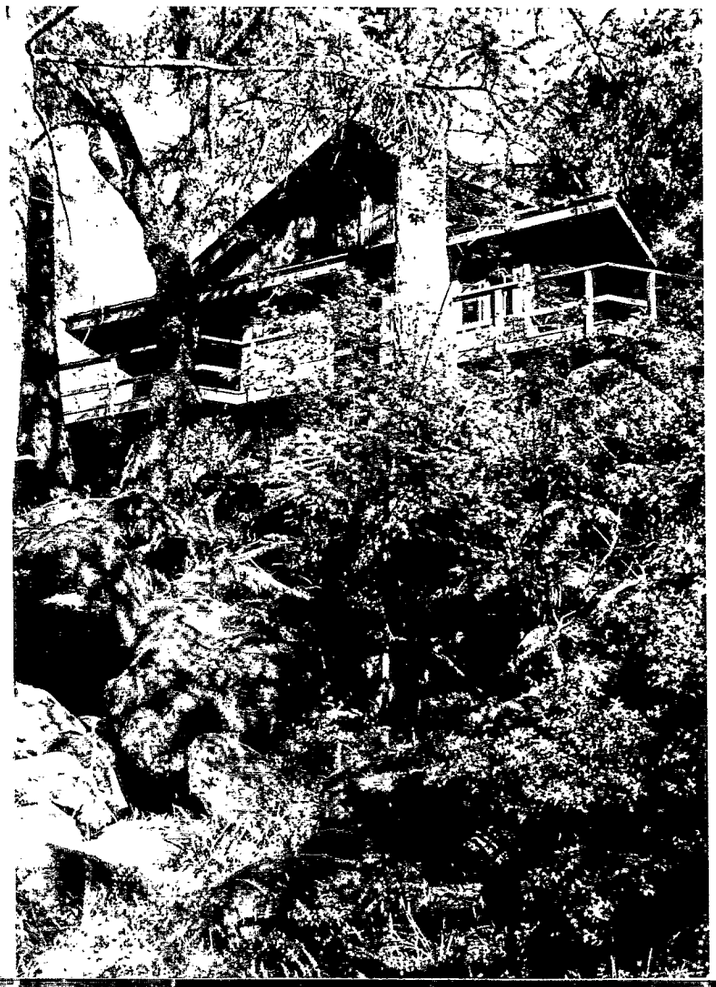
Club House
(Sleeps 10)



Rock House
(Sleeps 4)

C-014638

C—014638



Way Station
(Sleeps 6)

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2

Wild and Scenic Rivers Chapter, CA Public Resources Code

§ 5093.542. McCloud River; legislative findings and declarations

The Legislature finds and declares that the ***McCloud River possesses extraordinary resources*** in that it supports one of the finest wild trout fisheries in the state. Portions of the river have been appropriately designated by the Fish and Game Commission, pursuant to Chapter 7.2 (commencing with Section 1725) of Division 2 of the Fish and Game Code, as wild trout waters, with restrictions on the taking, or method of taking, of fish. The Legislature has determined, based upon a review of comprehensive technical data evaluating resources and potential beneficial uses, that potential beneficial uses must be balanced, in order to achieve protection of the unique fishery resources of the McCloud River, as follows:

(a) The continued management of river resources in their existing natural condition represents the best way to protect the unique fishery of the McCloud River. ***The Legislature further finds and declares that maintaining the McCloud River in its free-flowing condition to protect its fishery is the highest and most beneficial use of the waters*** of the McCloud River within the segments designated in subdivision (b), and is a reasonable use of water within the meaning of Section 2 of Article X of the California Constitution.

(b) ***No dam, reservoir, diversion, or other water impoundment facility shall be constructed on the McCloud River*** from Algoma to the confluence with Huckleberry Creek, and 0.25 mile downstream from the McCloud Dam to the McCloud Bridge; nor shall any such facility be constructed on Squaw Valley Creek from the confluence with Cabin Creek to the Confluence with the McCloud River.

(c) Except for participation by the Department of Water Resources in studies involving the <u>technical</u> and <u>economic</u> feasibility [only] of enlargement of Shasta Dam, ***no department or agency of the state shall assist or cooperate*** with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government in the planning or construction of any dam, reservoir, diversion or other water impoundment facility ***that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery.***

(d) All state agencies exercising powers under any other provision of law with respect to the protection and restoration of fishery resources shall continue to exercise those powers in a manner to ***protect and enhance the fishery*** of those segments designated in subdivision (b). In carrying out this subdivision, any exercise of powers shall be consistent with § 5093.58.

(e) Nothing in this section shall prejudice, alter, affect in any way, or interfere with the construction, maintenance, repair, or operation by the Pacific Gas and Electric Company of the existing McCloud-Pit development (FERC 2106) under its license, or prevent Pacific Gas and Electric from constructing a hydroelectric generating facility by retrofitting the existing McCloud Dam if the operation of the facility does ***not alter the existing flow regime*** below the dam.

(Added by Stats. 1989, c. 215, § 2.) (emphasis added)

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McCloud River

Coordinated Resource Management Plan

("McCloud River CRMP")

Adopted July 23, 1991

MCCLOUD RIVER COORDINATED RESOURCE MANAGEMENT PLAN

CONTENTS

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PART 3 - Assessment of Existing Situation

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PART 5 - Plan Area Objectives and Allowable Practices

APPENDIX

C—014645

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PART 1

INTRODUCTION

C—014646

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Part 1

INTRODUCTION TO COORDINATED RESOURCE MANAGEMENT PLANNING IN MCCLOUD RIVER DRAINAGE

I. PURPOSE

The purpose of this Plan is to define the organizational structure and establish guidelines to coordinate management activities with principle landowners in the McCloud River Drainage area and public agencies that administer programs in that area.

II. COORDINATED PLANNING

Coordinated planning is a process designed to achieve compatabality between the uses being made of natural resources in a specified area, such as fisheries, watershed, wood products, and recreation. These resources are improved if necessary, where degraded, and perpetuated in a condition of high quality for future generations. This approach uses the best efforts and knowledge of everyone involved; private landowners and involved Federal, State, and local agencies. A coordinated resource management plan (CRMP) sets the framework for activity planning withing the CRMP boundary. All major uses of the area are considered and coordinated to avoid unacceptable and unnecessary conflicts. This plan is a coordinated resource management program administrated by the principal owners and managers of the resources addressed in the McCloud River Coordinated Resources Management Planning Area (hereafter "the CRMP area", See map, Appendix Item 1). It includes provisions for public input into the planning process.

It is essential that all members of the CRMP participate actively in the coordinated planning process. Where full-time agency and landowner participation does not or cannot take place, a review of the CRMP should be made with all landowners at intervals so that its goals and objectives may be reasonably assured of success and the results will be acceptable to all CRMP participants.

Each agency and group has its own program of activities for which priorities are established. Coordinated resource management and planning should be structured to dovetail with each agency's and landowner's activity schedule to the extent feasible. This requires reasonable flexability among the CRMP's participants in assigning priorities.

III. POLICY

The Memorandum of Understanding (M.O.U., See Part 2) establishes policy and general guidelines for coordinating planning, management, and educational activities for the McCloud River Drainage. Its signatories agree to cooperate to the fullest degree possible in fostering coordinated resource management planning on land within the CRMP area boundaries, recognizing that ownership patterns within the boundaries are complex.

All parties need not necessarily be involved in all planning decisions. It may be that for logical reasons, a particular project may involve only a small portion of the land within the CRMP boundaries. When this occurs, the signoratory parties who will cooperate on planning on such an area will vary depending upon the pattern of land ownership and administration within that area, the nature of the project, and the capacity of the project to affect lands within the CRMP boundaries outside the immediate project area. Other agencies and organizations will be involved as needed or appropriate, where required by and consistant with Federal, State, and local laws and ordinances.

IV. AUTHORITY

Authority for State and Federal agencies to participate in coordinated planning is contained in existing statutes or delegations of authority. Interagency coordinated resource management in California is defined in the Memorandum for Understanding for Coordinated Resource Management Planning in California signed by all agencies participating in this Plan.

V. PLAN AREA OBJECTIVES

The signatories of the M.O.U. agree that the mission of the CRMP is to coordinate various land management activities:

A. To improve management of resources while promoting cooperation between agencies, groups, and individuals responsible for resource management and land use planning and implementation within the CRMP area boundaries.

B. To implement resource management plans to achieve compatible resource uses based on sound ecological relationships for logical managment areas such as subwatersheds.

C. To allow a sustained flow of wood, fiber, recreation use, and other services and benefits from such lands while at the same time protecting and enhancing the area's natural environmental qualities and fully recognizing and protecting the rights of private participants in their property.

The M.O.U. outlines general goals of the the CRMP pertinent to these overall objectives. Part 5 of the Plan outlines more specific and measurable objectives. The Coordinating Group will develop follow-up schedules to monitor and evaluate implemented programs to measure the success of specific management practices. Recommendations by the Coordinating Group (discussed infra) will be developed to improve the coordinated program to meet these objectives or recommend changes in the targets associated with these objectives to assure that the CRMP remains functional.

V. ORGANIZATION

Representatives from all landowners, resource administering agencies, and other appropriate organizations described herein are invited to join the Coordinating Group (See Part 4). These representatives should have authority to make decisions for the agency or group they represent.

All representatives engaged in coordinated resource planning and management will present information about on-going and proposed resource and land use planning activities of local concern to the Coordinating Group.

The CRMP will not be amended without a unaminous vote of all signatories thereto.

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Part 2

MEMORANDUM OF UNDERSTANDING

C—014650

C-014650

MEMORANDUM OF UNDERSTANDING BETWEEN
AGENCIES AND INDIVIDUALS CONCERNED WITH
THE MCCLOUD RIVER DRAINAGE COORDINATED RESOURCE
MANAGEMENT PLANNING AREA

The signatories to this Memorandum recognize the need to coordinate land management activites between public agencies and private landowners, and to evaluate and discuss matters of mutual interest concerning the management and planning of resource activites in the McCloud CRMP Area.

WITNESSETH:

WHEREAS, The McCloud River CRMP Area, composed of privately owned lands and lands managed by the Forest Service of the United States Department of Agriculture, has been selected to be used for the planning and implementation of coordinated resource management activities:

WHEREAS, Several agencies, which do not have management or ownership responsibilites, have statutorily mandated program responsibilities within the McCloud River Area: and

WHEREAS, The private landowners and all agencies with statutorily mandated land management (or program) responsibilites recognize the value of a cooperative approach in the management of all natural resources in the McCloud River Area.

Now, therefore, we, the undersigned, for the McCloud River Coordinating Group, hereinafter called the Coordinating Group, establish the following principles, objectives, and goals:

1. Signatories may cooperate with one another in the performance of project work related to the McCloud River Area.

2. The Coordinating Group will be headed on a rotational basis by a member of the Coordinating Group. A representative of the Forest Service will chair the Coordinating Group for the first year of the CRMP, beginning on the effective date of the CRMP. Thereafter, the Chairmanship of the Coordinating Group shall rotate on an annual basis among the voting members of the Group according to an order mutually agreed upon. The Coordinating Group shall meet at least annually for the purpose of project evaluation and updating of plans.

3. The Coordinating Group shall, at its first meeting, establish its operating proceedures and policies, including but not limited to, such proceedures and policies as the frequency of meetings other than the annual meeting, election of officers, formation of committees, and the ordinary manner of conducting business.

4. Additional members are invited to join the Coordinating Group if they meet any of the following criteria:

   a. They own or manage land in the McCloud River Area.

b. They have statutory responsibility for governmental programs that directly affect the McCloud River Area.

The mission of the Coordinating Group is to coordinate, between agencies and landowner participants, the various land management activities in such a way so as to achieve the following goals:

1. To maintain respect for the property rights of the participants.

2. To enhance and improve habitat for wildlife and fish by coordination with other resources and by specific habitat improvement projects.

3. To improve water quality for fisheries and other beneficial uses.

4. To improve and coordinate recreation resource opportunities and interpretation.

5. To maintain soil resources for beneficial uses.

6. To develop the timber resource to its reasonable attainable potential in harmony with other resources.

THEREFORE, It is mutually agreed that:

1. All parties will adopt and manage their lands according to the objectives and land management practices identified in Part 5.

2. Nothing herein shall be construed as obligating any signatory agency or individual to expend in any contract or other obligation for the future payment of money in excess of appropriations by law and administratively allocated for this work.

3. No member of, or Delegate to, Congress shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

4. No governmental agency which is a party hereto shall exercise the power of eminent domain over any private property within the CRMP boundaries. This provision shall not be construed to prohibit or discourage said agencies from entering into consensual agreements with private parties for the sale, lease, or other transfer of property, or for consensual exchanges of land by and among said agencies and private parties.

5. The private parties hereto may perform a habitat study and resource survey of the private lands within the CRMP boundaries for the purposes of enhancing the knowledge base necessary to thorough planning. Upon completion of said study, if undertaken, the data obtained shall be provided to the United States Forest Service for inclusion in its computer data base, which data base is currently limited to information regarding federal lands. If said study is undertaken, it shall be funded through the efforts of said parties and

the Coordinating Group shall take the needs of the study into account when planning for significant changes in use of the areas under study during the course of the study. The United States Forest Service shall make the data base reasonably available to CRMP participants.

6. Entry into this agreement by the United States Forest Service is a demonstration of its determination that the CRMP is the preferred alternative to designation of the McCloud River under the Wild and Scenic Rivers Act; provided, however, that the United States Forest Service reserves the right to pursue such designation if either:

   (a) The CRMP is terminated or significantly impaired by withdrawal of CRMP participants under the provisions stated below; or

   (b) The CRMP, after a period of good faith efforts at implementation, fails to protect the values which render the river suitable for such designation as measured by an objectively reasonable standard.

7. This agreement shall be effective upon execution by all parties hereto.

8. Any party may withdraw from this agreement by providing one year's written notice. Written notice may be given by mail or by any other means reasonable under the circumstances. Notice shall become effective when received by all parties or their representatives or seven days after transmitted, whichever is earlier.

9. The Record of Decision for the Shasta-Trinity Forest Land Management Plan will authorize participation in this CRMP by the Forest Service.

10. California-Trout, Inc. (Cal-Trout) shall be a signatory hereto and a member of the Coordinating Group as a voting, at-large member representing the following organizations: (1) the Audubon Society, (2) Friends of the River, (3) Citizens for Better Forestry, and (4) Sierra Club, Inc., Mother Lode Chapter, provided that at the time of signing by proposed CRMP members Cal-Trout evidences by written authorizations that it has the proxy to represent the above-named environmental organizations. Cal-Trout shall have one vote and one vote only based upon said written authorizations. If any of said four environmental organizations withdraws its written authorization for any reason, the remaining members of the Coordinating Group shall determine by vote whether Cal-Trout, Inc. shall continue to have voting power or the rights of a signatory. Notwithstanding the outcome of such determination, it shall continue to be eligible to be a non-voting, at-large member.

TERMINATIONS:
This agreement shall continue in force until terminated by mutual agreement of the parties. Termination shall become effective one year after the date of decision to terminate. Withdrawal from the agreement of any party pursuant to the provision for withdrawal above shall not terminate this agreement as to those parties remaining.

AMENDMENTS: This agreement shall not be amended without the unanimous consent of all signatories.

C—014653

C-014653

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the last date written below.

Signed this 23rd day of July, 1991.

Bollibokka Land Company
Title: Vice President

Crane Mills
Title: Vice President

Shasta-Trinity National Forest
Title: Forest Supervisor

McCloud Fly Fishing Club
Title: President

Pacific Gas and Electric
Title: Hydro Superintendent

Sierra Pacific Industries
Title: Director of Timberlands

State of California,
Department of Fish and Game
Title: Regional Manager

C-014654

The Hearst Corporation
By: _____

_____ for Steve McCormick
The Nature Conservancy
Title: VP

_____
California Trout, Inc.
Title: Region 1 Manager
By and on behalf of and Representative for the Audubon Society, Friends of the River, Citizens for Better Forestry, and the Sierra Club, Inc. (Mother Lode Chapter).

Part 3

ASSESSMENT OF EXISTING SITUATION

C—014656

C-014656

ASSESSMENT OF EXISTING SITUATION
FOR THE
MCCLOUD RIVER COORDINATED RESOURCE MANAGEMENT PLAN

The purpose of this Assessment is to provide a generalized description of the existing physical, biological, social, and political situation with respect to the McCloud River CRMP area; to identify ownerships, jurisductions, roles and responsibilities, and; to identify public issues, management concerns and opportunities for the McCloud River CRMP area.

I. PLAN AREA DESCRIPTION; PHYSICAL AND BIOLOGICAL

A. Location of Plan Area

The McCloud River CRMP area is divided into two segments: the lower McCloud and upper McCloud areas. The CRMP area is essentially that area visible from the river, that is, ridgetop to ridgetop, and the like area visible from Squaw Valley Creek.

Lower McCloud: This segment covers the McCloud River and Squaw Valley Creek drainages from Shasta Lake north to Lake McCloud on the river and to Cabin Creek on Squaw Valley Creek. The east boundary extends up to approximately one mile on the east side of the river. The west boundary extends up to four miles from the river and Squaw Valley Creek (see map).

Upper McCloud: This segment generally encompasses the inter-gorge area of the river from Lake McCloud up stream to Algoma Campground.

B. Climate

The McCloud River is situated in a Mediterranean climatic regime. It is typified by cool, moist winters and dry, warm summers. Average rainfall ranges from 80 inches per year in the canyon of the lower McCloud to 40 inches on the upper reaches of the river. Most of the precipitation falls as rain with occasional mid-winter snowfalls. Average summer temperatures cover a diurnal range of 45 to 90 deg. F. Average winter diurnal variation is 20 to 40 deg. F.

C. Soil and Geology

Lower McCloud: The Lower McCloud crosses a geologic province known as the eastern Paleozoic belt. It is characterized by a complex melange of metamorphic sedamentary and metamorphic volcanic rocks with frequent outcrops of the McCloud limestone. Soils are typically moderately deep (20-40") with very gravelly surface soils and very cobbly or shaley subsoils. Deep, non-stony soils are found on river terraces. Erosion hazards are moderate.

Upper McCloud: The Upper segment of the McCloud river follows the interface between the eastern Paleozic belt and the lava flows and outwash deposits

associated with Mt.Shasta. The south bank of the river abuts a sloping upland of metamorphic rock that is overlain by deposits of wind-laid volcanic ash. Typical soils are deep and non-stony with ashy surface textures. The north bank of the river is a level terrain of Shasta mudflows and lava flows. Typical soils range from shallow, stony soils on lava flows to deep, sandy deposits of mudflow landforms.

D. Hydrology

Lower McCloud: The eastern paleozoic belt is being uplifted by tectonic forces and consequently the drainage pattern is deeply incised with very steep canyons and sideslopes. Flows in the lower McCloud are regulated by the dam to maintain a constant water level for the fishery. When the tributary flows are high, releases at the dam are reduced. Fish habitat is maintained but flushing flows have been all but eliminated. The lower McCloud's main tributaries are Hawkins Creek, Squaw Valley Creek, and Clairborne Creek.

Upper McCloud: The upper McCloud arises from the uplands near Colby Meadow and meanders westward as a small stream with high seasonal flucuations in-flows. The upper reaches of the river is intermittent in some years. The upper McCloud is subject to flooding during winter flows due to the "flashy" or low lag time characteristic of the tributaries that flow off the uplands to the south. There is essentially no tributary flow from the north. The stream gradient is nearly level except for the falls and cascades that occur where the river enters its narrow gorge. Just downstream from the falls of the McCloud is Big Springs which approximately doubles the river's flow. A mile or so below Big Springs, Mud Creek enters the McCloud river and dumps its heavy load of glacial silt. This natural source of sediment has the largest effect on McCloud river water qualilty.

E. Vegetation

There are broad ranges of vegetation types in both areas, and especially in the lower river/Squaw Valley drainages where types vary from the riparian vegetation along the streams to the chinquapin brush fields on the south and west facing slopes. Live oak and black oak stands are found throughout the area. Commercial species of Douglas-fir, white fir, ponderosa pine, incense cedar, and sugar pine are found in virgin and managed stands throughout the area.

The upper river area, except for inner-gorge from Lower Falls to Lake McCloud, has been logged extensively. The riparian vegetation is much the same as the lower river except the upper river canyon is generally wider and the riparian zones more extensive and there are more meadows, especially above Upper Falls.

F. Wildlife and Fish

There is a variety of wildlife throughout these two areas including black bear, black tail and mule deer, bobcat, mountain lion, coyote, river otter, wolverine, grey squirrel; upland game including blue grouse, mountain quail, turkey, and bandtail pigeon; several species of waterfowl, including

wood duck, mergansers, widgeon, mallard and occasionally Canadian geese, and numerous species of birds of prey.

Fish species include rainbow, brook, and brown trout. Dolly Varden were once known to inhabit the river but none has been reported in several years. Redband trout could be present in some of the upper reaches of the upper river area.

II. ECOLOGICAL, ECONOMIC, SOCIAL, AND CULTURAL CONSIDERATIONS

A. Sensitive, Threatened, and Endangered Species

Unites States Forest Service surveys indicate that the northern spotted owl, goshawk, bald eagle, Shasta Salamander and wolverine inhabit some portions of the plan area. Information available to the Forest Service indicates that willow flycatcher exist in some portions of the upper river area and may exist in portions of the lower river as well.

B. Cultural Resources

Archaeological surveys have been conducted on the upper river from Lower Falls north through the planning area. Also, a portion of the lower McCloud from Ash Camp to Ah-Di-Na has been surveyed. Numerous pre-historic sites have been located and recorded. Most have to do with the McCloud River Wintun Tribe and their uses associated with the river and Squaw Valley Creek, and probably associated with the salmon and steelhead runs up these streams.

Also, there are historic sites relating to early Forest Service fire practices, and early private fishing and hunting of the McCloud River, Squaw Valley Creek and tributaries.

C. Visual Quality

Because of the inner-gorge nature of most of this area, it is not easly viewed from a distance, except from certain vantage points and from the air. Most of the scenic values must be enjoyed by people who use the area for hiking, fishing or using the streams. Long-term visual quality and visitor sensitivity must be considered with all planned activities for the area.

D. Wildlife

Wildlife objectives should provide for protection of meadows and riparian habitat and maintain a diverse habitat for the wildlife species that use this area. There may be opportunities for habitat enhancement projects for fisheries and waterfowl.

E. Water

The McCloud River and its tributaries contribute significantly as a water source to Shasta Lake and, ultimately, for agricultural purposes in the

Sacramento Valley. It is important that activities carried on in this CRMP area do not have significant adverse effects on water quantity or quality.

F. Range

There are no active range uses occurring inside the Lower McCloud portion of the CRMP area, and livestock use is probably incompatable with proposed uses inside the CRMP area. Livestock use appears to be inconsistant with the area's planning objectives. Livestock use has been a compatable use throughout the Upper McCloud portion of the CRMP area.

G. Vegetation

The major concern with vegetative management should be with the riparian zones along McCloud River and Squaw Valley Creek. In the upper river area, development should be designed to avoid adverse pubic impact on these sensitive zones. Timber and vegetation management activities within either upper or lower river areas should be planned and implemented with concern for the recreation, scenic, watershed, and wildlife values.

An introduced species (black locust) in the Ah-Di-Na/Nature Conservancy area is spreading throughout the immediate area and in the riparian areas downstream. The proliferation of this species is at the expense of the native species in the area.

H. Recreation

The general direction will be to emphasize high-density developed recreation in those public areas of the upper river area acquired from Champion International, and dispersed recreation with trail access on the lower river/Squaw Valley area. Development of public facilities on private lands will not be encouraged and the public agencies which are signatories hereto will not exercise the power of eminent domain to acquire such facilities, but may enter into consensual agreements to acquire land for such purposes.

I. Fuels Management

Objectives for fuels management should be to identify and burn by prescription those areas that need treatment for wildlife, recreation, watershed, and wildfire hazard reduction purposes.

III. PLAN AREA OWNERSHIPS, JURISDICTIONS, ROLES AND RESPONSIBILITIES

Coordinated resource planning offers a voice to all private landowners and involved public agencies in the planning and scheduling of management activities in the CRMP area. The value of a cooperative approach to the management of all natural resources in the McCloud River CRMP area is very high.

A. Public Agencies

1. USDA-Forest Service

The McCloud and Shasta Lake Ranger Districts, Shasta-Trinity National Forest, are responsible for the administration of about 33,288 acres within the CRMP Area.

Management direction on National Forest lands is presently guided by District Multiple Use Plans and the Forest Timber Management Plan and EIS. Both plans emphasize multiple use management. The CRMP is intended to be an integral part of the Land Management Plan for the Shasta-Trinity National Forest.

The Forest Service has responsibility for fire protection on National Forest Lands. A Mutual Aid Agreement with the California Department of Forestry and Fire Protection (CDF) gives the Forest Service protection responsibility for all private lands in the CRMP area. This pertains to wildland fires. The Forest Service is not responsible for structural fire suppression.

2. California Department of Fish and Game (DF&G)

This state agency is responsible for management of the fish and wildlife species in California. Issues that are likely to be of particular concern to DF&G within the CRMP area will be fishing regulations, wild trout and put-and-take fisheries, redband trout, Dolly Varden Trout, and the impacts of concentrated public use on these resources. Also of concern will be wildlife species such as deer, black bear, mountain lion, and the effects of land and resource management on any sensitive wildlife species in the CRMP area.

B. Private Landowners

Private landowners in the area include the Hearst Corporation, Nature Conservancy, McCloud River Fly Fishing Club, Bollibokka Land Co., Crane Mills, Sierra Pacific Industries, and Pacific Gas and Electric Company.

C. At-Large Members

The Coordinating Group shall include two "at-large" member seats for public interest organizations. One of the two at-large groups will be occupied by California-Trout, Inc. (Cal-Trout) as a representative of four environmental organizations: (1) the Audubon Society, (2) Friends of the River, (3) Citizens for Better Forestry, and (4) The Sierra Club, Inc., Mother Lode Chapter, upon the obtaining of written authorizations from each and all said groups pursuant to and subject to the provisions of the Memorandum of Understanding. This at-large seat will have voting power and the rights of a signatory for so long as Cal-Trout retains such authorization from all constituent groups. If any of said organizations withdraws its authorization for any reason, the remaining members of the Coordinating Group shall determine by vote whether Cal-Trout, Inc. shall continue to heave voting power or the rights of a signatory. Notwithstanding the outcome of such determination, it shall continue to be eligible to be a non-voting, at-large member.

Part 4

MEMBERSHIP AND FUNCTION
OF THE
COORDINATING GROUP

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COORDINATING GROUP

FOR

MCCLOUD RIVER COORDINATING RESOURCE MANAGEMENT PLAN

I. MEMBERS

A. Bollibokka Land Co.
B. Crane Mills
C. U.S.D.A. Forest Service
D. McCloud River Fly Fishing Club
E. Pacific Gas and Electric
F. Sierra Pacific Industries
G. State of California Department of Fish and Game
H. The Hearst Corporation
I. The Nature Conservancy
J. At-Large, Non-Voting Public Interest Member
K. At-Large, Voting Public Interest Member

Consistent with paragraph 4 of the Memorandum of Understanding, new members are invited to join the Coordinating Group if they meet the criteria set forth in paragraph 4.

One At-large Public Interest Member Seat (paragraph I.K. supra) will be occupied by California-Trout, Inc. (Cal-Trout) as a representative of the following organizations: (1) the Audubon Society, (2) Friends of the River, (3) Citizens for Better Forestry, and (4) Sierra Club, Inc., Mother Lode Chapter, upon the obtaining of the written authorization from each and all said groups pursuant to and subject to the provisions of the Memorandum of Understanding. If, at any time and for any reason, Cal-Trout ceases to act as representative for said groups, the remaining members of the Coordinating Group shall determine by vote whether Cal-Trout, Inc. shall continue to have voting power or the rights of a signatory. Notwithstanding the outcome of such determination, it shall continue to be eligible to be a non-voting, at-large member.

II. FUNCTION OF THE COORDINATING GROUP

A. Establish guidelines and/or management direction that shapes Coordinated Resource Program.

B. Evaluate projects and monitor progress and accomplishments and assure that they are consistent with the objectives and allowable practices identified in part 5.

C. Make decisions and modify the CRMP as necessary.

D. Provide a focal point for consideration of public concerns.

E. Recognize and seize opportunities to guide coordinated planning in the Plan area.

F. Establish procedures for operation of the Coordinating Group.

Part 5

PLAN AREA OBJECTIVES

AND

ALLOWABLE PRACTICES

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Part 5

PLAN AREA OBJECTIVES

The signatories to this plan recognize that the McCloud River Basin is one of those few remaining areas within the State of California with outstanding natural resource values. Fisheries, geology, scenery, cultural, and historic values are all considered outstandingly remarkable. In recognition of these values and the fact that the McCloud River at certain locations may be eligible for inclusion in the National Wild and Scenic Rivers System, the signatories hereto have joined together to effectuate protection of the river's pristine resources by utilizing a mechanism to protect its resources which is, in their opinion, more effective than Wild and Scenic designation, namely the Coordinated Resource Management Plan.

The intent of the CRMP is to coordinate large-scale resource planning. The Coordinating Group evaluates projects to be implemented according to the consensus of group members on long range goals, principles, and strategies. Agencies and private landowners cooperate in individual project planning and implementation.

The main objective of this process is to assure that projects are compatible with the objectives and allowable practices identified in this CRMP.

Consistant with the Memorandum of Understanding, this CRMP can be used as an acceptable alternative to Wild and Scenic River Designation for the McCloud River.

I. Objectives

The primary objective of the CRMP is to preserve the pristine quality of the river resources described herein.

The CRMP area includes significant recreation and visual resource values. Objectives for management are:

(a) maintenance of a predominately natural appearing area;

(b) provision for public use consistant with wildlife and watershed protection and the rights of private landowners.

The CRMP area includes significant vegetation resources. The objective for mangement is:

(a) vegetation use consistent with watershed, viewshed and fisheries values protection.

Portions of the McCloud River have been designated by the Department of Fish and Game as wild trout waters under the California Wild Trout Program. The general fisheries management objectives of the Wild Trout Program are:

A. Maintenance of wild trout populations at levels necessary to provide satisfactory recreational angling opportunities.

B. Maintenance and enhancement, where appropriate, of the habitat required for optimum wild trout production.

C. Preservation of the natural character of the streamside environment.

These objectives are appropriate for land management practices adopted pursuant to this management plan since they relate to the central issues of the McCloud watershed, including recreation management, timber management, wildlife management, watershed protection, and fisheries management.

II. Management Practices

A. Logging and Road Construction

Minimize new road construction and locate new roads away from stream courses by designing mid-ridge and ridgeline roads. Locate roads across stream courses only in areas where water quality and fisheries impacts will be minimized. Avoid significant wetlands and wet meadoes wherever possible.

Except for necessary road crossings as noted above, no logging or road construction will take place within riparian areas. These riparian management zones are defined as 50/100 feet from ephemeral and key intermittent streams, significant wet meadows, and marshes and 100/250 feet from perennial streams, lakes, and reservoirs depending on slope and stability.

In the remainder of the CRMP area, timber management activities will not be more intensive than prescription VI (Wildlife Management) of the proposed Shasta-Trinity Forest Plan. All parties to this plan will be consulted during the planning phases of both private and public timber sales.

B. McCloud-Pit Dam Operation

The operation of the McCloud-Pit Dam has direct influence on the McCloud River Basin. Any changes in the operation of the dam will be a subject for study by the CRMP coordinating group.

C. Recreation Development

Sanitation and support facilities may be developed between reservoir and Ah-Di-Na Campground.

Development of the upper McCloud will be according to the Upper McCloud River Management Plan.

On the lower river, existing, developed and dispersed recreation sites on public lands (Ah-Di-Na, Star City Creek and Ash Camp) will be maintained. Development of public use facilities on private lands will not be encouraged.

D. Road and Trail Access

Public access within the lower McCloud area will be primarily by trail. Forest Service will develop an overall trail system for the area. Current, existing, and planned trails on National Forest lands will be incorporated, including the Pacific Crest Trail, Tom Dow Trail, Tom Neal Trail, and the Squaw Valley Creek Trail. The Tom Dow Trail will be rerouted so that it does not cross privately owned property.

Roads necessary for administrative use, and those acceptable under logging practices described earlier, will be allowed. Initially, additional road access for public use will not be made available.

The Forest Service will analyze the need for trailheads and road access within the area and will first present any proposals for additional public access to all involved landowners. Protection of resource values and respect for private property rights will be prime considerations when proposing any additional motorized access to the area.

E. River Use

The Forest Service may manage use of the river through a permit system. The United States Forest Service will determine whether commercial or noncommercial white water boating is an acceptable public use. The determination will be based upon appropriate studies to establish the suitability or nonsuitability of the McCloud River for such use. This provision shall not be construed to require the Service to conduct such studies in the absence of a specific application to permit such use.

Public use of hiking trails, recreational camping, and fishing will be encouraged consistent with types, levels and locations of use to be determined by the Coordinating Group consistent with the principles herein and stated in the Memorandum of Understanding.

F. Fisheries

The Coordinating Group shall encourage reduced legal fishing limits on streams through public and private lands.

G. Wildlife Habitat Management

Management activities within identified Threatened, Endangered, or Sensitive species habitat will emphasize enhancement of habitat for target species. Consumptive harvests of game consistent with California Department of Fish and Game population objectives will be allowed. Nongame species habitat will be emphasized throughout the area with special concern in riparian zones.

H. Wildfire and Fuels Management

Wildfires will continue to be suppressed at a level consistent with protecting high value resources found throughout the area. Prescribed fire

will be an acceptable tool to reduce wildfire hazard and improve wildlife habitat where protection of aesthetic values is assured.

Maintenance of existing helispots, trails, and roads will be encouraged to provide access for wildfire suppression.

I. Soil and Watershed Management

All management activities will recognize potential effects upon soil and water resources and attempt to minimize any significant adverse impact. Watersheds will be monitored on the subdrainage unit with any activity designed to remain below the "watershed threashold of concern".

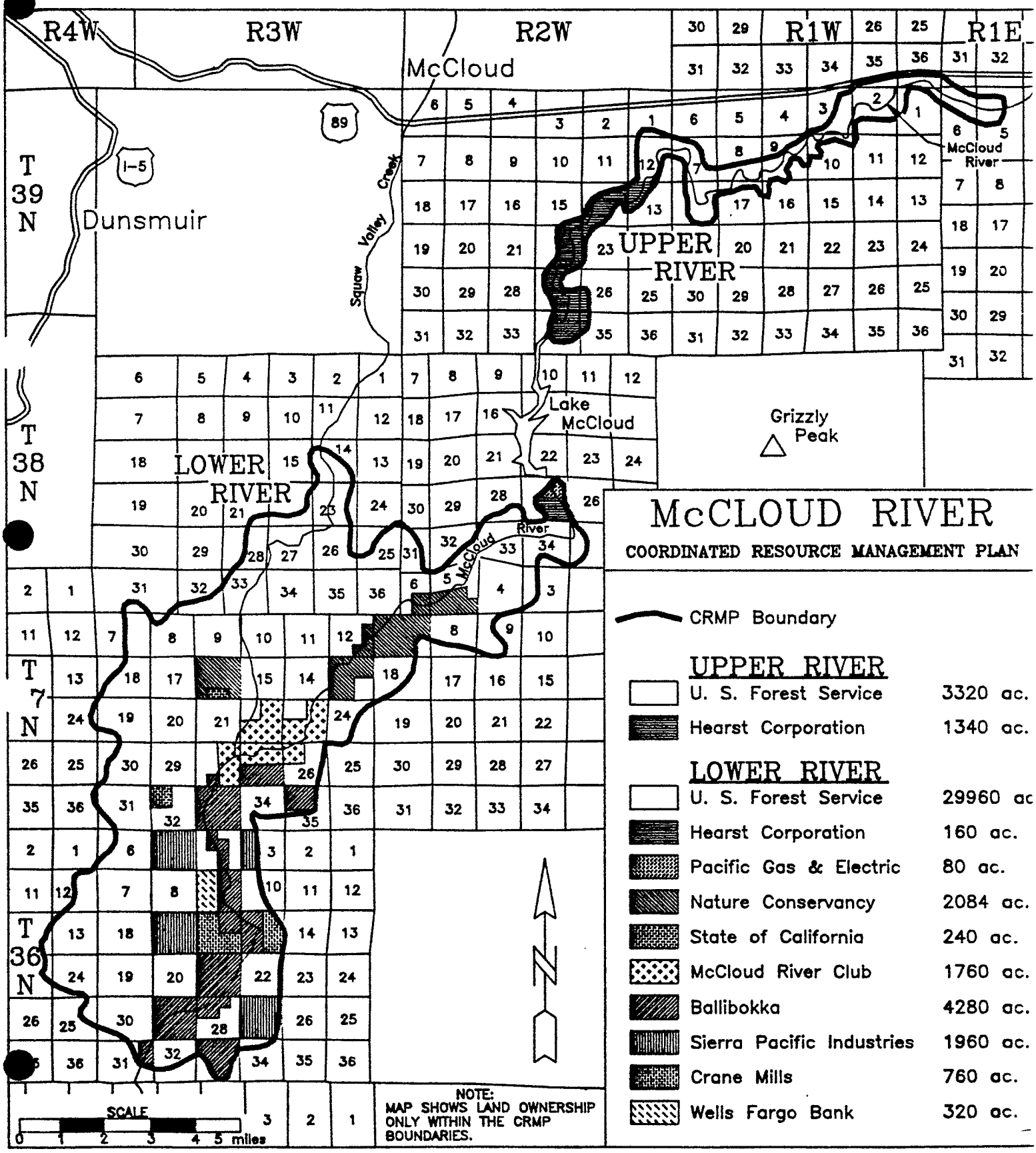
J. Range management

Domestic livestock use of commercial dimensions will not be permitted throughout the Lower McCloud area. Use may be permitted within the Upper McCloud area but utilization will be managed to ensure consistency with wildlife forage needs. Range habitat and structural improvements will not be encouraged except where consistency with resource values can be ensured.

K. Private Management

No private management activity of an landowner will be required to be undertaken unless specifically set forth in the CRMP or subsequently agreed upon by a vote of the members as set forth herein.

No private management activity of a landowner consistent with the principles herein and in the Memorandum of Understanding will be prohibited by the CRMP unless such prohibition is specifically set forth in the agreement or is subsequently agreed to by a vote of the members as set forth herein.


R4W
R3W
R2W
R1W
R1E
McCloud
Dunsmuir
I-5
89
T 39 N
T 38 N
T 37 N
T 36 N
Squaw Valley Creek
UPPER RIVER
LOWER RIVER
Lake McCloud
McCloud River
Grizzly Peak
McCLOUD RIVER
COORDINATED RESOURCE MANAGEMENT PLAN
CRMP Boundary
UPPER RIVER
U. S. Forest Service 3320 ac.
Hearst Corporation 1340 ac.
LOWER RIVER
U. S. Forest Service 29960 ac
Hearst Corporation 160 ac.
Pacific Gas & Electric 80 ac.
Nature Conservancy 2084 ac.
State of California 240 ac.
McCloud River Club 1760 ac.
Ballibokka 4280 ac.
Sierra Pacific Industries 1960 ac.
Crane Mills 760 ac.
Wells Fargo Bank 320 ac.
SCALE
0 1 2 3 4 5 miles
NOTE:
MAP SHOWS LAND OWNERSHIP ONLY WITHIN THE CRMP BOUNDARIES.

MEMORANDUM OF UNDERSTANDING

STATEMENT OF INTENT
REGARDING THE McCLOUD RIVER
COORDINATED RESOURCE MANAGEMENT PLAN

PURPOSE

This Statement of Intent identifies the agreed upon responsibilities of the signatories to pursue and complete a Coordinated Resource Management Plan (CRMP). The purpose of the CRMP is to establish guidelines for management activites in both federal and private lands within the McCloud River drainage. Any CRMP which is ultimately accepted pursuant to this agreement is intended as an acceptable option to Wild and Scenic designation for the McCloud River. The CRMP to be devleoped pursuant to this agreement is not intended by the signatories hereto to be a Management Plan for implementation of any Wild and Scenic legislation. Subject lands are shown on the map attached hereto and labeled Exhibit A. The United States, through the USDA, Forest Service, hereinafter known as "Forest Service"; Bollibokka Land Company; Crane Mills; McCloud River Co-Tenants; Pacific Gas and Electric Company; Sierra Pacific Industries; State of California, Department of Fish and Game; The Hearst Corporation; and The Nature Conservancy, agree to expeditious action to prepare the CRMP. The private parties listed above will hereinafter be known as "Landowners".

AGREEMENT:

A. Landowners and the Forest Service will jointly prepare a CRMP in accordance with the purpose as set forth above. Other groups or agencies, not listed as signatories of this agreement, may be consulted in the preparation of this document, and shall be listed as contributors in the CRMP.

B. Forest Service will participate in the CRMP preparation and, prepare all necessary documents required by law to enable the Forest Service to participate in the CRMP. The Forest Service will comply with the NEPA process prior to the adoption of CRMP management direction. Conformance with NEPA may be satisfied by:

   1) Incorporation of CRMP management direction into the Final Land Management Plan; or

   2) Development of separate decision documents that are compatible with the Final Land Management Plan.

PRINCIPALS

For the purpose of expeditious completion of this CRMP, the principal representatives of the signatories are:

Bollibokka Land Company
Leighton Hills, Vice President
16 Miller Avenue, Suite 202
Mill Valley, CA 94941

Crane Mills
Robert Crane
P.O. Box 318
Corning, CA 96021

Forest Service
Robert R. Tyrrel, Forest Supervisor
Shasta-Trinity National Forests
2400 Washington Avenue
Redding, CA 96001

McCloud River Co-Tenants
Walter H. Leimert, Jr.
606 North Larchmont Blvd., Suite 302
Los Angeles, CA 90004-1395

Pacific Gas and Electric
John Sandhofner, Hydro-Supervisor
Star Route 1,b Ox 50
Burney, CA 96013

Sierra Pacific Industries
Thomas Nelson
P.O. Box 496014
Redding, CA 96049-6014

State of California
Benky Curtis, Regional Manager
Region One
6012 Locust Street
Redding, CA 96001

The Hearst Corporation
Amory J. Cooke, Vice President
The Hearst Corporation
Sunical Division
200 Hearst Building
5 Third Street
San Francisco, CA 94103

The Nature Conservancy
George Stroud
P.O. Box 409
McCloud, CA 96057

TERMINATIONS:

This agreement shall continue in force until terminated by mutual agreement or by 90 days written notice to the other signatories.

Signed this 26 day of September, 1990.

Thomas E. Lee Kano (for)
Bollibokka Land Company
Title: Attorney

Crane Mills
Title:

Robert R Tyndall
Forest Service
Title: Forest Supervisor

Thomas E. Lee Kano (for)
McCloud River Co-Tenants
Title:

R J Sandhofner
Pacific Gas and Electric
Title: Hydro Superintendent

Thomas C. Nelson
Sierra Pacific Industries
Title: Redding District Mgr.

Becky Curtis
~~State of California~~
Department of Fish and Game
Title: Regional Manager

The Hearst Corporation
Title: VICE-PRESIDENT

The Nature Conservancy
Title:

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4

EXECUTIVE SUMMARY

Introduction

The California Wild and Scenic Rivers Act (Act) (Public Resources Code Sec. 5093.50 et seq.) was passed in 1972 to preserve designated rivers possessing extraordinary scenic, recreational, fishery, or wildlife values. The Act incorporates major portions of the Smith, Klamath, Trinity, American, and Eel River drainages into the State Wild and Scenic Rivers System (System). No other river segments have been included within the System since the original Act was passed.

In September 1986, Assembly Bill 3101 (Statutes 1986, Chapter 894) amended the Act by requiring the Secretary of The Resources Agency (Secretary) to study portions of the McCloud, West Walker, and East Fork Carson Rivers for potential inclusion in the System. The Secretary is required to complete these studies and submit reports with recommendations on these rivers to the Governor and Legislature by January 1, 1989. The objective of this report is to present the necessary information to determine if nominated segments of the McCloud River are suitable to be included in the System.

Study Area

Draining approximately 670 square miles of land in Siskiyou and Shasta Counties, the McCloud River flows southwesterly near McCloud, California, at the southern flank of Mt. Shasta. The McCloud River flows from an upland basin of gentle topography through chaparral and scrub habitats, rocky canyons, and mixed coniferous forests. Terminating at Shasta Lake, the McCloud River also is impounded upstream of Shasta Lake by McCloud Reservoir. Candidate segments on the McCloud River begin at Algoma and proceed to McCloud Reservoir (upper McCloud River) and extend from McCloud Dam to Shasta Lake (lower McCloud River). The upper and lower segments are 20 and 23 miles long, respectively. The 10-mile candidate segment on Squaw Valley Creek begins at the northern boundary of Section 14 (T38N, R3W) and ends at the confluence with the McCloud River. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments.

Resource Values

The following resource values of the McCloud River and Squaw Valley Creek were evaluated:

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- o Climate and air quality
- o Geology, soils, and minerals
- o Water quantity and quality
- o Botanical
- ● Wildlife
- ● Fishery
- ● Recreational
- ● Scenic
- o Cultural and historic
- o Scientific, ecological, and educational

The primary objective of these evaluations was to determine whether each resource under study represented an "extraordinary" value. A river segment typically possesses at least one extraordinary value to be eligible for inclusion in the System (Public Resources Code Sec. 5093.50). A river also may possess a combination of resource values which together constitute extraordinary values even though none of the individual resource values are themselves extraordinary. Resource values are considered in the context of this evaluation to be extraordinary if they were, individually or collectively, unusual or unique in the State of California (State) and provided benefit and enjoyment to the people of the State.

Seven resources--geologic; water; fishery; recreational; scenic; cultural; and scientific, ecological, and educational--are considered to be extraordinary in at least part of the nominated river segments on the McCloud River. The upper McCloud River from Algoma to Upper Falls, a distance of approximately 10 miles, does not contain extraordinary resource values and therefore is ineligible for inclusion in the System. The lower 10 miles of the upper McCloud River, as well as the entire 23 miles of the lower McCloud River, maintains extraordinary resource values and are eligible for inclusion in the System. Short reaches below McCloud Reservoir and upstream of McCloud Reservoir and Shasta Lake are ineligible because of resource degradation caused by water diversion or reservoir fluctuations. Scenic and cultural resources are extraordinary in the lower 9.5 miles of the 10-mile nominated segment on Squaw Valley Creek.

The upper and lower McCloud River contain extraordinary water resources. Active volcanism and recent glaciations create a complex and unique hydrologic system replete with waterfalls and springs. Glacial silt gives the river a beautiful turquoise color typical of rivers draining glacial valleys in British Columbia and Alaska. Three waterfalls are located within a 1.5-mile section of the upper McCloud River. Big Springs, emerging from cliffs and cascading into the McCloud River, contributes more than half of the McCloud River flows and represents a unique geologic and hydrologic feature. McCloud River water resources determine the values of other resources in the area.

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The McCloud River supports one of the premiere wild trout fisheries in California. Catch rates are high and a significant portion of the catch has consisted of trophy-sized brown and rainbow trout. Eleven miles of the lower McCloud River are designated as Wild Trout Waters to protect the exceptional fishery resources. Much of the lower McCloud River represents classic "pocket water," and the native rainbow trout are highly colorful and vigorous fish whose fighting qualities have earned the lower McCloud River its reputation as one of the top wild trout fisheries in California. While not as well known, the lower 10 miles of the upper McCloud River also maintains an extraordinary wild trout fishery.

The McCloud River is most well known for its semipristine condition and trophy trout fishery. The quality of the angling experience alone results in an extraordinary rating for recreational resources throughout most of the McCloud River study segments. The river offers many diverse angling opportunities. Anglers can gain relatively easy vehicular access at the three waterfalls on the upper McCloud River and fish for hatchery trout, fish for trophy-sized wild trout downstream at several other easily accessible locations, or hike into secluded fishing spots and fish under strictly catch-and-release regulations.

Rafting in the upper McCloud River is restricted to a narrow time of suitable flows each year, but the trip is extraordinary because of the scenic qualities of the river corridor, which are unsurpassed in California. Hiking, backpacking, camping, kayaking, nature observation, and ecological values also contribute to the extraordinary recreational experience in the lower McCloud River and lower 10 miles of the upper McCloud River.

Vivid views of large, pristine river valleys with beautiful white water and deep pools are rare in California but extensive along the McCloud River. The upper McCloud River drains a broad, flat plateau covered by coniferous forest with Mt. Shasta as the dominant feature in the landscape. Natural scenic focal points include Big Springs and the trio of waterfalls. Wyntoon, a private riverfront development along the upper McCloud River, provides an element of enchantment to the beautiful river setting on the upper McCloud River. Seven large buildings are printed with life-size murals of characters from Grimm's fairy tales. One structure is referred to as the "castle." Several buildings overhang the river, and beautiful landscaped courtyards are visible from the river. These images are striking and present a fairy tale-like picture of grandeur. The lower McCloud River watershed is more mountainous, and the region is characterized by large, steep, v-shaped valleys covered with coniferous and oak forests. Squaw Valley Creek, located in a steep-sided valley, flows under a dense forest canopy through bedrock outcroppings. Visual resources of most of the McCloud River and Squaw Valley Creek are extraordinary.

Cultural resources are extraordinary in the study area. The McCloud River watershed was a major center of Wintu occupation and 45 archaeological sites have been recorded along the McCloud River. Additional sites are located along Squaw Valley Creek. Two sites are eligible for inclusion in the National Register, and other unidentified Natural Register eligible sites are likely to occur along the river. Important historical sites are related to the McCloud lumber and railroad companies, which have attracted the interest of railroad and history buffs.

The lower McCloud River provides extraordinary scientific, ecological, and educational resources primarily because of the pristine and diverse natural resources and management priorities of The Nature Conservancy at the McCloud River Preserve. Geologic resources are valuable for education and research because of the high diversity of rock types and geologic formations. The great diversity of plant species and communities, including an estimated 80 species of lichens, offers numerous opportunities for floristic and vegetation research. The McCloud River canyon maintains pristine, low-elevation habitat for diverse fish and wildlife populations. Cultural resources along the McCloud River are extensive and tend to be well preserved because of the low level of watershed development. Consequently, the diverse array of resource values comprise a significant and extraordinary resource value.

The educational opportunities of the lower McCloud River are embodied in the research activities at the McCloud River Preserve. Graduate students, interns, and researchers from many universities have studied the McCloud River Preserve and surrounding areas. The college student internship program provides needed research for the Preserve as well as valuable field experience for the participants. Interpretive trails and guides to the flora, fauna, and other natural resources of the area are available to the casual visitor.

Land and Water Uses

Private ownership dominates the river corridor. One-third of the study area is within the Shasta-Trinity National Forest, but the majority is held privately among five large ownerships: Champion International Corporation (Champion), the Hearst Corporation, The Nature Conservancy, the McCloud River Club, and the Bollibokka Club. The latter two are fishing and hiking clubs. Public access is limited in most of the areas along the McCloud River and Squaw Valley Creek. Champion has proposed a land exchange with the Shasta-Trinity National Forest whereby all Champion holdings along the nominated segment of the upper McCloud River (2,045 acres) would be acquired for public use.

Lands in and adjacent to the upper McCloud River watershed are primarily employed for timber production, livestock grazing, and outdoor recreation. Significant acreages also are managed

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by Shasta-Trinity National Forest with an emphasis on habitat quality for sensitive wildlife and fish species. Designated streamside management zones and management practices by both public and private land managers to preserve riparian and scenic values have balanced the multiple uses of the natural resources. Timber production is not currently practiced on the lower McCloud River within the study area; management of these lands is based on protecting fishery and natural values. No substantial changes in current land uses are expected to occur in the foreseeable future within the study area except where land exchanges may occur.

Existing beneficial water uses on the McCloud River include power generation, municipal and agricultural supply, contact and noncontact recreation, and cold freshwater fisheries and wildlife habitat. Hydroelectric power generation is a major water use on the McCloud River. Pacific Gas and Electric Company constructed McCloud Dam in 1965 to divert water from the McCloud River basin to the Pit River basin and generate hydroelectric power. Approximately 1,000 cubic feet per second is transported to the Pit River watershed. Municipal and agricultural water uses from the McCloud River are limited. Lakin Dam, located on the upper McCloud River, diverts water to the town of McCloud as an auxiliary water supply. Small quantities of diverted water are used for irrigating approximately 400 acres of pasture, controlling dust on logging roads, and fighting forest fires. Water is appropriated upstream of the study area on Squaw Valley Creek for irrigating pasture, watering a golf course, and domestic use. These uses are minor and do not affect the free-flowing status of the McCloud River and Squaw Valley Creek. Fisheries and wildlife habitat maintenance and recreation are other important water uses. Future water uses are expected to be similar to existing uses.

Eligibility and Classification

A primary objective of this study is to determine if nominated river segments or any portion thereof within designated study boundaries meet eligibility requirements for inclusion in the System. The presence of one or more extraordinary resource values along a free-flowing river generally qualifies the river for eligibility. The upper McCloud River from Upper Falls to Huckleberry Creek, lower McCloud River from 0.25 mile downstream of McCloud Dam to the McCloud River bridge near Shasta Lake, and Squaw Valley Creek from Cabin Creek to the McCloud River all maintain extraordinary resource values and are eligible for inclusion in the System.

Eligible segments are classified as wild, scenic, or recreational based on the condition of the river corridor at the time of the study. These classifications are defined in the Act (Public Resources Code Sec. 5093.53) as follows:

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- Wild Rivers - "Those rivers or segments of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted."

- Scenic Rivers - "Those rivers or segments 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 Rivers - "Those rivers or segments 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."

Classification for eligible river segments is as follows:

McCloud River

- Upper Falls to the northern boundary of Section 13 (T39N, R1W) - RECREATIONAL classification

- the northern boundary of Section 13 (T39N, R1W) to the confluence with Angel Creek - SCENIC classification

- the confluence with Angel Creek to the confluence with Huckleberry Creek - RECREATIONAL classification

- 0.25 mile downstream from McCloud Dam to the unnamed tributary (known locally as Parking Lot Creek) 0.5 mile upstream of the confluence with Ladybug Creek - SCENIC classification

- 0.5 mile upstream of the confluence with Ladybug Creek to the unnamed tributary in the northern portion of Section 23 (T37N, R2W) - WILD classification

- the unnamed tributary in the northern portion of Section 23 (T37N, R2W) to the confluence with Squaw Valley Creek - SCENIC classification

- the confluence with Squaw Valley Creek to the northern boundary of Section 9 (T35N, R3W) - WILD classification

- the northern boundary of Section 9 (T35N, R3W) to the McCloud River Bridge - SCENIC classification

Squaw Valley Creek

- the confluence with Cabin Creek to the confluence with Beartrap Creek - WILD classification

- the confluence with Beartrap Creek to the confluence with the McCloud River - SCENIC classification

Impacts

Impacts from wild and scenic river designation were assessed for land, water, and economic uses. The Act does not affect grazing and mining use. California's Forest Practice Rules require that lands within 200 feet of a designated wild and scenic river be considered a special treatment area for purposes of timber management (14 California Administrative Code 895.1). Some form of reduced harvest or selective cutting already is required in the watercourse protection zone, which varies from 50 to 300 feet from the river's edge. Consequently, a significant further reduction in harvest to achieve compliance with special treatment area provisions would probably not be needed. No reductions beyond the 200-foot-wide corridor are implied by State wild and scenic river designation.

Construction of dams, reservoirs, diversions, and other water impoundment facilities on river segments included in the System are foreclosed (Public Resources Code Sec. 5093.55). Water diversion facilities can be constructed, however, on any such river if the Secretary determines that such facilities are needed to supply domestic water and that facilities will not adversely affect the river's free-flowing condition and natural character. The Pacific Gas and Electric Company's McCloud-Pit development, operating under the existing Federal Energy Regulatory Commission license, is excluded from provisions of the California Wild and Scenic Rivers Act (Public Resources Code Sec. 5093.548). Other water development projects do not exist and are not reasonably foreseeable. Consequently, inclusion of eligible study segments into the System will not have any effect on existing water development projects, and reasonably foreseeable projects are not presently proposed.

The Act states that all State and local governments and agencies shall exercise their existing powers in a manner consistent with policy and provisions of the Act (Public Resources Code Sec. 5093.61). Thus, State agencies and local governments, in addition to not participating in water projects to impound or divert water as described earlier, shall exercise their various powers regulating private land use consistent with preserving rivers in their free-flowing state together with their immediate environments. Designated State wild and scenic rivers have not been managed by State or local governments in a manner that would create potential impacts. There are no indications from State or local agencies and governments that this trend would not continue. Consequently, it is expected that the exercise of State and local discretionary powers will not significantly affect uses of the area.

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Wild and scenic river designation will protect extraordinary resource values by precluding any presently unforeseen water impoundments or diversions that could affect these resources. Water development projects have the potential to greatly impact resource values. Extraordinary resource values could be affected if impoundments or diversions were located within the study area. Protected resources along the McCloud River and Squaw Valley Creek could increase in value if similar resources are adversely affected along unprotected waterways.

The only potential adverse impact to resources from wild and scenic designation is increased recreational use that diminishes resource values. There is an undetermined but finite capacity of the river environment to withstand increasing use without deterioration of resource values. Existing recreational activities would continue, and the levels of use would increase as the area becomes better known and other stream environments are developed. This impact is not considered significant because overall use is expected to increase to a much greater degree regardless of wild and scenic designation. Shasta-Trinity National Forest management priorities to provide a quality recreational experience also will limit overuse and future impacts.

Local and regional economies will not be significantly affected by inclusion of eligible McCloud River and Squaw Valley Creek segments into the System. Existing and reasonably foreseeable land and water uses are not affected; therefore, the economy will remain unchanged. Timber production is a major traditional use of the study area that will remain unaffected, except for any limitations within the 200-foot-wide corridor. Recreation demand will increase somewhat, thereby increasing sales, employment, and personal income in industries such as hotels, eating and drinking establishments, grocery stores, and service stations.

Comparison with Designated State Wild and Scenic Rivers

Designated State wild and scenic rivers are located within the Klamath, Trinity, Smith, Eel, and American River watersheds. With the exception of the American River, all other components of the System are northcoast or Klamath basin rivers. The North Fork American River is the only component representing high elevation western Sierra rivers, while the lower American River represents a large, low elevation river in the Sacramento-San Joaquin River basin. Extraordinary and other resource values of California's designated wild and scenic rivers, therefore, are rather limited in scope given the great diversity and array of free-flowing river segments in California.

The McCloud River and Squaw Valley Creek would represent unique components of the California System. With the exception of the North Fork American River, the McCloud River and Squaw

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Valley Creek are the only rivers with extraordinary nonanadromous fishery resource values. Geographically, the McCloud River and Squaw Valley Creek are located far from existing wild and scenic rivers, and the complex resource values are quite distinct on the McCloud River and Squaw Valley Creek. The recreational, scenic, cultural, fishery, wildlife, botanical, water, geologic, and cultural resource values of the McCloud River and Squaw Valley Creek are not represented by any existing component of the California System. In this context, comparison with existing wild and scenic rivers is not particularly useful because of the great divergence in resource values and attributes between the McCloud River and Squaw Valley Creek and existing components of the California System.

Alternatives and Conclusions

Several alternatives are available for recommendation by The Resources Agency to the Legislature and Governor. One alternative, the no-designation alternative, is to recommend that none of the McCloud River or Squaw Valley Creek be included within the California Wild and Scenic Rivers System. Available data strongly refute the appropriateness of this alternative. Most of the McCloud River and Squaw Valley Creek is eligible for inclusion. In addition, wild and scenic river designation of these eligible segments will not significantly impact any current or reasonably foreseeable land or water uses or local and regional economies. Nondesignation would risk impact to extraordinary resource values, immediate environments, and free-flowing status from any inappropriate land or water uses. Such resource values already have been degraded or lost on many other rivers in the region.

Another alternative includes all of the eligible segments of the McCloud River but excludes Squaw Valley Creek entirely. Squaw Valley Creek does not maintain the wealth of extraordinary values found on the McCloud River. The scenic values of Squaw Valley Creek are extraordinary nonetheless and quite different from scenic values on the McCloud River. Squaw Valley Creek also contributes to the extraordinary resource values in the lower McCloud River by providing additional streamflow, cultural resource sites, and fisheries and wildlife habitat. For these reasons, the extension of wild and scenic river status from the McCloud River along Squaw Valley Creek is appropriate.

A third alternative is to include only part of the eligible candidate segments on the McCloud River and Squaw Valley Creek in a wild and scenic river designation. As stated previously, designation of all eligible segments will not cause significant land, water, or economic impacts. The inclusion in the California System of only portions of the eligible segments does not fully protect the unique continuum of resource values and opportunities that are present.

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A fourth alternative is to include all of the upper McCloud River, from Algoma to McCloud Reservoir, in the California System. An argument can be made that the presence of redband trout in the upper portions of this segment constitutes an extraordinary fishery resource value. Upper McCloud River redband trout have significant scientific value as a relict ancestral stock of modern coastal rainbow trout and have recreational value to anglers who enjoy pursuing unique strains of fish. In addition, recreational resources resulting from several campgrounds and an intensive put-and-take hatchery trout fishery may be considered to constitute extraordinary recreational resource values. The presence of a single special-status species should not necessarily provide rationale for including a river segment into the California System. Fish, wildlife, and botanical special-status species have widespread distributions as a group and can be found in many watersheds in California. Including all such rivers into the California System without consideration of other resource values and attributes may not meet the intent of the California Wild and Scenic Rivers Act. Hatchery-supported fisheries and riverside campgrounds also are not considered unique in California. For these reasons, it was determined that the upper portion of the upper McCloud River segment did not contain extraordinary resource values and, therefore, was ineligible for inclusion within the California System.

The preferred alternative of the authors of this report is to include all eligible segments of the McCloud River and Squaw Valley Creek within the California Wild and Scenic Rivers System. These segments contain extraordinary resource values and would represent unique additions to the California System. Preservation of the study segments in their free-flowing state is considered presently to be the highest and most beneficial use of the water for the people of the State because of the presence of extraordinary resource values and less-than-significant impacts from designation on land and water uses and regional and local economies. Land and water uses generally will be maintained. It is therefore recommended that certain river segments be classified and added to the California Wild and Scenic Rivers System as specified on page vi and vii.

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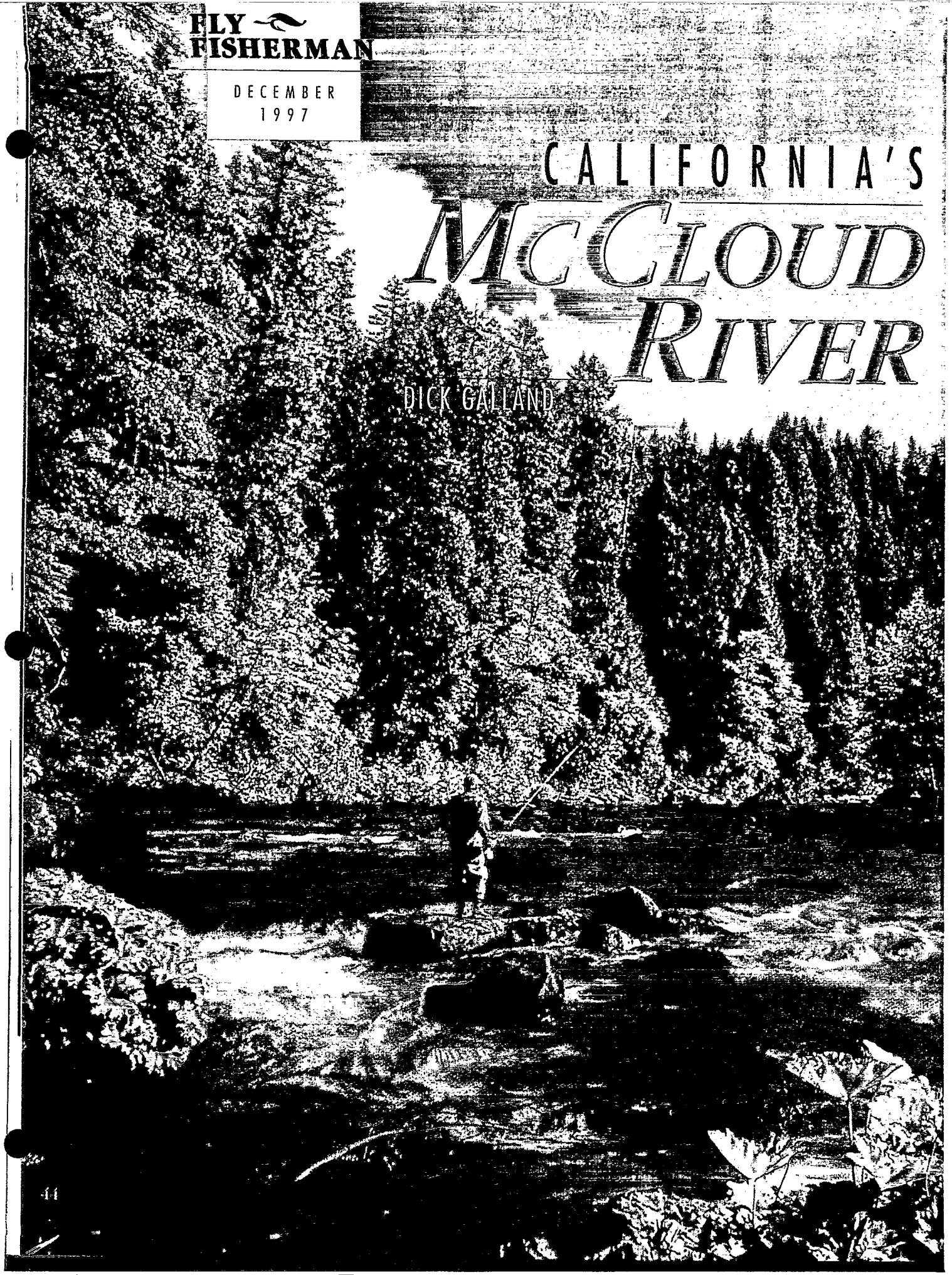
FLY FISHERMAN

DECEMBER
1997

CALIFORNIA'S McCLOUD RIVER

DICK GALLAND



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How to discover its moods, seasons, and wild browns and rainbows

PHOTOS BY
R. VALENTINE ATKINSON

THE TROUT IN CALIFORNIA'S MCCLOUD RIVER are measured in pounds rather than inches, but before you start packing your tackle, I must tell you that the McCloud, more than most rivers I've fished, requires a long-term commitment. You must court this river as you would a lover, learning its moods and seasons. Only then will it reveal its secrets.

The McCloud can be devilish. Days on which all the conditions seem right can produce only the occasional small fish, while bright, hot days, when the alders and big leaf maples droop in the still air and neither bird nor bug stirs, can produce remarkable fishing. You'll need the right tackle and techniques, a good deal of persistence, and a measure of luck to hook up with big fish consistently. But for me, their presence is a powerful incentive, and the canyon is so pristine that no day spent there is disappointing. Some days just produce more fish than others.

Occasionally the water is clear enough for sight fishing. In the summer of 1996, Dave Longanecker, a fisheries biologist and McCloud regular, took nearly an hour of careful presentations and fly changes to land an 8-pound brown. This was the biggest fish taken recently, but certainly not the only one present. I've seen huge fish, as big as a salmon, leap from the water.

There is another compelling reason to make a journey to the McCloud: The river holds a key place in American angling history. It was from the McCloud in 1874 that the first rainbow-trout eggs were collected and shipped to pioneer fish culturist Seth Green and others in the East and Midwest. These eggs, and those from the Russian River drainage north of San Francisco, produced the rainbows that have been distributed worldwide. Anglers in New Zealand, Argentina, the British Isles, and across the United States fish over trout with McCloud genes.

The early fish culturists could hardly have chosen a finer strain—fish of singular beauty, broad and muscular,

Fed by springs that rise out of northern California's volcanic terrain, the McCloud is fast and cold. Its large pools and fast runs make wading difficult.

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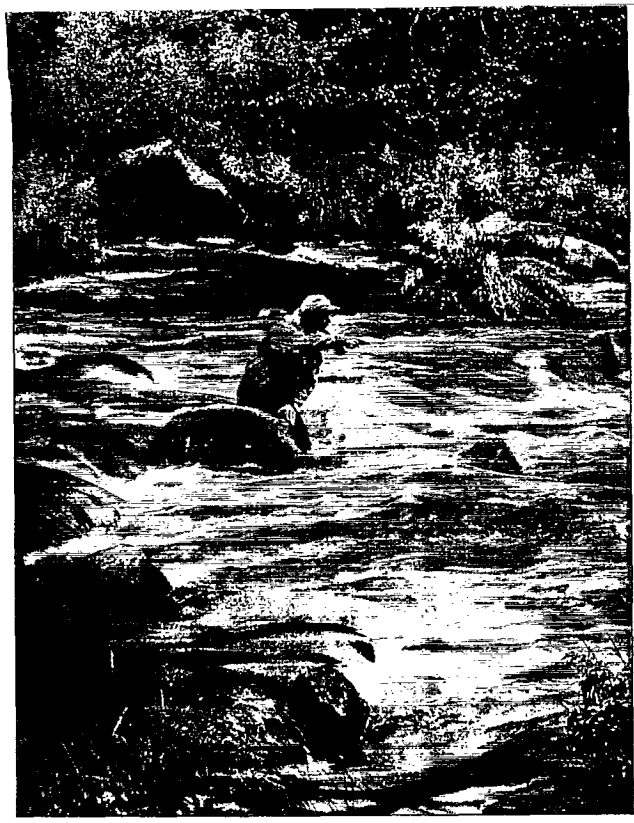


The McCloud has more than eight miles of water available to anglers. The McCloud Preserve of the Nature Conservancy limits entry to its three miles of water.

distinguished by deep red sides and small irregular black spots across their flanks. Perfectly adapted to the cold, clear fast waters of the McCloud, these trout personify everything we love about the species: aggressiveness, surpassing beauty, willingness to take a dry or a nymph, acrobatic agility. These same pure-strain rainbows still live in the McCloud. The impulse that sent rainbows around the world brought browns from Germany and Scotland to the McCloud at about the turn of the century. These bright fish add an extra measure of excitement to the fishing.

River Characteristics

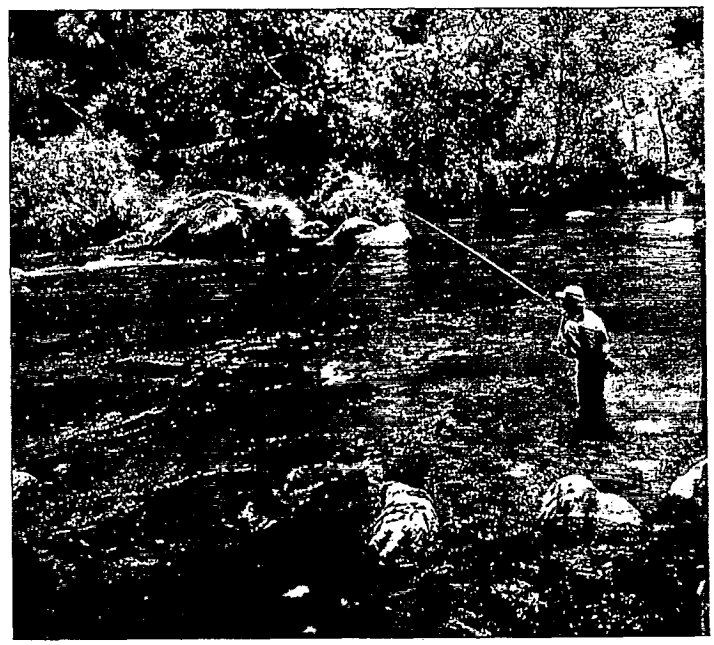
THE ONLY DAM ON THE MCCLOUD was built in the 1960s. Water releases below the dam are kept between 150 to 220 cubic feet per second (cfs), creating ideal tailwater conditions through nearly eight miles of river available to anglers. Five miles are public water within the Shasta Trinity National Forest. The lower three miles are the McCloud Preserve of the Nature Conservancy, limited to ten rods a day. The water is cold: 48 degrees Fahrenheit at the dam, warming to the low 50s as it flows down the canyon, shaded by the dense forest canopy of fir, pine, and alder.

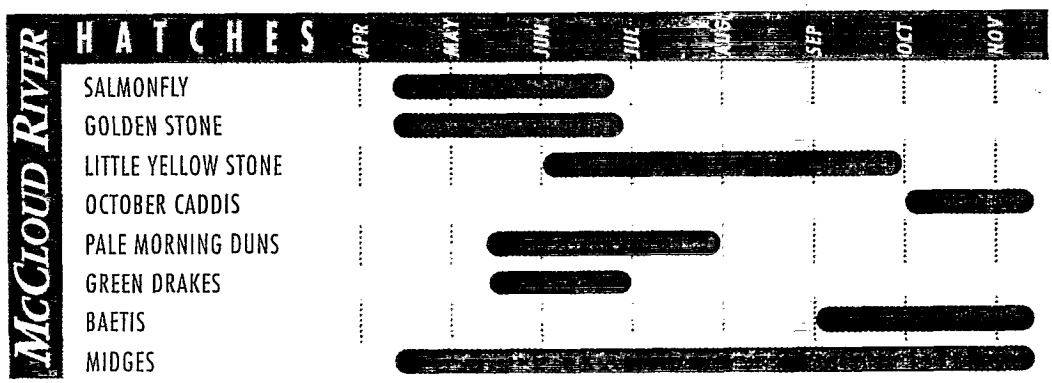
The steepness of the terrain and more than 100 years of private ownership have left the canyon remarkably intact. Magnificent old trees march up from the river's edge. On June afternoons, as the warm breeze drifts up the canyon, it carries the strong, sweet fragrance of the native azalea and Shasta lilies. It is a measure of the wildness and the profound beauty of this place that the river has for years been considered for wild and scenic status. It seems likely to achieve that status eventually.

Like most waters in northeastern California, much of the McCloud rises in the vast system of springs characteristic of the volcanic terrain. The river flows due south from Mt. Shasta, the 14,000-foot volcano that dominates the northern California landscape.

The McCloud is a river of large pools followed by runs and pocketwater; it has no riffle water. The average depth in the pockets and runs is four feet, and the bottom is a mix of large rocks, cobbles, and gravel. It can be crossed in many places, but choose your spot carefully. The water is fast and cold, and the pools are long and deep, often with steep cascades at their heads.

When I first came to fish the McCloud in the mid-1970s, I rarely ended the day without a bruise or a scrape, a sore shin or a skinned nose. I thought the McCloud was the toughest wading I'd ever encountered. In the intervening years, I have spent so many





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days scrambling around in the Pit River canyon, 50 miles to the south, that the McCloud now seems positively easy. Still, it commands respect. Chest waders with felt soles and a stout wading staff are necessary.

The McCloud lends itself to all styles of fishing. There are wonderful dry-fly opportunities during the golden stone and salmonfly hatches in May, the summer-long emergence of Pale Morning Duns, *Baetis*, and caddis, and the fall hatch of the big October Caddis. McCloud regulars spend most of their time fishing nymphs, switching to dries when the fish begin to rise. But the McCloud can fish well with dries all the time. Many members of the private clubs downstream of the Conservancy fish only dry flies with bamboo rods.

Short-line and Puffball Nymphing

I USE TWO NYMPHING TECHNIQUES: true short-line nymphing with a tiny indicator or no indicator at all, and another technique that we in this part of California call "puffball nymphing," after the nature of the indicator we use.

Successful McCloud nymph fishers pay particular attention to reading the water, especially the seams and slots that provide depth and cover for big fish. In May and June and again in the fall, the water is very clear, and nymphing anglers must approach the holding water carefully, paying attention to the sun angle and the shadows on the water. The trout favor the shadows. The shallow pockets and runs, up to a couple of feet deep, can provide plenty of action for average (8- to 14-inch) fish. Most anglers are content with these bright wild rainbows and browns.

If big fish are your quarry, though, present the fly in the deeper parts of the runs and big pools. A thoughtful approach and attentive short-line

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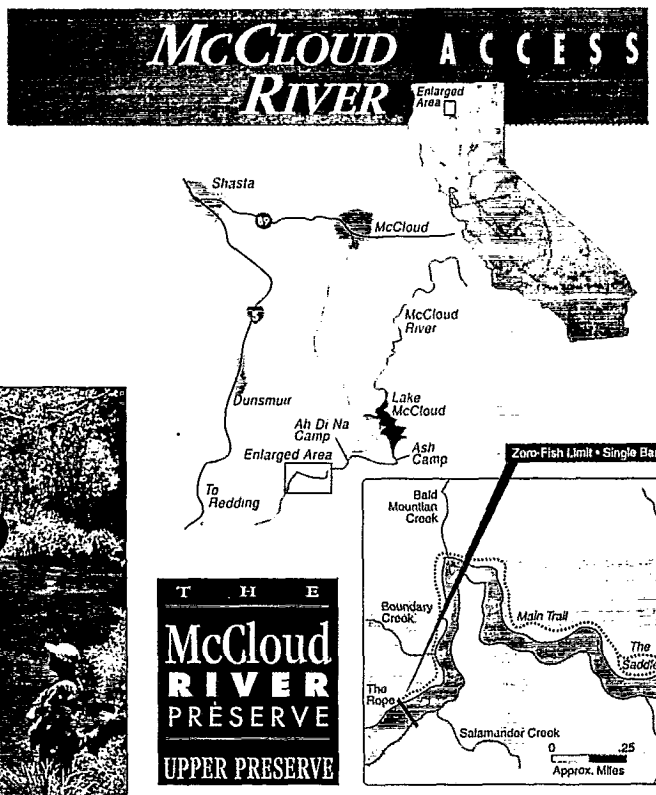

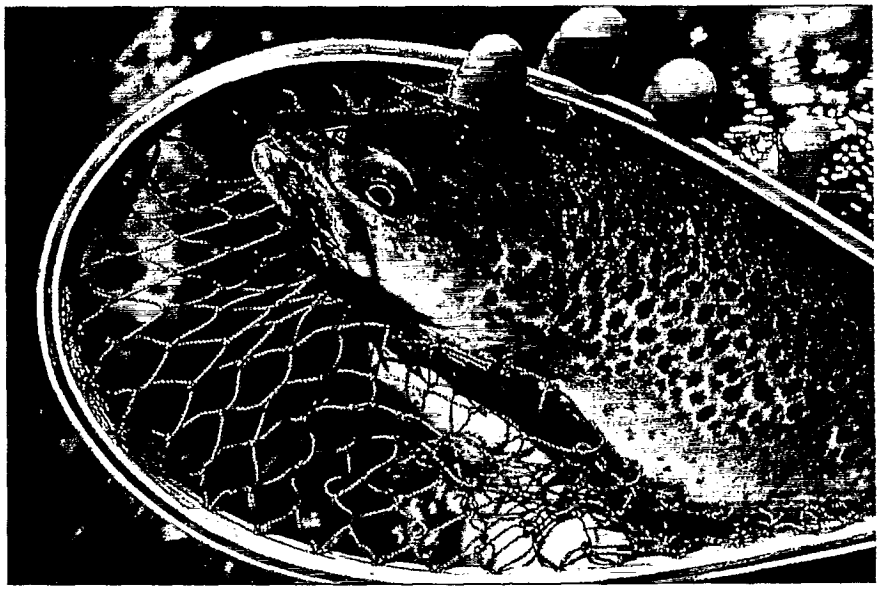

Short-line and puffball nymphing work well in the McCloud's deep pools and runs. A cabin on the Nature Conservancy Preserve houses resident mangers.

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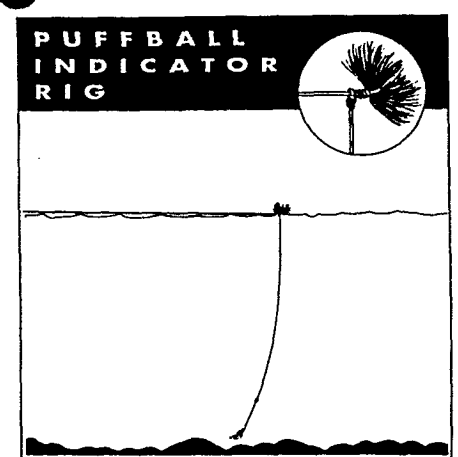
nymphing in this water can be rewarding. As the water depth approaches five feet, it gets tough to achieve a decent short-line drift. Here I use the puffball nymphing technique, an innovation pioneered on the McCloud and other northern California waters by local anglers Dean Schubert and Dave Hickson. It is a wonderfully simple solution to the challenge of presenting a nymph drag-free in deep water.

The puffball—a large poly-yarn indicator—acts as both a float and an indicator, suspending the fly at the chosen depth and signaling the slight hesitation that can mean a take. To rig for puffball nymphing, start with a 7-foot 4X or 5X tapered leader. Cut a 4-inch length of polypropylene macramé yarn and comb it to separate and fluff up the individual strands. Fold the yarn in half, tie it directly into the end of the tapered leader with a Duncan loop, and pull the loop tight against the indicator. Grease the indicator and trim it to the size you want. For most puffball nymphing, I prefer an indicator about the size of a large olive. Next, use another Duncan loop to tie a length of 5X or 6X tippet around the leader above the indicator and slide the tippet knot down against the indicator; tighten it so that the tippet hangs at 90 degrees to the leader. Add the fly or flies and a bit of weight, and you're ready to fish.



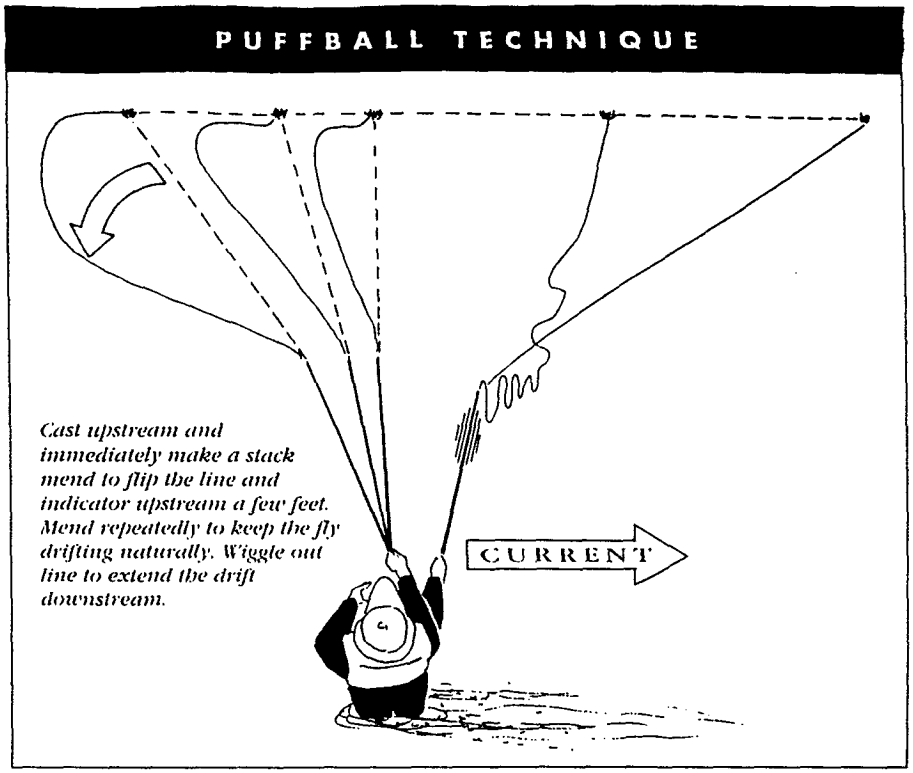
Tie the puffball on with a Duncan loop. Tie the tippet to the leader with an improved clinch knot. Add a fly and split-shot. The turnover point occurs when the fly is drifting naturally directly below the indicator.

My goal with this rig on the McCloud is to dead-drift my nymph at different depths in the deep pools and runs that hold the big trout. I cast upstream into the fast water at the head of the pool and immediately throw a tight, fast roll cast—a stack mend—at the indicator to flip it a few feet upstream. This takes the pressure off my tippet and fly, allowing it to sink faster. Once my fly has achieved its maximum depth, more stack mends create additional "turnover points," moments when the fly is truly drifting neutrally, as a natural nymph would drift. This is most attractive to the trout. By paying careful attention to the drift and the water, I set up those turnover points at the places that look the most fishy to me.

Any hesitation of the indicator—a pause, dip, turn, or twitch—is my signal to set the hook. With a long length of tippet below the indicator, it's critical to respond to the slightest suggestion of a take. As the puffball drifts past me, I drop my rod tip to the water and mend line out to continue the drag-free drift through the entire length of the pool.

Often the big fish will hold near the tailout, particularly early in the morning and in the evening. I am careful to cover *all* the fishy water. When I fish this way, I start shallow and add tippet to be certain that I have fished all levels in the water column. Some of the pools are very deep, perhaps as much as 20 feet. Only when my fly ticks the bottom am I confident that I have fished the entire water column. I might start at six feet and go down in 2-foot increments until my fly drags bottom.

For this type of fishing, my guides and I use long, progressive-action rods, often with a double-taper line one size heavier than what the rod calls for, to make roll casting easier. We keep our casting loops open to avoid the tangles guaranteed in a system that involves a big, wind-resistant indicator and several feet of fine tippet with BB split-shot. Be patient with the initial challenges of puffball nymphing; it takes getting used to, but it repays your efforts handsomely.



Streamer-fishing Jolts

PUFFBALL NYMPHING IS precision fishing, with its stack mends and subtle takes, but for pure adrenaline-pumping, rod-bending juice, nothing compares to the grab of a big trout on a streamer. It's a jolt of pure carnivorous electricity up your arm and into your brain; that feeling of being connected to something elemental in the depths of the pool. Streamer fishing may be the biggest appeal of the McCloud. The long, deep pools are made for streamer fishing, and the big resident fish are highly piscivorous.

Streamers call for a rod with more backbone than the puffball rig. My favorite outfit is a fast-action 9½-foot, 7-weight, with a Teeny 200 sinking line. I use a 5-foot tapered leader (old dry-fly and nymphing leaders work for this purpose), add 2X or 3X tippet material, and attach my streamer with a Duncan loop to get the maximum swimming action.

The Teeny line transitions smoothly from the 26-foot sinking section to the floating running line. It casts like a shot and mends easily. I can swim my fly in whatever manner I wish. Usually, I cast upstream into the fast water at the head of the pool and throw a couple of quick stack mends to let the sinking part get down as fast and deep as possible. I keep short 3-foot sections of lead-core trolling line, with loops on both ends, in my vest. I add these 3-foot mini-heads to the Teeny if I don't feel that I'm down deep enough.

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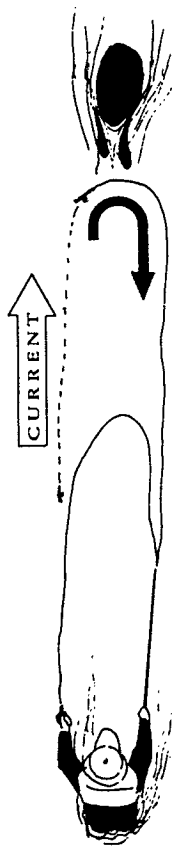
After the cast, I throw a big downstream loop, let the current catch the line, and begin swimming the streamer downstream. I put the rod tip down into the water and start retrieving. Fast, jerky strips work best for me. I want to imitate a frightened baitfish escaping downstream. Art Teter, one of Clearwater's guides, is fond of saying that you can't strip the fly too fast. But Art is just as likely to retrieve the fly slowly, feeding line into his loop as it moves downstream to maintain a steady drift speed. In either case, both of us are careful to swing our flies in front of rocks where big fish wait to ambush small trout or minnows.

I'm partial to #4 and #6 black marabou leeches, with or without chenille bodies. The ubiquitous Woolly Bugger in black, brown, or green is effective, as is the Thunder Creek series. Art likes wool-head sculpins. He also uses wet flies and his own soft-hackled versions of popular nymphs fished on floating or sinking-tip lines.

TWO-LOOK STREAMER TECHNIQUE



Hold the fly in your hand and feed the floating portion of a sinking-tip line downstream until a loop or belly forms in the line 12 to 15 feet above the rock. Drop the fly and sinking portion of the line into the current and immediately begin to retrieve the line at a rate that will hold the belly in the line at the same position. As the line straightens out in front of the rock (the fly should be at the fish's level), put the rod tip into the water and begin an erratic retrieve to simulate an escaping baitfish.

Art has developed an interesting technique to present his streamer to big fish lying in front of rocks in the meandering currents on the edges of the river's main flow. The two-look streamer technique (left) entices fish to take by giving them two looks at the streamer, one swimming downstream and one turning to escape across or upstream. Art positions himself 40 or 50 feet directly above the rock to which he plans to fish. With a minnow or trout fry pattern knotted to the leader of his 10-foot high-speed, high-D sinking-tip line, he first casts for distance (to get the propper length of line) downstream and well off to the side of the rock, stripping only enough line off the reel to have the streamer hang directly in front of the rock at the final presentation.

Gathering up the line again, he holds the fly in his hand, and keeping his rod tip above the water, feeds the floating section of the line downstream until the loop in the line is 12 to 15 feet above the rock. Then he drops the fly and tip section of the line into the current at his feet. He immediately begins to retrieve line at a rate that will hold the belly in the line at the same position 12 to 15 feet above the rock. This is the critical step. It's important to control the loop and the rate of descent of the fly.

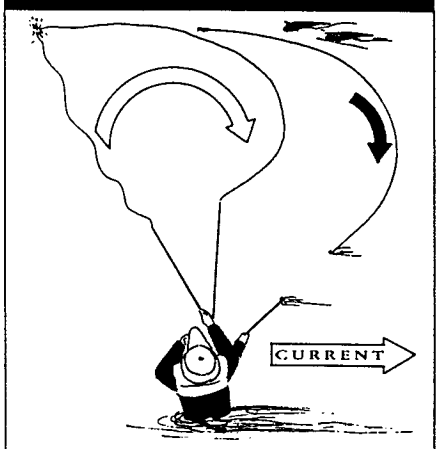
By the time the fly nears the rock, it is at the trout's level, about midway in the water column, swimming leisurely downstream. As the line straightens out in front of the rock, Art sticks his rod tip into the water and begins an erratic retrieve to simulate an escaping fry or minnow surprised by the sudden appearance of a big trout. Art figures that giving the fish these two views of the fly doubles his chances of getting a take. He gets plenty of takes.

Seasons and Trails

THE McCLOUD GETS THE greatest pressure in the spring and early summer and again in the fall. In mid-summer, when temperatures on Mt. Shasta are the highest, aptly-named Mud Creek begins flowing off the mountain, carrying glacial silt and volcanic ash into the river, turning the water a milky green. Some anglers prefer this time of year. With few anglers onstream and milky water to mask their approach, they find the big fish less wary and easier to catch.

October and November see heavy fishing pressure. The browns begin their spawning rituals, and their aggressive behavior is often their undoing. Studies have shown that some lake browns come into the river in the spring and remain there through spawning in November and December. These studies also showed that there is a separate population of resident browns in the river. In other words, there are plenty of big fish around from Opening Day the last Saturday in April, to the season's close on November 15.

TETER TECHNIQUE



Mend line downstream to keep the fly swimming downstream at the speed you want.

Trails along the McCloud, mostly on the west side, provide access. The Pacific Crest Trail crosses the river a mile and a half below the dam and provides access to the upper river. You can walk the trail within sight of the water and choose the reach you'd like to fish. The middle river is easily accessed from the fine Forest Service campground at Ah Di Na. There is an excellent trail on the entire three miles of the Nature Conservancy section.

The Conservancy water is limited to artificials with barbless hooks and is strictly catch-and-release. Above the Conservancy, it is also artificials only, but anglers are allowed to keep two fish per day under 14 inches. Most fly fishers in the McCloud canyon are dedicated to catch-and-release. Trout grow quite slowly in the cold water; it takes a McCloud rainbow an extra year to achieve the comparable size of the same age trout in the nearby Pit or upper Sacramento rivers. For those who would take a fish for their campfire dinner, make it a brown; leave the native rainbows.

The McCloud is a river worthy of a pilgrimage. The promise of big fish may bring you there, but I suspect you will quickly fall under the spell of the place. The remoteness and rugged beauty of the canyon, the clear, cold water with its bright native rainbows and wild browns, and the sense of the McCloud's place in

Continued on page 80

fly-fishing history imbue the river and its surroundings with a special magic.

McCloud Tackle

TACKLE FOR THE MCCLOUD includes the rods and lines I've mentioned: a long progressive-action 4- or 5-weight rod with a one-size-greater double-taper floating line for nymphing and dry-fly fishing. For sinking lines, use a stiffer 6- or 7-weight outfit capable of casting sinking-tip, full-sinking, and lead-core mini-heads.

Neoprene chest waders and a wading staff are essential. The river is cold, and the odds of banging your knees and shins are good. Also, carry a water bottle; it gets hot in the canyon. And keep an eye out for rattlesnakes; they're not common, but they are present.

The town of McCloud is a good base for fishing the lower river. It has hotels and motels, cafes, markets, and gas stations. The nearest fly shop is 20 minutes away in Dunsmuir. To reach the lower river, turn south off State Highway 89 on the Squaw Valley Road. In eight miles, you'll reach McCloud Reservoir. Stay right on the well-maintained road that follows the western shoreline of the lake. In two miles, note the Ah Di Na road going off to the right, marked with a Forest Service sign for Ah Di Na campground. Continuing around the reservoir, you'll cross the dam and in another mile and a half see Ash Camp, the campground for anglers fishing the upper two or three miles of water.

Backtracking to the Ah Di Na road, it is seven miles over the ridge to that campground. This dirt road is generally passable with a passenger car or a small camper. Ah Di Na is the principal camp for anglers fishing the middle and lower sections of the river, including the Nature Conservancy water. It's a pleasant camp, with running water, flush toilets, and shady sites set in the trees at the edge of a meadow, a minute from the river. There are also several unimproved campsites in this area. From the campground, trails provide access up and down the river. The Pacific Crest Trail crosses the road from the reservoir about one-half mile before the entrance to the campground. Following the Pacific Crest Trail northeast will take you to Ash Camp.

To reach the Nature Conservancy property, continue one mile past the Ah Di Na campground to where the road splits. The downhill left fork ends at the river. The fork straight ahead goes 100 yards and ends at the Conservancy parking area and trailhead. A ten-minute walk along the river puts you at the Preserve headquarters, which has a cabin, resident managers, a sign-in sheet, angler tags, maps, and information.

The Preserve allows ten rods per day, five by advance reservation and five on a first-come/first-served basis. If a tag is available, take one and attach it to your vest where the resident managers can see it as they walk the river trail during the day. If there are no tags available, you may walk two hundred yards east to the river and begin fishing upstream from there. The Conservancy property starts at Ladybug Creek, just below that point.

To reserve a spot, call the Nature Conservancy office in San Francisco, (415) 777-0487, at least two weeks before your intended visit. Reservations are held until 10 A.M. and then given to walk-on anglers wishing tags.

McCLOUD FAVORITE FLY PATTERNS

DRYS

- #6 Salmonfly
- #8 Orange Bucktail caddis
- #12 Green Drake
- #14-#18 Elk-hair Caddis
- #10-#16 Stimulator in yellow
- #14-#16 Light Cahill
- #14-#16 Yellow Humpy
- #14-#16 Royal Wulff
- #16-#20 Olive Dun

NYMPHS
(with and without bead-heads)

- #6 Black Rubberlegs
- #8-#10 Poxyback Golden Stone nymph
- #8 October Caddis pupa
- #12-#16 Prince nymph
- #12-#18 PT nymph
- #20-#22 Midge pupa

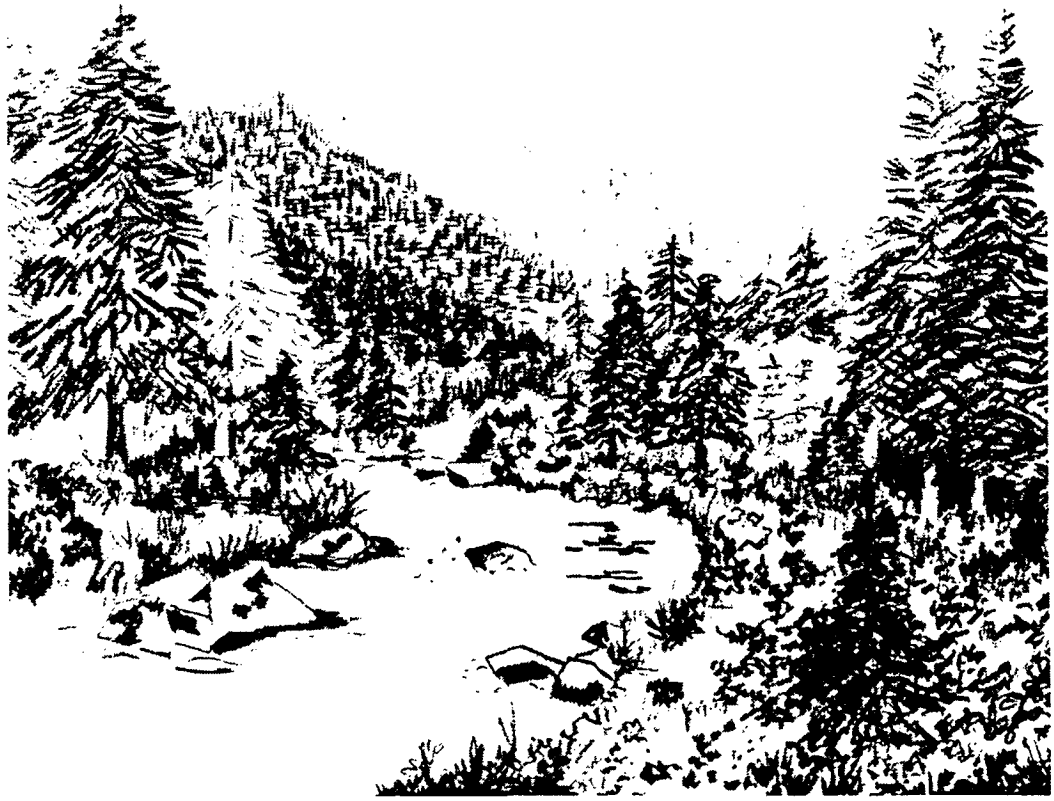
STREAMERS

- #4-#6 Woolly Buggers in black, brown, and green
- #4-#6 Marabou Leeches in black, brown, and green
- #4-#6 Thunder Creek
- #4-#6 Wool-head sculpins in brown and olive
- #4-#6 Little Rainbow Trout

DICK GALLAND owns Clearwater House on Hat Creek, a full-service fly-fishing lodge in Cassel, California, and hour south of the McCloud.

McCLOUD RIVER
WILD AND SCENIC RIVER STUDY REPORT

VOLUME I
FINAL STUDY REPORT



Prepared for:

THE RESOURCES AGENCY OF CALIFORNIA

Prepared by:

JONES & STOKES ASSOCIATES, INC.

JUNE 1988

McCLOUD RIVER
WILD AND SCENIC RIVER STUDY

VOLUME I
FINAL STUDY REPORT

Submitted to:

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June 1988

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Introduction

The California Wild and Scenic Rivers Act (Act) (Public Resources Code Sec. 5093.50 et seq.) was passed in 1972 to preserve designated rivers possessing extraordinary scenic, recreational, fishery, or wildlife values. The Act incorporates major portions of the Smith, Klamath, Trinity, American, and Eel River drainages into the State Wild and Scenic Rivers System (System). No other river segments have been included within the System since the original Act was passed.

In September 1986, Assembly Bill 3101 (Statutes 1986, Chapter 894) amended the Act by requiring the Secretary of The Resources Agency (Secretary) to study portions of the McCloud, West Walker, and East Fork Carson Rivers for potential inclusion in the System. The Secretary is required to complete these studies and submit reports with recommendations on these rivers to the Governor and Legislature by January 1, 1989. The objective of this report is to present the necessary information to determine if nominated segments of the McCloud River are suitable to be included in the System.

Study Area

Draining approximately 670 square miles of land in Siskiyou and Shasta Counties, the McCloud River flows southwesterly near McCloud, California, at the southern flank of Mt. Shasta. The McCloud River flows from an upland basin of gentle topography through chaparral and scrub habitats, rocky canyons, and mixed coniferous forests. Terminating at Shasta Lake, the McCloud River also is impounded upstream of Shasta Lake by McCloud Reservoir. Candidate segments on the McCloud River begin at Algoma and proceed to McCloud Reservoir (upper McCloud River) and extend from McCloud Dam to Shasta Lake (lower McCloud River). The upper and lower segments are 20 and 23 miles long, respectively. The 10-mile candidate segment on Squaw Valley Creek begins at the northern boundary of Section 14 (T38N, R3W) and ends at the confluence with the McCloud River. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments.

Resource Values

The following resource values of the McCloud River and Squaw Valley Creek were evaluated:

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- o Climate and air quality
- o Geology, soils, and minerals
- o Water quantity and quality
- o Botanical
- ● Wildlife
- ● Fishery
- ● Recreational
- ● Scenic
- o Cultural and historic
- o Scientific, ecological, and educational

The primary objective of these evaluations was to determine whether each resource under study represented an "extraordinary" value. A river segment typically possesses at least one extraordinary value to be eligible for inclusion in the System (Public Resources Code Sec. 5093.50). A river also may possess a combination of resource values which together constitute extraordinary values even though none of the individual resource values are themselves extraordinary. Resource values are considered in the context of this evaluation to be extraordinary if they were, individually or collectively, unusual or unique in the State of California (State) and provided benefit and enjoyment to the people of the State.

Seven resources--geologic; water; fishery; recreational; scenic; cultural; and scientific, ecological, and educational--are considered to be extraordinary in at least part of the nominated river segments on the McCloud River. The upper McCloud River from Algoma to Upper Falls, a distance of approximately 10 miles, does not contain extraordinary resource values and therefore is ineligible for inclusion in the System. The lower 10 miles of the upper McCloud River, as well as the entire 23 miles of the lower McCloud River, maintains extraordinary resource values and are eligible for inclusion in the System. Short reaches below McCloud Reservoir and upstream of McCloud Reservoir and Shasta Lake are ineligible because of resource degradation caused by water diversion or reservoir fluctuations. Scenic and cultural resources are extraordinary in the lower 9.5 miles of the 10-mile nominated segment on Squaw Valley Creek.

The upper and lower McCloud River contain extraordinary water resources. Active volcanism and recent glaciations create a complex and unique hydrologic system replete with waterfalls and springs. Glacial silt gives the river a beautiful turquoise color typical of rivers draining glacial valleys in British Columbia and Alaska. Three waterfalls are located within a 1.5-mile section of the upper McCloud River. Big Springs, emerging from cliffs and cascading into the McCloud River, contributes more than half of the McCloud River flows and represents a unique geologic and hydrologic feature. McCloud River water resources determine the values of other resources in the area.

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The McCloud River supports one of the premiere wild trout fisheries in California. Catch rates are high and a significant portion of the catch has consisted of trophy-sized brown and rainbow trout. Eleven miles of the lower McCloud River are designated as Wild Trout Waters to protect the exceptional fishery resources. Much of the lower McCloud River represents classic "pocket water," and the native rainbow trout are highly colorful and vigorous fish whose fighting qualities have earned the lower McCloud River its reputation as one of the top wild trout fisheries in California. While not as well known, the lower 10 miles of the upper McCloud River also maintains an extraordinary wild trout fishery.

The McCloud River is most well known for its semipristine condition and trophy trout fishery. The quality of the angling experience alone results in an extraordinary rating for recreational resources throughout most of the McCloud River study segments. The river offers many diverse angling opportunities. Anglers can gain relatively easy vehicular access at the three waterfalls on the upper McCloud River and fish for hatchery trout, fish for trophy-sized wild trout downstream at several other easily accessible locations, or hike into secluded fishing spots and fish under strictly catch-and-release regulations.

Rafting in the upper McCloud River is restricted to a narrow time of suitable flows each year, but the trip is extraordinary because of the scenic qualities of the river corridor, which are unsurpassed in California. Hiking, backpacking, camping, kayaking, nature observation, and ecological values also contribute to the extraordinary recreational experience in the lower McCloud River and lower 10 miles of the upper McCloud River.

Vivid views of large, pristine river valleys with beautiful white water and deep pools are rare in California but extensive along the McCloud River. The upper McCloud River drains a broad, flat plateau covered by coniferous forest with Mt. Shasta as the dominant feature in the landscape. Natural scenic focal points include Big Springs and the trio of waterfalls. Wyntoon, a private riverfront development along the upper McCloud River, provides an element of enchantment to the beautiful river setting on the upper McCloud River. Seven large buildings are printed with life-size murals of characters from Grimm's fairy tales. One structure is referred to as the "castle." Several buildings overhang the river, and beautiful landscaped courtyards are visible from the river. These images are striking and present a fairy tale-like picture of grandeur. The lower McCloud River watershed is more mountainous, and the region is characterized by large, steep, v-shaped valleys covered with coniferous and oak forests. Squaw Valley Creek, located in a steep-sided valley, flows under a dense forest canopy through bedrock outcroppings. Visual resources of most of the McCloud River and Squaw Valley Creek are extraordinary.

Cultural resources are extraordinary in the study area. The McCloud River watershed was a major center of Wintu occupation and 45 archaeological sites have been recorded along the McCloud River. Additional sites are located along Squaw Valley Creek. Two sites are eligible for inclusion in the National Register, and other unidentified Natural Register eligible sites are likely to occur along the river. Important historical sites are related to the McCloud lumber and railroad companies, which have attracted the interest of railroad and history buffs.

The lower McCloud River provides extraordinary scientific, ecological, and educational resources primarily because of the pristine and diverse natural resources and management priorities of The Nature Conservancy at the McCloud River Preserve. Geologic resources are valuable for education and research because of the high diversity of rock types and geologic formations. The great diversity of plant species and communities, including an estimated 80 species of lichens, offers numerous opportunities for floristic and vegetation research. The McCloud River canyon maintains pristine, low-elevation habitat for diverse fish and wildlife populations. Cultural resources along the McCloud River are extensive and tend to be well preserved because of the low level of watershed development. Consequently, the diverse array of resource values comprise a significant and extraordinary resource value.

The educational opportunities of the lower McCloud River are embodied in the research activities at the McCloud River Preserve. Graduate students, interns, and researchers from many universities have studied the McCloud River Preserve and surrounding areas. The college student internship program provides needed research for the Preserve as well as valuable field experience for the participants. Interpretive trails and guides to the flora, fauna, and other natural resources of the area are available to the casual visitor.

Land and Water Uses

Private ownership dominates the river corridor. One-third of the study area is within the Shasta-Trinity National Forest, but the majority is held privately among five large ownerships: Champion International Corporation (Champion), the Hearst Corporation, The Nature Conservancy, the McCloud River Club, and the Bollibokka Club. The latter two are fishing and hiking clubs. Public access is limited in most of the areas along the McCloud River and Squaw Valley Creek. Champion has proposed a land exchange with the Shasta-Trinity National Forest whereby all Champion holdings along the nominated segment of the upper McCloud River (2,045 acres) would be acquired for public use.

Lands in and adjacent to the upper McCloud River watershed are primarily employed for timber production, livestock grazing, and outdoor recreation. Significant acreages also are managed

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by Shasta-Trinity National Forest with an emphasis on habitat quality for sensitive wildlife and fish species. Designated streamside management zones and management practices by both public and private land managers to preserve riparian and scenic values have balanced the multiple uses of the natural resources. Timber production is not currently practiced on the lower McCloud River within the study area; management of these lands is based on protecting fishery and natural values. No substantial changes in current land uses are expected to occur in the foreseeable future within the study area except where land exchanges may occur.

Existing beneficial water uses on the McCloud River include power generation, municipal and agricultural supply, contact and noncontact recreation, and cold freshwater fisheries and wildlife habitat. Hydroelectric power generation is a major water use on the McCloud River. Pacific Gas and Electric Company constructed McCloud Dam in 1965 to divert water from the McCloud River basin to the Pit River basin and generate hydroelectric power. Approximately 1,000 cubic feet per second is transported to the Pit River watershed. Municipal and agricultural water uses from the McCloud River are limited. Lakin Dam, located on the upper McCloud River, diverts water to the town of McCloud as an auxiliary water supply. Small quantities of diverted water are used for irrigating approximately 400 acres of pasture, controlling dust on logging roads, and fighting forest fires. Water is appropriated upstream of the study area on Squaw Valley Creek for irrigating pasture, watering a golf course, and domestic use. These uses are minor and do not affect the free-flowing status of the McCloud River and Squaw Valley Creek. Fisheries and wildlife habitat maintenance and recreation are other important water uses. Future water uses are expected to be similar to existing uses.

Eligibility and Classification

A primary objective of this study is to determine if nominated river segments or any portion thereof within designated study boundaries meet eligibility requirements for inclusion in the System. The presence of one or more extraordinary resource values along a free-flowing river generally qualifies the river for eligibility. The upper McCloud River from Upper Falls to Huckleberry Creek, lower McCloud River from 0.25 mile downstream of McCloud Dam to the McCloud River bridge near Shasta Lake, and Squaw Valley Creek from Cabin Creek to the McCloud River all maintain extraordinary resource values and are eligible for inclusion in the System.

Eligible segments are classified as wild, scenic, or recreational based on the condition of the river corridor at the time of the study. These classifications are defined in the Act (Public Resources Code Sec. 5093.53) as follows:

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- Wild Rivers - "Those rivers or segments of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted."

- Scenic Rivers - "Those rivers or segments 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 Rivers - "Those rivers or segments 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."

Classification for eligible river segments is as follows:

McCloud River

- Upper Falls to the northern boundary of Section 13 (T39N, R1W) - RECREATIONAL classification

- the northern boundary of Section 13 (T39N, R1W) to the confluence with Angel Creek - SCENIC classification

- the confluence with Angel Creek to the confluence with Huckleberry Creek - RECREATIONAL classification

- 0.25 mile downstream from McCloud Dam to the unnamed tributary (known locally as Parking Lot Creek) 0.5 mile upstream of the confluence with Ladybug Creek - SCENIC classification

- 0.5 mile upstream of the confluence with Ladybug Creek to the unnamed tributary in the northern portion of Section 23 (T37N, R2W) - WILD classification

- the unnamed tributary in the northern portion of Section 23 (T37N, R2W) to the confluence with Squaw Valley Creek - SCENIC classification

- the confluence with Squaw Valley Creek to the northern boundary of Section 9 (T35N, R3W) - WILD classification

- the northern boundary of Section 9 (T35N, R3W) to the McCloud River Bridge - SCENIC classification

Squaw Valley Creek

- the confluence with Cabin Creek to the confluence with Beartrap Creek - WILD classification

- the confluence with Beartrap Creek to the confluence with the McCloud River - SCENIC classification

Impacts

Impacts from wild and scenic river designation were assessed for land, water, and economic uses. The Act does not affect grazing and mining use. California's Forest Practice Rules require that lands within 200 feet of a designated wild and scenic river be considered a special treatment area for purposes of timber management (14 California Administrative Code 895.1). Some form of reduced harvest or selective cutting already is required in the watercourse protection zone, which varies from 50 to 300 feet from the river's edge. Consequently, a significant further reduction in harvest to achieve compliance with special treatment area provisions would probably not be needed. No reductions beyond the 200-foot-wide corridor are implied by State wild and scenic river designation.

Construction of dams, reservoirs, diversions, and other water impoundment facilities on river segments included in the System are foreclosed (Public Resources Code Sec. 5093.55). Water diversion facilities can be constructed, however, on any such river if the Secretary determines that such facilities are needed to supply domestic water and that facilities will not adversely affect the river's free-flowing condition and natural character. The Pacific Gas and Electric Company's McCloud-Pit development, operating under the existing Federal Energy Regulatory Commission license, is excluded from provisions of the California Wild and Scenic Rivers Act (Public Resources Code Sec. 5093.548). Other water development projects do not exist and are not reasonably foreseeable. Consequently, inclusion of eligible study segments into the System will not have any effect on existing water development projects, and reasonably foreseeable projects are not presently proposed.

The Act states that all State and local governments and agencies shall exercise their existing powers in a manner consistent with policy and provisions of the Act (Public Resources Code Sec. 5093.61). Thus, State agencies and local governments, in addition to not participating in water projects to impound or divert water as described earlier, shall exercise their various powers regulating private land use consistent with preserving rivers in their free-flowing state together with their immediate environments. Designated State wild and scenic rivers have not been managed by State or local governments in a manner that would create potential impacts. There are no indications from State or local agencies and governments that this trend would not continue. Consequently, it is expected that the exercise of State and local discretionary powers will not significantly affect uses of the area.

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Wild and scenic river designation will protect extraordinary resource values by precluding any presently unforeseen water impoundments or diversions that could affect these resources. Water development projects have the potential to greatly impact resource values. Extraordinary resource values could be affected if impoundments or diversions were located within the study area. Protected resources along the McCloud River and Squaw Valley Creek could increase in value if similar resources are adversely affected along unprotected waterways.

The only potential adverse impact to resources from wild and scenic designation is increased recreational use that diminishes resource values. There is an undetermined but finite capacity of the river environment to withstand increasing use without deterioration of resource values. Existing recreational activities would continue, and the levels of use would increase as the area becomes better known and other stream environments are developed. This impact is not considered significant because overall use is expected to increase to a much greater degree regardless of wild and scenic designation. Shasta-Trinity National Forest management priorities to provide a quality recreational experience also will limit overuse and future impacts.

Local and regional economies will not be significantly affected by inclusion of eligible McCloud River and Squaw Valley Creek segments into the System. Existing and reasonably foreseeable land and water uses are not affected; therefore, the economy will remain unchanged. Timber production is a major traditional use of the study area that will remain unaffected, except for any limitations within the 200-foot-wide corridor. Recreation demand will increase somewhat, thereby increasing sales, employment, and personal income in industries such as hotels, eating and drinking establishments, grocery stores, and service stations.

Comparison with Designated State Wild and Scenic Rivers

Designated State wild and scenic rivers are located within the Klamath, Trinity, Smith, Eel, and American River watersheds. With the exception of the American River, all other components of the System are northcoast or Klamath basin rivers. The North Fork American River is the only component representing high elevation western Sierra rivers, while the lower American River represents a large, low elevation river in the Sacramento-San Joaquin River basin. Extraordinary and other resource values of California's designated wild and scenic rivers, therefore, are rather limited in scope given the great diversity and array of free-flowing river segments in California.

The McCloud River and Squaw Valley Creek would represent unique components of the California System. With the exception of the North Fork American River, the McCloud River and Squaw

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Valley Creek are the only rivers with extraordinary nonanadromous fishery resource values. Geographically, the McCloud River and Squaw Valley Creek are located far from existing wild and scenic rivers, and the complex resource values are quite distinct on the McCloud River and Squaw Valley Creek. The recreational, scenic, cultural, fishery, wildlife, botanical, water, geologic, and cultural resource values of the McCloud River and Squaw Valley Creek are not represented by any existing component of the California System. In this context, comparison with existing wild and scenic rivers is not particularly useful because of the great divergence in resource values and attributes between the McCloud River and Squaw Valley Creek and existing components of the California System.

Alternatives and Conclusions

Several alternatives are available for recommendation by The Resources Agency to the Legislature and Governor. One alternative, the no-designation alternative, is to recommend that none of the McCloud River or Squaw Valley Creek be included within the California Wild and Scenic Rivers System. Available data strongly refute the appropriateness of this alternative. Most of the McCloud River and Squaw Valley Creek is eligible for inclusion. In addition, wild and scenic river designation of these eligible segments will not significantly impact any current or reasonably foreseeable land or water uses or local and regional economies. Nondesignation would risk impact to extraordinary resource values, immediate environments, and free-flowing status from any inappropriate land or water uses. Such resource values already have been degraded or lost on many other rivers in the region.

Another alternative includes all of the eligible segments of the McCloud River but excludes Squaw Valley Creek entirely. Squaw Valley Creek does not maintain the wealth of extraordinary values found on the McCloud River. The scenic values of Squaw Valley Creek are extraordinary nonetheless and quite different from scenic values on the McCloud River. Squaw Valley Creek also contributes to the extraordinary resource values in the lower McCloud River by providing additional streamflow, cultural resource sites, and fisheries and wildlife habitat. For these reasons, the extension of wild and scenic river status from the McCloud River along Squaw Valley Creek is appropriate.

A third alternative is to include only part of the eligible candidate segments on the McCloud River and Squaw Valley Creek in a wild and scenic river designation. As stated previously, designation of all eligible segments will not cause significant land, water, or economic impacts. The inclusion in the California System of only portions of the eligible segments does not fully protect the unique continuum of resource values and opportunities that are present.

A fourth alternative is to include all of the upper McCloud River, from Algoma to McCloud Reservoir, in the California System. An argument can be made that the presence of redband trout in the upper portions of this segment constitutes an extraordinary fishery resource value. Upper McCloud River redband trout have significant scientific value as a relict ancestral stock of modern coastal rainbow trout and have recreational value to anglers who enjoy pursuing unique strains of fish. In addition, recreational resources resulting from several campgrounds and an intensive put-and-take hatchery trout fishery may be considered to constitute extraordinary recreational resource values. The presence of a single special-status species should not necessarily provide rationale for including a river segment into the California System. Fish, wildlife, and botanical special-status species have widespread distributions as a group and can be found in many watersheds in California. Including all such rivers into the California System without consideration of other resource values and attributes may not meet the intent of the California Wild and Scenic Rivers Act. Hatchery-supported fisheries and riverside campgrounds also are not considered unique in California. For these reasons, it was determined that the upper portion of the upper McCloud River segment did not contain extraordinary resource values and, therefore, was ineligible for inclusion within the California System.

The preferred alternative of the authors of this report is to include all eligible segments of the McCloud River and Squaw Valley Creek within the California Wild and Scenic Rivers System. These segments contain extraordinary resource values and would represent unique additions to the California System. Preservation of the study segments in their free-flowing state is considered presently to be the highest and most beneficial use of the water for the people of the State because of the presence of extraordinary resource values and less-than-significant impacts from designation on land and water uses and regional and local economies. Land and water uses generally will be maintained. It is therefore recommended that certain river segments be classified and added to the California Wild and Scenic Rivers System as specified on page vi and vii.

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INTRODUCTION

Chapter 1

INTRODUCTION

The California Wild and Scenic Rivers Act (Act or California Act) (Public Resources Code Sec. 5093.50 et seq.) was passed in 1972 to preserve designated rivers possessing extraordinary scenic, recreational, fishery, or wildlife values. The Act incorporates major portions of the Smith, Klamath, Trinity, American, and Eel River drainages into the State Wild and Scenic Rivers System (System or California System). No other river segments have been included within the System since the original Act was passed.

In September 1986, Assembly Bill 3101 (Statutes 1986, Chapter 894) amended the Act by requiring the Secretary of The Resources Agency (Secretary) to study portions of the McCloud, East Fork Carson, and West Walker Rivers for potential inclusion in the System. The Resources Agency subsequently contracted with Jones & Stokes Associates to conduct the requisite studies and make recommendations. The Secretary is required to complete these studies and submit reports on these rivers to the Governor and Legislature by January 1, 1989. The objective of this report is to present the necessary information to determine if nominated segments of the McCloud River and Squaw Valley Creek are suitable to be included in the System.

REPORT ORGANIZATION

The McCloud River Wild and Scenic River Study consists of two separate volumes. Volume I represents the final study report and

- discusses provisions of the California Act and National Wild and Scenic Rivers Act (National Act);
- summarizes resource evaluations;
- describes existing and proposed land and water uses;
- presents eligibility and classification analyses;
- determines land, water, and economic impacts from wild and scenic rivers designation; and
- compares the McCloud River and Squaw Valley Creek with existing river components of the California System.

The report then concludes by discussing a number of potential alternatives: include the nominated river segments, include a subsection of the nominated river segments, or reject the nominated river segments as components of the System.

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Volume I contains an Executive Summary and 10 chapters. The Executive Summary provides a synopsis of river eligibility, classification, potential impacts from designation, and alternative recommendations. The report begins with a description of the organization of the Volume I report and an explanation of the background and development of the Act (Chapter 1). The study area is delineated (Chapter 2), and its resources are characterized, evaluated, and summarized in relation to potential wild and scenic river designation (Chapter 3). Land ownership patterns, land and water uses, and economics of the study area are described (Chapter 4) as well as river eligibility for inclusion in the System and river classification (Chapter 5). Potential impacts to existing and proposed land and water uses from inclusion in the System are identified and examined (Chapter 6). Characteristics of previously designated State wild and scenic rivers are compared with resource values of the McCloud River (Chapter 7). Alternative recommendations are summarized and documented with supporting rationale (Chapter 8). A bibliography (Chapter 9) and list of preparers and acknowledgements complete the report (Chapter 10).

Volume II presents technical resource evaluations in support of Volume I. Resource evaluations cover geology, soil, and mineral resources; water quality and quantity; botanical, wildlife, and fishery resources; recreation; scenic resources; and cultural and historic resources. Resource evaluations required extensive data gathering, review, and analysis, which necessitated their compilation in a separate volume.

MAIN PROVISIONS OF CALIFORNIA WILD AND SCENIC RIVERS ACT

Overview

The California Act and its requirements for eligibility and suitability studies are patterned after the earlier-enacted National Act. To provide a framework for the evaluation of the McCloud River, the main provisions of the California and National Acts are reviewed and contrasted below.

The California Act (presented as amended in Appendix A) provides a number of legal protections for rivers included within the System. The Act was enacted in 1972 and received major amendments in 1982 (Assembly Bill 1349) and 1986 (Assembly Bill 3101). The Act's major provisions are reviewed below. (All citations in this report are to sections of the Public Resources Code unless otherwise noted.)

Policies and Purposes

The Act begins with the following legislative declaration (Sec. 5093.50):

> It is the policy of the State of California that certain rivers which possess extraordinary scenic,

recreational, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state. The Legislature declares that such use of these rivers is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution. It is the purpose of this chapter to create a California Wild and Scenic Rivers System to be administered in accordance with the provisions of this chapter.

The Act defines "free-flowing" as "existing or flowing without artificial impoundment, diversion, or other modification of the river." The existence of minor structures does not ban a river from being considered for inclusion in the System, however, and several rivers, such as the Trinity and lower American River, are included in the System despite substantial flow modifications by artificial impoundments and diversions.

Classification and Designation of Rivers Included in System

Definition of River and Immediate Environment

The Act defines "river" as "the water, bed, and shoreline of rivers, streams, channels, lakes, bays, estuaries, marshes, wetlands, and lagoons, up to the first line of permanently established riparian vegetation" (Sec. 5093.52[c]). The latter phrase ("...up to the first line of permanently established riparian vegetation") was added in a 1982 amendment and represents a reduction in the area of streambed and shoreline potentially subject to the Act's protection.

The Act defines "immediate environments" only generally as the land "immediately adjacent" to designated segments (Sec. 5093.52 [h]). This definition, which was added in the 1982 amendments, represents a reduction in the land area potentially subject to the Act's protection.

Classification of Rivers

Rivers or segments of rivers included within the System are classified by the Legislature as either "wild," "scenic," or "recreational" (Sec. 5093.53). The Secretary, however, may recommend classifications to the Legislature. Wild rivers are free of impoundments and are generally inaccessible except by trail, with primitive watersheds or shorelines and unpolluted waters. Scenic rivers are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads. Recreational rivers are readily accessible by road or railroad, may have some

development along their shorelines, and may have been impounded or diverted in the past.

Components of System

The Act designates certain segments and tributaries of the following rivers as components of the System: Klamath, Trinity, Smith, Eel, and American. The Secretary may recommend to the Legislature other rivers qualifying for inclusion in the System. (Sec. 5093.54)

Amendments to the Act in 1982 specified that the Legislature is responsible for classifying or reclassifying rivers by statute. The Secretary may recommend such legislation, including specific land use restrictions for each particular classification (Sec. 5093.546). The 1982 amendments statutorily classified all river segments in the System consistent with federal classifications under the National Act (Sec. 5093.545).

Additions to System

In 1986, the Act was amended to establish for the first time a study process modeled after federal law for potential additions to the System (Assembly Bill 3101; Secs. 5093.547, 5093.548). The Secretary is now required to study and submit to the Governor and Legislature reports on the suitability or nonsuitability of rivers designated by the Legislature as potential additions to the System. The Secretary also must make recommendations regarding designation of a river or segment. Each report must show, among other things, the area included within the report; the characteristics which do or do not make the area a worthy addition to the System; the current status of land ownership and use in the immediate environment; and the reasonably foreseeable potential land and water uses that will be enhanced, foreclosed, or curtailed if the river or segment were included in the System.

Legal Effects of Inclusion in System

Water Impoundment Facilities

No dam, reservoir, diversion, or other water impoundment facility may be constructed on any river included in the System or on the three rivers designated as potential additions. This prohibition does not apply to temporary flood storage facilities on the Eel River. (Sec. 5093.55)

The prohibition on water impoundments also does not apply to construction of temporary impoundments for recreational

purposes on recreational segments of rivers with a history of these impoundments. The Secretary must first authorize these temporary recreational impoundments, however, after making a number of findings. (Sec. 5093.67)

Water Diversion Facilities

No water diversion facility may be constructed on any river included in the System unless the Secretary determines that the facility is needed to supply domestic water to local residents and that the facility will not adversely affect the river's free-flowing condition and natural character (Sec. 5093.55).

State Agency Cooperation in Projects Affecting System

Agencies of the State of California (State) may not assist other government agencies in the planning or construction of any water impoundment facility that could adversely affect the free-flowing condition and natural character of rivers included in the System or the three rivers designated as potential additions (Sec. 5093.56).

Exercise of State and Local Powers

State and local agencies must exercise their existing powers consistent with the Act's policies and provisions (Sec. 5093.61). This provision ties the requirement of the Act to all other existing authorities. The Act does not, however, change the land use regulatory powers or authorities of State and local agencies granted by other laws (Sec. 5093.58).

Fish and Wildlife; Eminent Domain

The Act does not affect the State's jurisdiction or responsibility over fish and wildlife (Sec. 5093.62). Nor does the Act permit the taking of private property for public uses without just compensation (Sec. 5093.63).

proper interpretation?

Management of System

The 1972 Act required the Secretary to prepare and submit management plans for each river in the System to the Legislature for approval and to administer the System to protect scenic, recreational, fishery, and wildlife values without unreasonably limiting compatible timber harvesting, grazing, and other uses. In 1979, these responsibilities were delegated to the California Department of Fish and Game (DFG).

The 1982 amendments repealed these provisions. Instead, The Resources Agency is now required to conduct studies funded by the Legislature and may make recommendations to the Legislature for protection and enhancement of the System. The Resources Agency also is required to coordinate State agency activities affecting the System with activities of other federal, State, and local agencies. DFG is now required to conduct studies specifically funded by the Legislature and to make recommendations relating to: salmon and steelhead habitat restoration, fish and wildlife enforcement requirements, fisheries management data development, and legislation needed to protect the System's fish and wildlife values. (Sec. 5093.69)

Miscellaneous Provisions

Smith River Watershed

In 1982, the Act was amended to allow a mining project to proceed at a site on Gasquet Mountain within the Smith River watershed. Twelve tributaries were excluded from the System, although the prohibition against construction of water impoundment facilities on these tributaries was extended. (Sec. 5093.66)

Special Treatment Areas

In 1982, the Act was amended to establish special requirements for regulating forest practices within a "special treatment area" adjacent to streams included in the System. (This special treatment area is further defined in California's Forest Practice Act as a 200-foot corridor [14 Cal. Adm. Code 895.1]). Maximum penalties for violation of forest practice rules within special treatment areas are higher than in other areas. (Sec. 5093.68)

MAIN PROVISIONS OF NATIONAL WILD AND SCENIC RIVERS ACT

This section provides the reader with a background of the National Act and the National Wild and Scenic Rivers System (National System). It is presented only for informational purposes. It must be stressed that the McCloud River wild and scenic river study pertains only to the California Act. Inclusion within the California System does not affect or influence the National Act or System.

Overview

The National Wild and Scenic Rivers Act (16 U.S.C. Sec. 1271 et seq.), initially enacted in 1968, provided the framework for the California Act enacted 4 years later. The National Act (presented as amended in Appendix B) has been amended many times, primarily to add rivers to the National System or to list candidate rivers for future evaluation. Major provisions of the National Act are briefly summarized below and compared to the California Act. In the below discussion, citations are made to both sections of the National Act and to the "Final Revised Guidelines for Eligibility, Classification, and Management of River Areas" (Guidelines) issued by the U. S. Departments of Interior (USDI) and Agriculture (USDA) (47 FR 39454 et seq.) (Appendix C). The Guidelines supplement information in the National Act and provide guidance on definitions of key terms; eligibility, suitability, and classification processes and criteria; alternative analyses; and management.

Policies and Purposes

The National Act's basic policy, which is similar to that of the California Act, is to preserve certain selected rivers in their free-flowing condition because these rivers, with their immediate environments, possess "outstandingly remarkable" scenic, recreational, fish and wildlife, historical, cultural, or other similar values. Congress declared that the established national water development policy on some rivers needs to be complemented by a policy preserving other rivers in their free-flowing condition to protect water quality and fulfill other conservation purposes. (Sec. 1[b])

Classification and Designation of Rivers Included in National System

Definition of River and River Area

The National Act defines "river" more narrowly than the California Act, describing it as "a flowing body of water or estuary or a section, portion, or tributary thereof" (Sec. 16[a]). "River area," however, is a broader concept defined by the Guidelines. For designated rivers, "river area" means "the river and adjacent land within the authorized boundaries." For purposes of a river study (discussed below), "river area" means a river and its immediate environment extending at least 0.25 mile from each bank (47 FR 30456).

Both the National Act and the California Act have policies encouraging the protection of the "immediate environment" of designated rivers. The Guidelines' definitions of "river area" are intended to specifically define this immediate environment.

Classification of Rivers

The National Act's classification of rivers or river segments as either wild, scenic, or recreational corresponds to California's classification system (Sec. 2[b]).

Components of National System

The National Act originally designated eight rivers, including the Middle Fork Feather River, as components of the National System. As of November 1986, the National System encompassed 7,336 miles of 72 rivers (U. S. General Accounting Office 1986). In California, portions of the Klamath, Trinity, Smith, Eel, American, Feather, Kern, Merced, and Tuolumne Rivers are now included in the National System.

Identification of Potential Additions to National System

Federal agencies, in conducting planning for water and related land resources, must give consideration to potential wild, scenic, and recreational river areas. The USDI and USDA conducted specific studies to identify which potential wild, scenic, and recreational river areas must be evaluated in federal agency planning reports (Sec. 5[d]). In 1980, 67 such potential additions were identified in California, including portions of the McCloud, East Fork Carson, and West Walker Rivers (National Park Service 1982).

Additions to System

The National Act's procedures for designating rivers are more complex than those of the California Act. Under the National Act, rivers may be designated either by Congress through specific legislation with or without an eligibility and suitability study (Sec. 2[a][i]) or by the Secretary of the Interior upon request by a state governor (Sec. 2[a][ii]).

if in state system

For a river to be designated under Sec. 2(a)(i), Congress may either directly designate the river as a component of the National System, or first designate the river as a potential addition to the National System. In the latter case, the USDI or USDA prepares a "river study" on the eligibility and suitability of the potential addition. The river study follows detailed instructions set forth in Section II of the Guidelines. The study report is forwarded to the President, who in turn makes recommendations to Congress on inclusion of the river within the National System (Sec. 4[a]). Between 1968 and 1986, 81 studies were completed, with the Congress placing 16 rivers under federal protection (U. S. General Accounting Office 1986).

For a river to be designated under Sec. 2(a)(ii), a state legislature must first designate the river as wild, scenic, or recreational under state law; the river must be permanently administered as wild, scenic, or recreational; the state governor must make a request to the Secretary of the Interior for inclusion of the river in the National System; and the Secretary of the Interior must find that the river meets certain specified criteria. In January 1981, the Secretary of the Interior, pursuant to Sec. 2(a)(ii), added 1,246 river miles of five rivers within the California System to the National System. Nearly 3,000 river miles of tributaries then included in the California System, however, were not included in the National System because it was determined that they did not possess outstandingly remarkable values.

Legal Effects of Inclusion in National System

The National and California Acts are generally similar in their discouragement of new water projects on designated rivers. The directive for federal agencies (National Act) and State and local agencies (California Act) to use their powers to further the Acts' policies is also similar. Several differences, however, are noteworthy. Under federal designation, new mining claims are prohibited within 0.25 mile of rivers classified as wild, and mining on scenic and recreational rivers is subject to special regulation (Sec. 9). In contrast, the California Act does not specifically regulate mining activities. The California Act does not authorize land acquisition. In contrast, the National Act expressly authorizes the USDI and USDA to acquire land or interests in land within the authorized boundaries of any component of the National System.

Federal agencies with jurisdiction over lands including or adjacent to designated rivers or designated potential additions must manage these lands consistent with the purposes of the National Act. For rivers designated under Section 2(a)(ii), federal agencies, when appropriate, must enter into written cooperative agreements regarding federal land management with the appropriate state or local agencies (Sec. 12[a]).

The National Act and U. S. Forest Service (USFS) Land and Resource Management Planning Handbook (U. S. Forest Service 1987) contain more specific land use restrictions than the California Act. Future land uses such as timber production, mining, road construction, agriculture, recreation development, structures, utilities, and motorized travel are all restricted to various degrees, depending upon river classification as wild, scenic, or recreational. The California Act does not explicitly identify appropriate future land uses for different river classifications. Such differences, however, are implied in the definitions of wild, scenic, and recreation rivers.

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Management of System

Each federally designated river is assigned to either the USDI or the USDA as an administering agency. The administering agency, following designation of a river, is responsible for determining detailed boundaries and river classifications, unless Congress has already made these determinations. The administering agency is also responsible for preparing a "comprehensive management plan" describing management practices necessary to achieve the National Act's purposes. (Sec. 3)

The National Act's requirements for administration and management of designated rivers are much more extensive and formal than the analogous California Act requirements. Under the California Act, comprehensive management plans for designated rivers are no longer required.

RELATED STATUTORY PROTECTION

California relies on existing State and local authorities and responsibilities to administer nonfederal lands included in the California System. The foremost legal authorities, as established by the California Environmental Quality Act (CEQA), the Public Trust Doctrine, the California Forest Practice Rules, and the Porter-Cologne Water Quality Control Act of 1969, provide the legal framework for permanent State administration of these rivers. Many other statutes and resource programs exist to provide varying degrees of protection for the unique river qualities.

The greatest protection of the river values is provided by the California Act itself and particularly by the section of the Act which states that all State and local governmental agencies shall exercise their powers in a manner consistent with the Act (Sec. 5093.61). This section ties the requirements of the California Act to all other existing authorities of State and local agencies. Wherever these other authorities touch the values in the California System, these authorities shall be administered in a manner consistent with the California Act. Given the comprehensive nature of California's regulation of its natural resources and protection of its environment, this one provision in the Act brings about a comprehensive system of protection based on many independent but mutually reinforcing authorities.

In addition to the protections provided by the California Act, the following authorities and programs may play a major role in protecting the river values:

- California Environmental Quality Act: requires a detailed assessment of both public and private activities that require discretionary approval from a State or

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local agency if the activity could have a significant impact on the environment.

- Public Trust Doctrine: requires the State to administer public trust lands (tidelands and beds of navigable rivers) in conformance with basic trust purposes of navigation, commerce, fisheries, and environmental protection.

- California Forest Practice Act and Forest Practice Rules: establishes a State policy for forest management and assures protection of privately owned forestland along the rivers through the adoption and review of forest practice rules and regulations by the State Board of Forestry and requires timber harvesting plans for the conduct of timber operations.

- State Water Resources Control Board: requires the formulation and adoption of State policy for water quality control and promulgates general procedures for the adoption of water quality control plans by the nine regional water quality control boards.

- Other State Programs: include water quality regulation, fish and wildlife management, coastal zone management, cultural resource protection, boating and waterways programs, management of the State Park System, wetlands preservation, control of surface mining activities and reclamation, and wilderness preservation.

Local governments play a major role in administration of the rivers. A number of State statutes help ensure that local land use controls over privately owned land are consistent with wild and scenic river objectives. These include:

- Forest Taxation Reform Act and Forest Practice Act: establishes timberland preservation zones wherein uses are restricted to timber production and compatible uses, and requires timberland conservation permits for immediate rezoning.

- Williamson Act: offers tax incentives to owners of agricultural and open space land to keep their land in current uses.

- Other State Statutes: include the Coastal Act, the State Planning Act, the Subdivision Map Act, and CEQA.

LOCATION AND STUDY AREA

Chapter 2

LOCATION AND STUDY AREA

LOCATION

Draining approximately 670 square miles of land in Siskiyou and Shasta Counties, the McCloud River flows southwesterly near McCloud, California, at the southern flank of Mt. Shasta (Figure 2-1). The McCloud River flows from an upland basin of gentle topography through chaparral and scrub habitats, rocky canyons, and mixed coniferous forests. Terminating at Shasta Lake, the McCloud River also is impounded upstream of Shasta Lake by Lake McCloud (McCloud Reservoir) (Figure 2-2).

STUDY AREA

Section 5093.548 identifies specific segments of the McCloud River and Squaw Valley Creek as potential additions to the System. Candidate segments on the McCloud River begin at Algoma and proceed to McCloud Reservoir (upper McCloud River) and extend from McCloud Dam to Shasta Lake (lower McCloud River) (Figure 2-2). The upper and lower segments are 20 and 23 miles long, respectively. The 10-mile candidate segment on Squaw Valley Creek begins at the northern boundary of Section 14 (T38N, R3W) and ends at the confluence with the McCloud River. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments. Surface water elevation fluctuations at both Shasta Lake and McCloud Reservoir each generally affect approximately 2 river miles on a temporary basis. River elevations along the McCloud River segment range from 3,820 to 1,065 feet.

Under the Act, boundaries of designated rivers extend "up to the first line of permanently established riparian vegetation." This means that only the area of the river channel between the upstream and downstream segment boundaries of a designated river is covered under the Act. The "immediate environments" pertain only to the land "immediately adjacent" to river segments (Sec. 5093.52). To evaluate the resources that might provide a river worthy of designation under the Act, a broader area of investigation is needed.

Resource evaluations typically were conducted using a nested set of three study areas: ~~regional, secondary,~~ and primary. The regional study area or region generally coincides

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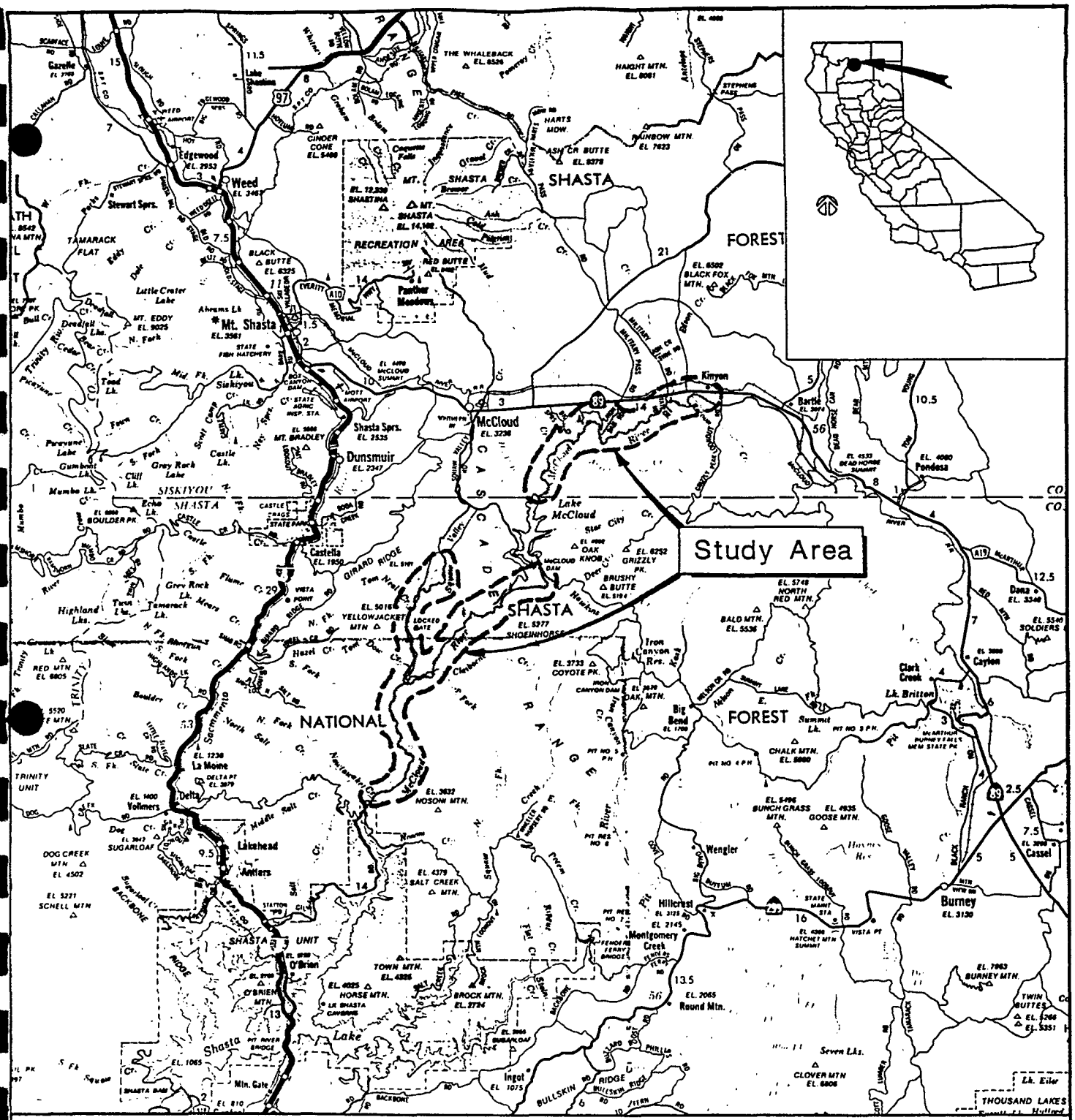

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FIGURE 2-1. McCLOUD RIVER LOCATION MAP

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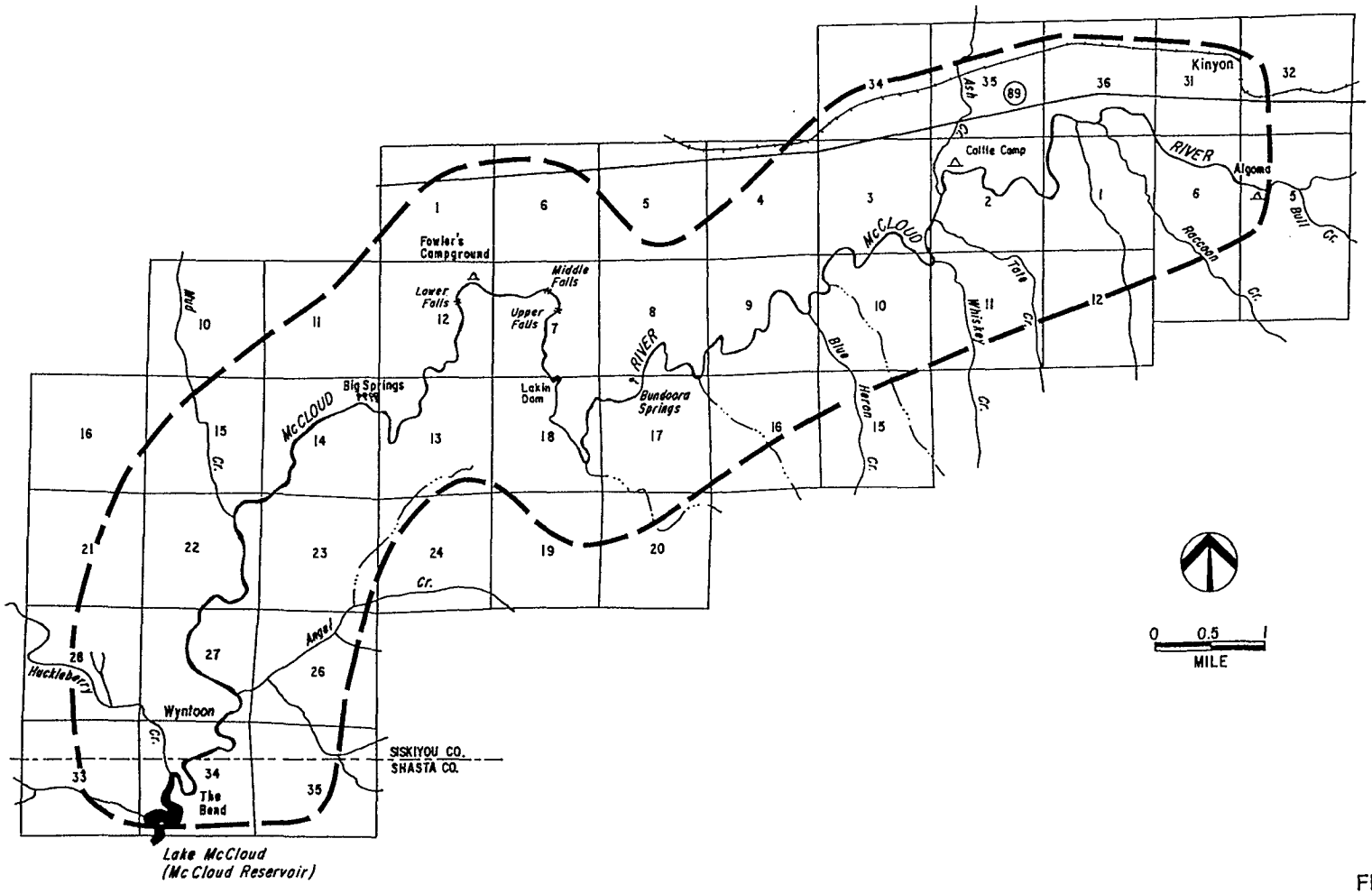

FIGURE 2-2A.

McCLOUD RIVER SECONDARY STUDY AREA

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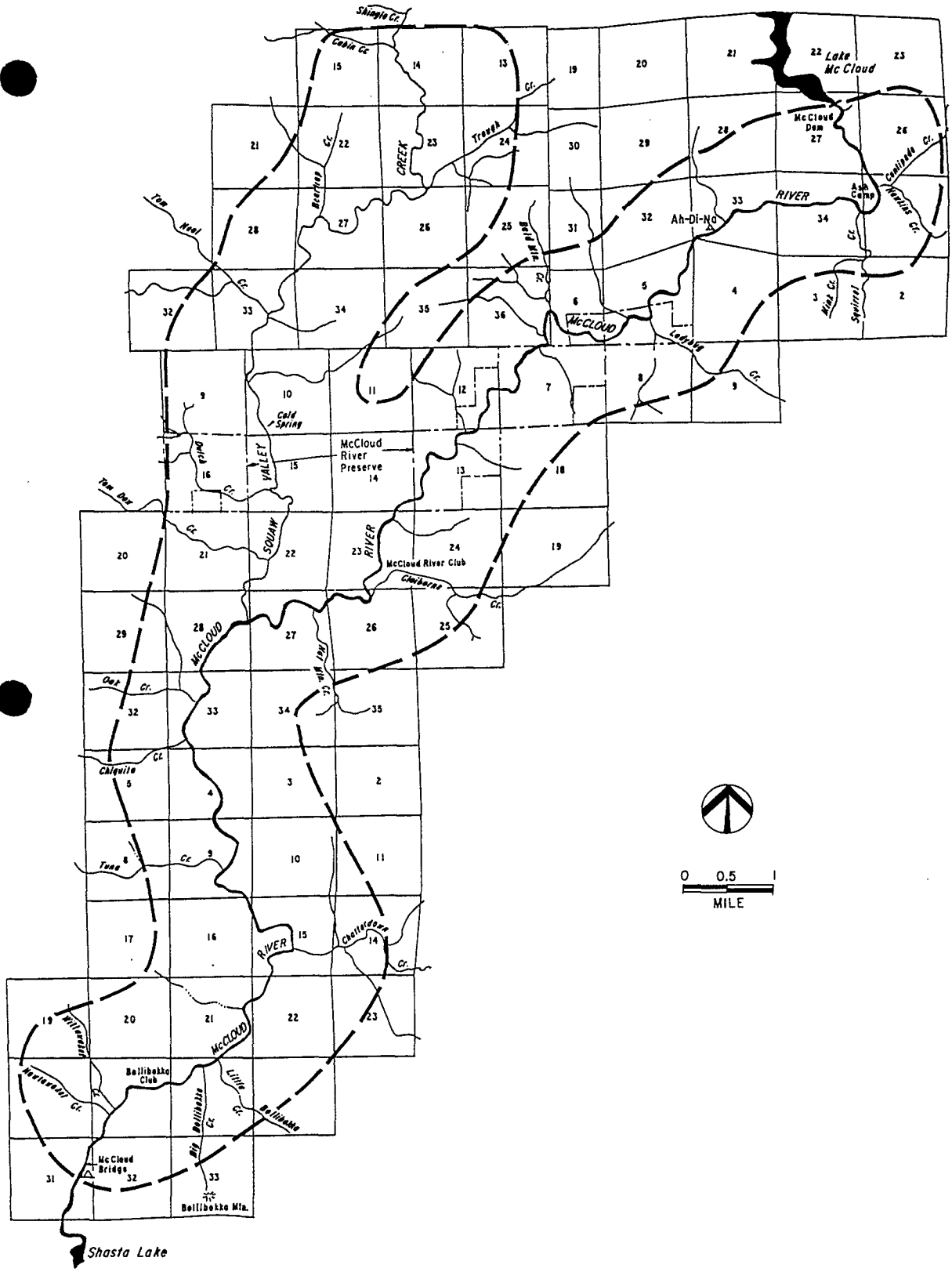

FIGURE 2-2B. McCLOUD RIVER SECONDARY STUDY AREA

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with the watershed boundary of the nominated river with some flexibility in boundaries to accommodate each different resource. A general description of the resources of the regional study area provided a broad perspective upon which specific resources were evaluated (see Volume II).

The secondary study area was approximately 2 miles wide (boundaries located 1 mile from each riverbank) between the upper and lower boundaries of the nominated river segment (Figure 2-2). The 2-mile-wide study area facilitates a thorough resource inventory within the general environment of the river under study.

The primary study area coincides with the boundaries established in the Act and extends up to the first line of permanently established riparian vegetation within the upper and lower boundaries of the nominated river segment.

Segments nominated for inclusion in the System were divided into shorter segments as necessary to facilitate greater accuracy in data collection, analyses, and recommendations. Segmentation was initially resource specific (see Volume II). This approach promoted more accurate representation of resource values along the river corridor than could have been achieved without the site-specific segmentation. Differences among site-specific segments for different resources were resolved in the final evaluation of nominated segments (Chapter 5 - "Eligibility and Classification").

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AFFECTED ENVIRONMENT AND RESOURCE EVALUATIONS

Chapter 3

AFFECTED ENVIRONMENT AND RESOURCE EVALUATIONS

Scenic, recreational, fishery, and wildlife resource values are emphasized in the California Act (Sec. 5093.50). These resource values are not defined in the Act and can be affected by, or components of, several other resource values not specifically identified in the Act. The following resource values were included in this analysis to provide a comprehensive perspective for evaluating all resource values of the McCloud River and Squaw Valley Creek:

- Climate and air quality
- Geology, soils, and minerals
- Water quantity and quality
- Botanical
- Wildlife
- Fishery
- Recreational
- Scenic
- Cultural and historic
- Scientific, ecological, and educational

This chapter summarizes technical resource evaluations presented in Volume II and provides additional evaluations of climate, air quality, scientific, ecological, and educational resources. The primary objective of these evaluations was to determine whether each resource under study represented an "extraordinary" value. A river segment typically possesses at least one extraordinary value to be eligible for inclusion in the System (Sec. 5093.50). A river also may possess a combination of resource values which together form an extraordinary resource value, even though none of the individual resource values are extraordinary themselves. The California Act does not specifically define "extraordinary," and a working definition of this term was needed to guide resource evaluations in this report. Resource values are considered in the context of this evaluation to be extraordinary if they were, individually or collectively, unusual or unique in California and provided benefit and enjoyment to the people of the State.

CLIMATE AND AIR QUALITY

Climate greatly influences the botanical, wildlife, and fishery resource values in an area. Air quality affects scenic resource values and thereby can affect recreational values.

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Although generally not considered to be important resources influencing wild and scenic river designation, climate and air quality can significantly affect more important resources.

Climate

The climate within the McCloud River study area is characterized by cool, moist winters and hot, dry summers (National Oceanic and Atmospheric Administration 1985). Annual precipitation varies from 15 to 80 inches, usually 50-60 inches, depending on orographic effects and elevation. Approximately 15-25 percent of annual precipitation falls as snow. Most precipitation originates from Pacific storms between September and March, but summer thunderstorms occasionally occur. Maximum daily summer air temperatures range from 77 to 106°F, while winter maxima range from 27 to 36°F.

The dominant wind flow pattern is from the north year-round (California Air Resources Board 1984). This pattern occurs mainly during evenings and nights, when cool air drains downslope from the north and northwest. Warm air travels upslope during the day, and air currents can come from the south and southeast. This southerly wind pattern can transport pollution into the study area from other areas.

Air Quality

The McCloud River is located in the Shasta County portion of the Sacramento Valley Air Basin as designated by the California Air Resources Board. Shasta County meets State and federal standards for carbon monoxide, ozone, and particulate matter levels and generally enjoys a high standard of air quality. Air quality degradation can occur from controlled burning, forest fires, and pollution drifting in from the southern Sacramento Valley and San Francisco Bay area (Booth pers. comm.). These sources of air pollution are irregular and not considered significant during most years. The large number of major wildfires in September 1987, however, caused significant air quality deterioration for several weeks.

The Clean Air Act of 1977 established a three-tiered classification system for preventing significant air quality deterioration. Most of Shasta County, including the study area, is rated Class II, which is defined as "a nice area that can afford minor air quality deterioration."

Extraordinary Values

Climate and air quality resources do not represent extraordinary resource values. Similar resource values are common throughout the region.

GEOLOGY, SOIL, AND MINERAL RESOURCES

Geology and soils are major factors determining the landforms, flora, and fauna of a river corridor. Together with mineral resources, these factors are also responsible for most historic, recent, and potential future patterns of land use and economic development in an area. Geologic features contribute significantly to the "wildness" of rivers, particularly in mountainous regions. Soil and mineral resources may provide opportunities for economic development that would interfere with a river's wild and scenic qualities and associated uses.

Geology

The McCloud River watershed encompasses portions of three geologic provinces. Most of the McCloud River, including all portions south of McCloud Reservoir, flows through the eastern belt of the Klamath Mountains Province. This is a region of metamorphosed sedimentary and volcanic rocks laid down in shallow seas from about 140 to 60 million years before the present (MYBP). These seas were created when a small crustal plate containing the northern end of the ancestral Sierra Nevada moved about 60 miles westward to become the Klamath Mountains (Alt and Hyndman 1975). Deposits formed in these seas have since been uplifted, folded, and eroded to form the mountains between the Sacramento Valley and Mt. Shasta.

The northern portion of the McCloud watershed is located in the Cascade Mountains Province. The river flows along the southern edge of this province from east of Algoma nearly to McCloud Reservoir. The Cascades are a series of volcanoes extending from Lassen Peak northward into British Columbia. In the McCloud watershed, the Cascade Mountains Province is dominated by Mt. Shasta. This massive, 14,162-foot peak originated over 100,000 years ago and appears to have been built through four distinct periods of eruptive activity. Many flows are recent, only 300-500 years old. The last eruption may have been as recent as 1857. Mudflows resulting from local warming beneath glaciers occurred as recently as 1924 (Hill 1977, Harris 1980).

The eastern portions of the McCloud watershed are located in the southwest corner of the Modoc Plateau Province. The Modoc Plateau is a region of high volcanic table lands and numerous volcanic cones and craters. Once part of the same seaway that produced the rocks of the eastern Klamath Mountains, this region became buried under extensive lava flows several hundred feet deep from about 50 to 30 MYBP. Geologically, the area is best known today for the rugged landforms in Lava Beds National Monument and the Medicine Lake Highlands (Alt and Hyndman 1975).

The oldest rocks in the secondary study area are Paleozoic marine sediments. These include the metasedimentary rocks of Carboniferous and Permian age along Squaw Valley Creek above the Dutch Creek confluence and along the upper McCloud River between The Bend and Big Springs. Paleozoic formations are also exposed extensively along the McCloud arm of Shasta Lake and enter the study area below the Bollibokka Club.

The most noteworthy of these Paleozoic marine deposits is the McCloud limestone of the Permian period. Bands of McCloud limestone cross Squaw Valley Creek at Cold Spring and the McCloud River below the Bollibokka Club. Fossils of marine corals and molluscs in these rocks have been the subject of much recent research interest (Wilson 1970, 1982, 1983). Caves and crevices in the McCloud limestone also provide habitat for several unique animal and plant species.

Big Springs is a unique and outstanding geologic feature on the north bank of the McCloud River about 2 miles downstream of Lower Falls (Figure 2-1). Cold, clear water flows out of talus below a cliff of Pleistocene basalt into the McCloud River at a rate of about 800 cubic feet per second (cfs). This water probably originates on the south flank of Mt. Shasta and travels through lava tubes and faults to the McCloud River (Strand 1962, 1963). Three waterfalls are located upstream of Big Springs where faults cross the river.

Volcanic and thermal activity centered at Mt. Shasta has long been an influence north of McCloud Reservoir and may continue to affect the area. In 1924, a mudflow caused by melting ice in the Konwakiton Glacier swept down Mud Creek into the McCloud River, damaging property near the community of McCloud and muddying the McCloud and Sacramento Rivers with sediment (Harris 1980). Pyroclastic flows and ash falls are also possible in this area. Ash falls are less likely, because prevailing winds would most often blow most ash from Mt. Shasta to the northeast (U. S. Forest Service 1986).

Soils

Along the upper McCloud River, most soils on Pleistocene volcanic parent materials are moderately acidic gravelly and sandy loams 20-40 inches in depth. Most soils on Tertiary volcanic materials are strongly acidic sandy loams and loamy sands of greater than 40 inches in depth (Mallory et al. 1978). None of the secondary study area soils support agricultural production. Soils of predominantly gentle to moderate slopes above McCloud Reservoir support sufficient forage for some grazing.

Minerals

No active or historical mines or quarries occur within the study area. Mineral activities in the region surrounding the study area including pumice quarries and geothermal leases near Mt. Shasta, an oil and gas lease at Colby Meadow near the headwaters of the McCloud River, and a quarry in the McCloud limestone near Shasta Lake. It is unlikely that economically developable mineral resources will be found within the secondary study area (Evans 1977, Van Susteren pers. comm.).

Extraordinary Values

Geology, soil, and mineral resources do not represent extraordinary resource values in most of the study area. Significant mineral resources are apparently absent from the study area, and the steepness or rockiness of many sites precludes grazing or timber production in many areas. Big Springs, however, does represent an extraordinary resource value in the upper McCloud River because of its role in providing substantial flows to the McCloud River.

WATER QUANTITY AND QUALITY

Suitable water quality and water resources provide the foundation for any evaluation of rivers nominated for inclusion in the California Wild and Scenic Rivers System. These resources significantly influence all of the primary values--scenic, recreational, fishery, and wildlife--that dictate wild and scenic river status. Water use in California greatly limits the number of free-flowing rivers with high-quality water, and river values are frequently degraded in the process of using the water.

Water Quantity

The McCloud River drainage basin is situated in the "land of fire and ice," a transitional zone between the Cascade Volcanic Mountain Range to the north and the heavily glaciated granitic Sierra Nevada Range to the south. Active volcanism and recent glaciations in this zone create a very complex hydrologic system. The McCloud River originates on a midelevation plateau at Colby Meadow, an upland basin of gentle topography situated 4,250 feet above sea level. The river flows for many miles as a small stream, both above and within the upper study area. The general region is marked with a variety of geologically young volcanic formations such as mudflows and basaltic lava flows, which are partly responsible for the staircase of waterfalls found on the upper McCloud River. These fluid basaltic lava flows traveled for many miles, blocking the ancestral course of the McCloud River, which previously flowed northward to the

Klamath River (Hesseldenz 1984). All three waterfalls--Upper, Middle, and Lower Falls--are within a 1.5-mile section of the river (Figure 2-2). Only 2 miles below Lower Falls, Big Springs contributes approximately 800 cfs of water to the river, cascading over basalt talus slopes covered with thick mats of moss and algae. From here the river flows unimpaired for 5.5 miles before entering McCloud Reservoir. McCloud Dam, a Pacific Gas and Electric Company (PGandE) project, diverts a maximum of 900 cfs from the river for hydroelectric generation. The lower McCloud River constitutes the most remote and primitive river segment, although flows are impaired by McCloud Dam located upstream. Except during high flows, lower McCloud River flows are approximately 200 cfs and increase from tributary inflow downstream.

Most McCloud River tributaries form on the southern and eastern slopes of Mt. Shasta. The porous and highly permeable volcanic formations, soils, and creeks that traverse this volcanic topography absorb water rapidly, recharging local groundwater basins. This stored water is a significant factor contributing to sustained summer flows observed in the region's creeks and springs. Groundwater springs of various sizes and flow rates, such as Big Springs, issue cold, clear water and are found throughout the McCloud River basin.

Regional runoff characteristics are related to winter precipitation and the gradual warming and melting of high water content snowpack on the slopes of Mt. Shasta in spring and summer. Winter precipitation, in conjunction with groundwater, provides variable flows in winter. As spring approaches and air temperatures increase, annual snowpacks at lower elevations begin to melt, providing the first source of continuous water to ephemeral creeks and supplementing flow in perennial streams. Continued warming and establishment of the summer heating period gradually melts snowfields at higher elevations, sustaining earlier runoff. Glacial meltwater from Mt. Shasta's relic, Pleistocene-age glaciers also provides water. This combination of available snowbound water at various elevations provides water runoff throughout the summer period characteristic of most high mountainous regions. Peak streamflows occur during periods of large precipitation events (typically November and December) and snowmelt runoff (typically March or April).

Big Springs is a unique water resource feature of the McCloud River basin. Streamflow in the lower portion of the upper McCloud River is controlled primarily from groundwater inflow from Big Springs. The springs vary in size and flow rate and bubble up from the ground or cascade down the face of fractured basalt cliffs that border the river's northern edge. They are believed to be the surface expression of a collapsed terminous of an ancient lava tube. The springs have a summer peak flow, in contrast to winter and spring peak flows upstream from the springs (Hesseldenz 1984). The source of water in the springs is thought to be from snowmelt and deep groundwater from

Mt. Shasta. Depending upon seasonal and meteorological conditions, the flow rate from Big Springs can represent 50-85 percent of the total monthly river flow. This constant supply of cold (43°F) water provides a uniform baseflow and is a key component of the high-quality fishery observed in the river.

Streamflow in the lower McCloud River is controlled primarily from McCloud Reservoir releases. Minimum instream flows immediately downstream of McCloud Dam are 40 cfs from December 1 through June 30 and 50 cfs during the remainder of the year. Minimum instream flow releases for the McCloud River below Hawkins Creek at Ah-Di-Na are 160 cfs in January and February, 170 cfs in March and April, 200 cfs from May through August, 210 cfs from September to December 15, and 170 cfs from December 16-December 31. Minimum flow requirements are reduced to between 160 and 180 cfs from May 15 through December in dry years. When necessary, releases to meet flow requirements at Ah-Di-Na are made through a pipe located immediately below McCloud Dam. The stable summer baseflow is a prime reason for the successful fishery in the lower McCloud River. Significant streamflow fluctuations are related to increases or decreases in the flow release schedule established for McCloud Reservoir, spills from the dam during heavy rainfall periods, and tributary inflow.

Peak and base streamflows are much higher in the lower McCloud River below Squaw Valley Creek; tributary inflow, especially from Squaw Valley Creek, is significant in this lower segment. Squaw Valley Creek is the largest tributary to the lower McCloud River. The headwaters are located near 6,000 feet elevation on the southern slope of Mt. Shasta. The creek is about 20 miles long, with 10 miles under consideration as a wild and scenic river. The average summer flow is approximately 30 cfs (Hesseldenz pers. comm.). In addition, a small portion of the flow in the creek is actually water diverted from the upper McCloud River at Lakin Dam (Figure 2-1).

Pollution from Town of McCloud

Water Quality

McCloud River water quality is considered excellent by State water agencies, and the basin has relatively few pollution sources. Water quality in the upper McCloud River is influenced by inflow from Big Springs, Bundoora Springs, and Mud Creek. Big and Bundoora Springs are exceptionally high-quality water sources bringing cold, highly oxygenated water to the McCloud River. Adverse water quality in the upper McCloud River is primarily caused by Mud Creek, which seasonally transports very large sediment volumes to the McCloud River. Runoff from melting glaciers on Mt. Shasta increase Mud Creek flows in the summer, carrying very fine glacial flour and volcanic ash to McCloud Reservoir. The larger and heavier sediment particles are carried to the reservoir and settle out near the creek's

mouth, forming a delta. Fine ash and silt particles remain suspended in the reservoir and are eventually released below the dam.

Water quality of the lower McCloud River is excellent. Dissolved oxygen is at or near saturation levels, nutrient concentrations are very low, and the water is soft with very little mineral content. Turbidity and suspended solids concentrations, which are measures of water clarity, vary with the season, storm events, and river segments. In general, turbidity levels increase downstream due to input from Mud Creek and runoff from logging roads and other sources.

Water temperatures increase with distance downstream from McCloud Dam. Warmer temperatures are conducive to increased growth rates for brown trout and contribute to the high production level of this species.

DFG sampled the McCloud River as part of the Toxic Substances Monitoring Program (California Department of Fish and Game 1978). Liver tissue samples from fish had detectable concentrations of copper, cadmium, mercury, nickel, lead, zinc, and silver. The levels of these trace metals detected during sampling represent background concentrations, do not differ greatly from those of other rivers, and do not exceed levels established by the U. S. Food and Drug Administration.

As with most remote, pristine streams, water quality data from Squaw Valley Creek are limited. In general, water quality is considered good. Water temperatures are cool and dissolved oxygen concentrations are satisfactory for fishery production.

Extraordinary Values

McCloud River water resources are unique and extraordinary. The substantial groundwater input to the upper McCloud River is an instrumental factor in maintaining high summer flows. The extraordinary fisheries, scenic, recreational, and cultural resources of the river are largely determined by these flows. This reliable source of high-quality water in the McCloud River is extremely important to the State. Water from the McCloud River system is stored at Shasta Lake and is distributed throughout the Sacramento-San Joaquin Valleys and southern California for a wide variety of uses.

Contrary to much of the McCloud River, water resources from Algoma to the Upper Falls are not considered to be extraordinary. This reach does not maintain significant flows, nor does it contain the waterfalls and springs present downstream. The three waterfalls, Big Springs, and large summer flows comprise extraordinary resources from Upper Falls to Huckleberry Creek. Siltation from Mud Creek (via Huckleberry Creek) and reservoir

inundation make the reach from Huckleberry Creek to McCloud Reservoir (distance depending upon reservoir water levels) less than extraordinary.

A large percentage of water is diverted from the McCloud River at McCloud Dam. The diversion precludes designation of the lower McCloud River as "free-flowing." Other State-designated rivers such as the lower American, Trinity, and Klamath Rivers, however, also are controlled by large impoundments. Likewise, Federal Guidelines state that "the fact that a river segment may flow between large impoundments will not necessarily preclude its designation" (47 FR 39457). The lower McCloud River maintains high summer flows responsible for many of the extraordinary values of the McCloud River. Consequently, the segment from 0.25 mile below McCloud Dam to the McCloud Bridge located near Shasta Lake is considered to have extraordinary water resources. The 0.25-mile segment below McCloud Dam and the segment below the McCloud Bridge (distance depending upon reservoir water levels) are not extraordinary because of major river channel modifications caused by a dam and impoundment, respectively.

doesn't flow between is diverted away

Squaw Valley Creek is a free-flowing stream within the study area. Flows are augmented to a small degree by McCloud River water. The extraordinary scenic, fisheries, and recreational resources of the lower McCloud River are largely determined by these flows and to ignore them would preclude protection needed to assure the presence of extraordinary values downstream. In its own right, Squaw Valley Creek maintains extraordinary scenic and cultural resources which are due, in part, to the water resources.

BOTANICAL RESOURCES

Vegetation influences the quality of many natural resources. It dominates the character of terrestrial ecosystems and wildlife habitats, strongly influences the scenic quality of river corridors and watersheds, and provides critical protection for water quality and fish habitat. Vegetation is among the most sensitive of natural resources. It can be severely degraded by inappropriate development, intensive timber harvest, or overuse by recreationists or livestock. Its character changes significantly in response to seasonal changes of climate, successional phenomena, and events such as wildfire and erosion. Vegetation is frequently the subject of resource management programs such as habitat enhancement, erosion control, and fire management. Plant communities in and adjacent to stream courses are particularly sensitive to alterations in their natural environment, especially when the alteration is a change in the water regime.

The McCloud River lies in a biological transition zone that combines elements of the northern Sierra Nevada, southern Cascade Ranges, eastern North Coast Ranges, and western Great Basin (Figure 2-1). Species and communities typical of each region occur within the McCloud River watershed, sometimes near the limits of their ranges. Vegetation in shaded canyons is more reminiscent of rivers in the Pacific Northwest than of rivers in California. The watershed also contains at least one and possibly three unique species, all of which occur on rock outcrops. Douglas-fir forest and mixed conifer forest are the most widespread plant communities in the region. Other important communities include oak forests, scrub and chaparral, riparian and spring communities, and sparsely vegetated limestone outcrops. Many of these communities have numerous species in common and are differentiated on the basis of species dominance, understory composition, structural characteristics, or physical habitat factors. Vegetation in the area is rarely uniform over areas larger than a few acres because of highly variable topography, geology, and successional history. The resulting vegetation is a complex matrix of intergrading communities and habitats. Generalized vegetation of the secondary study area is mapped in Figure 3-1.

More than 240 species of vascular plants have been recorded at the The Nature Conservancy's McCloud River Preserve (Preserve). Also included in the Preserve's flora are more than 45 species of mosses and liverworts and an estimated 80 species of lichens (Kunkel 1975). The flora of the entire secondary study area is substantially larger and offers numerous opportunities for floristic and vegetation research. Three rare flowering plants are known to occur along the McCloud River; field surveys and taxonomic studies may reveal others.

Upland Forest Communities and Habitats

The most widespread vegetation type in the watershed of the lower McCloud River is Douglas-fir forest. The canopy is dominated by Douglas-fir and may also include scattered pine, oak, or big leaf maple. The understory in this forest may include a variety of shrubs, such as dogwood, vine maple, filbert, poison-oak, wild rose, as well as saplings of overstory trees. Douglas-fir forest is best developed on relatively cool, moist, east and north slopes and represents the climax forest community in this area. Several areas of old-growth Douglas-fir forest occur within a mile of the lower McCloud River. These sites have an especially high diversity of plant and animal species because of the diversity of microhabitats present. Many other areas support Douglas-fir forest that is mature (but is not old-growth) or in an earlier successional stage of this forest type. Douglas-fir forest intergrades in portions of the study area with mixed conifer forest, oak forest, and riparian forest (Patterson 1975, Podolak and Dudgeon 1986, Hesseldenz pers. comm.).

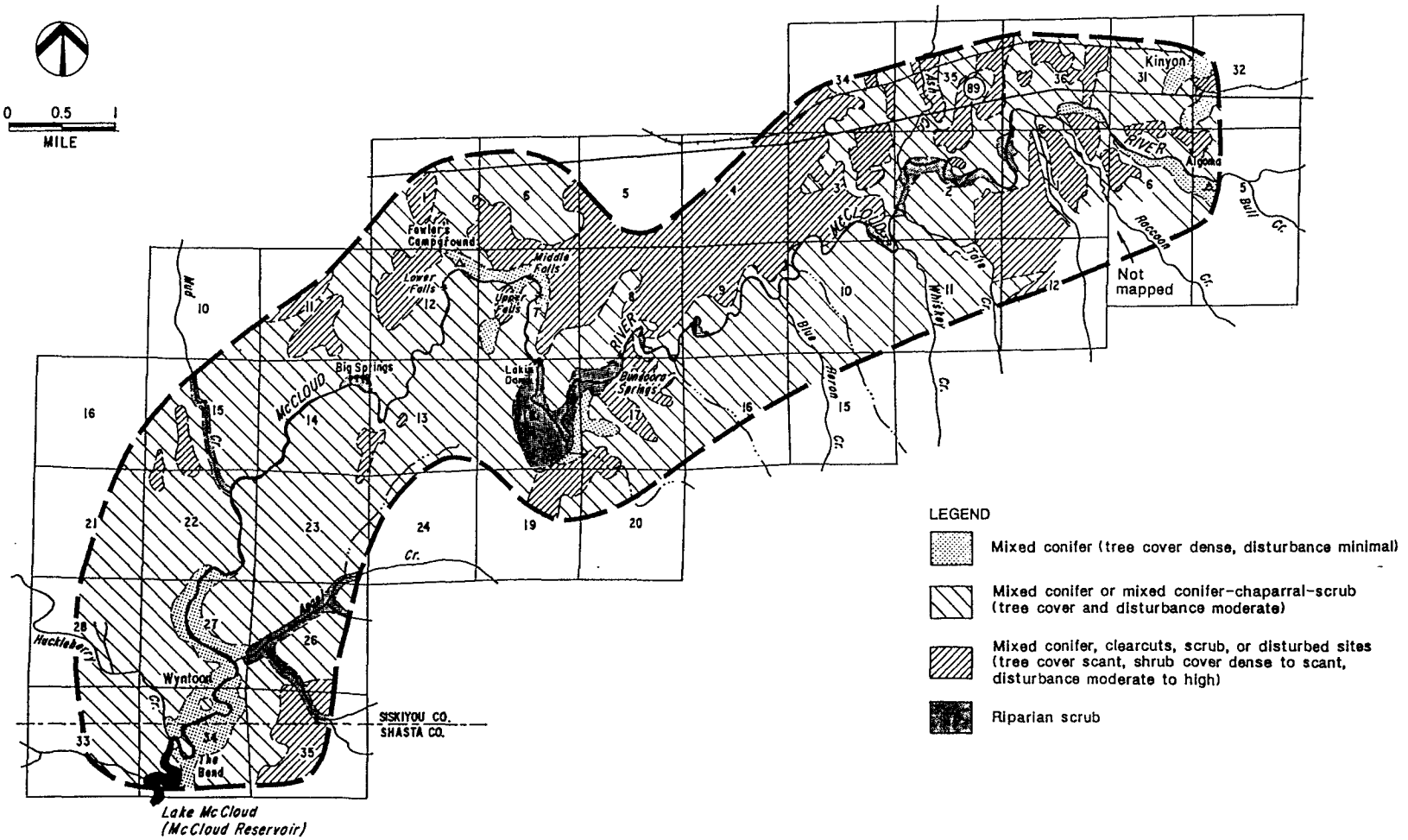

FIGURE 3-1A.
VEGETATION OF THE McCLOUD RIVER

Source: July 1985 aerial photographs

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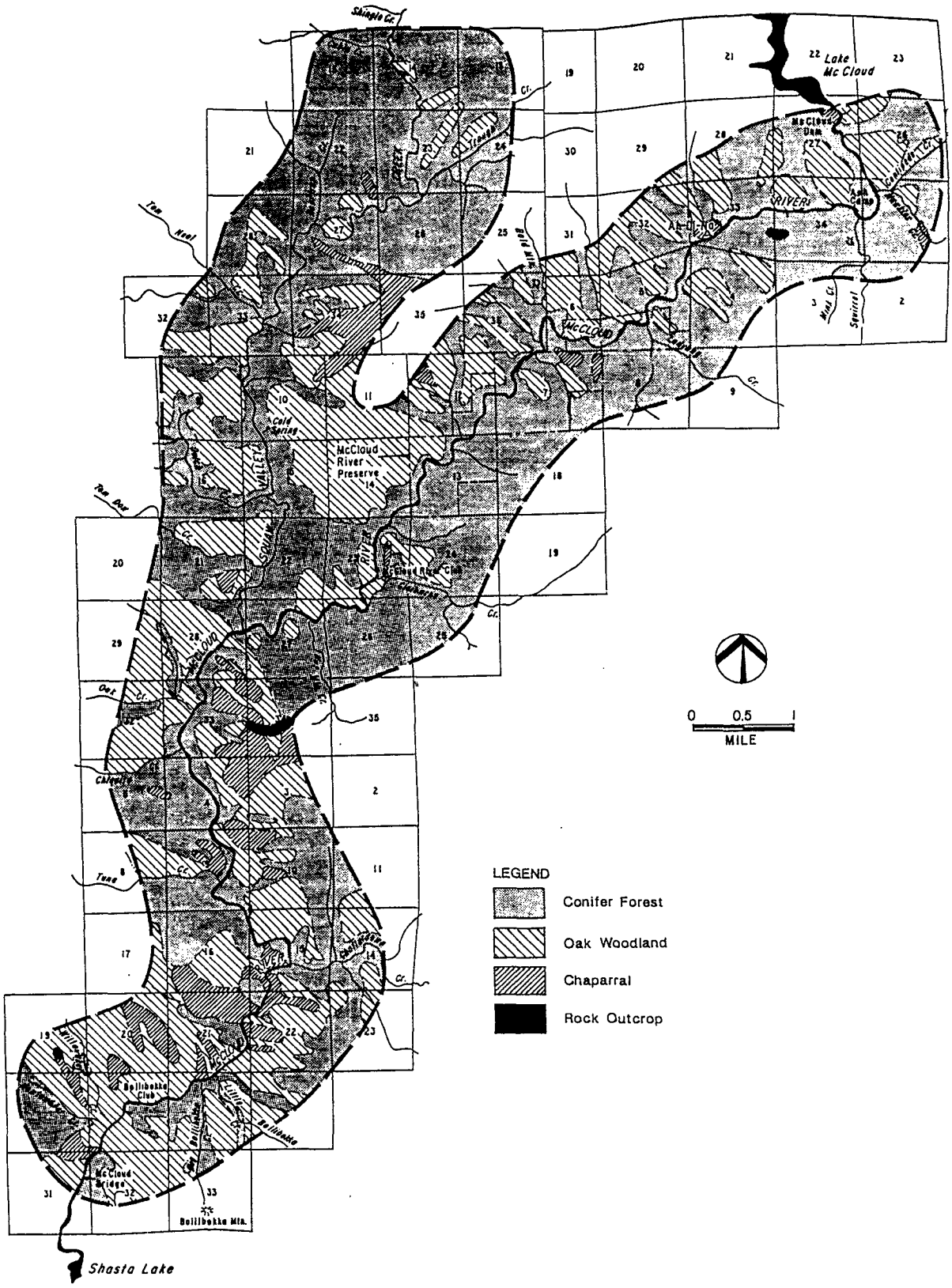

FIGURE 3-1B. VEGETATION OF THE McCLOUD RIVER

Source: July 1985 Aerial Photographs

Two kinds of oak forest (one evergreen, the other deciduous) are common on sites not dominated by Douglas-fir. Canyon live oak forest is best developed on steep, rocky slopes, a common habitat in the canyon of the lower McCloud River. Canopy cover is often sparse, giving the community more of a woodland than a forest character. Associated shrubs are drought-tolerant species characteristic of the nearby chaparral. These areas contain a relatively high diversity of herbs and small shrubs.

California black oak forest or woodland occurs on more moderate slopes and on flats. These trees, and the often associated deer brush, establish quickly after fires or other disturbance. This community represents an intermediate successional stage on sites that were once disturbed and may eventually succeed to Douglas-fir forest.

Mixed conifer forest occurs throughout the study area but is most widespread on the volcanic uplands bordering the upper McCloud River. Ponderosa pine and Douglas-fir are the most abundant trees; also present are white fir, incense-cedar, sugar pine, knobcone pine, California black oak, and Oregon white oak. Mixed conifer forest along the lower McCloud River is typically a mixture of Digger pine and Douglas-fir, together with a variety of smaller trees and shrubs.

Chaparral and Scrub Communities

Chaparral is a dense growth of woody shrubs with small, thick, evergreen leaves adapted to drought and fire. Chaparral generally occurs on hot, dry slopes that are rocky or have poor soil development. Chaparral is one of the most characteristic vegetation types in California, encompassing a wide variety of plant communities. In the study area, chaparral is occasional on slopes above the lower McCloud River. Species composition varies with successional status but is generally dominated by greenleaf and whiteleaf manzanitas.

Scrub vegetation is a scattered to dense growth of shrubs that are not generally adapted to fire or prolonged drought. Scrub occurs in cooler, moister situations than chaparral and usually in deeper soils. Scrub vegetation in the study area is similar to that of the western Great Basin. Dominant species are Sierra whitethorn and bitterbrush; others include rabbitbrush and service berry.

Riparian and Spring Communities and Habitats

Rivers, moist drainages, and springs support plant communities very different from those in drier habitats. Species occurring in riparian (riverside) or other moist zones almost always have unlimited access to groundwater and many have high

The most important outcrops in the study area are those in the McCloud limestone formation along the lower McCloud River. Outcrops of McCloud limestone are the only habitat of the rare Shasta eupatory. Shasta limestone habitats in the study area offer many opportunities for important biological research. Other botanically important outcrops are those supporting populations of the rare Howell's lewisia. These occur within and adjacent to the river channel along the lower McCloud River and several tributaries, including Squaw Valley Creek. An outcrop near Fowler's Campground on the upper McCloud River reportedly supports the rare Scott's Mountain phacelia (California Natural Diversity Data Base 1987).

Disturbed Habitats

Portions of the Douglas-fir and mixed conifer forests have been disturbed by logging operations and associated road construction. Tree removal increased the amount of light and heat reaching the forest floor, decreased competition among species, and altered the physical, chemical, and biological properties of soil and litter. These changes allowed the proliferation of "pioneer" species such as deer brush, cheatgrass, various weedy forbs, and "light-loving" shrubs and vines such as gooseberry and blackberry (Patterson 1975). Areas in which secondary succession has been renewed by logging activities may appear to be botanically rich, with many different species, but lack the ecological complexity of mature or old-growth forests.

Special-Status Species

Three rare plants occur within the secondary study area, all in rock outcrop habitats. None of the rare plants have been designated as threatened or endangered under the California or U. S. Endangered Species Acts.

The rarest of these is probably the Scott Mountain phacelia, which was reportedly seen near Fowler's Campground in 1979 and is a candidate for federal listing. This population has not been verified or seen since then (California Natural Diversity Data Base 1987). Most occurrences of this plant are in the Scott Mountains west of Mt. Shasta (Smith and York 1984).

Howell's lewisia, also a candidate for federal listing, is by far the most abundant of the rare plants in the study area and is the only one to occur within the primary study area. Many other populations are known from Shasta, Trinity, Humboldt, and Del Norte Counties, and from southwestern Oregon.

Shasta eupatory was originally discovered on limestones between the McCloud and Pit Rivers and subsequently found near the McCloud arm of Shasta Lake (Taylor and Stebbins 1978). No populations are specifically known from within the secondary

study area, but geological mapping indicates a strong likelihood that the species would be found if certain parts of the study area were surveyed. This species, while of limited distribution, is too common for listing.

Extraordinary Values

Botanical resources are rated as very good to excellent along much of the McCloud River and Squaw Valley Creek. Factors supporting this rating are the generally wild and undisturbed quality of riparian and other vegetation in these areas; the presence of Howell's lewisia, which is rare, but not unique in the region; and the unusual character and diversity of vegetation at Big Springs. These resources are not considered to be extraordinary but represent an important contribution to the scientific and ecological value of the area.

WILDLIFE RESOURCES

Wildlife resources are an important component in the ecological description of riparian and riverine communities. Because of their undisturbed character, wild and scenic rivers often support high densities of wildlife species, including many special-status species. Some species fill important ecological niches or provide recreational enjoyment for many Californians. Habitat quality is an important determinant of wildlife resources. Breeding, feeding, and resting habitats are critical components necessary for species survival, growth, and reproduction. Riparian forests, wetlands, old-growth forests, and other major habitat types determine the range, distribution, and abundance of wildlife species within the study area. Most wildlife species are sensitive to disturbance of their natural environments. Wildlife species dependent on riparian areas, wet meadows, or other sensitive habitats are especially vulnerable to habitat alterations.

The McCloud River lies in a transition zone between the Central Valley and the Cascade Range, and wildlife species from both areas occupy the McCloud River drainage. The pristine character of the lower McCloud River and Squaw Valley Creek watersheds provides high-quality habitat for a diversity of wildlife species. The most intensively studied portion of the study area is contained within the 2,330-acre Preserve. Approximately 841 invertebrate species (Hajek 1975), 94 bird species, 13 reptile species, eight amphibian species, and 36 mammal species have been recorded on the Preserve (Hayes 1975, Hayes and Kraai 1975, Hesseldenz pers. comm.). Species of special interest to the public include mule deer, black bear, mountain lion, coyote, bobcat, raccoon, river otter, and ringtail.

Some USFS lands have been inventoried for special-status species and other areas have been identified for future surveys. Recent surveys of USFS lands have revealed the presence of numerous special-status species in the McCloud River and Squaw Valley Creek watersheds (Brumley and Phelps pers. comms.). State- and federal-listed species include bald eagle, peregrine falcon, wolverine, Shasta salamander, and the Shasta sideband snail. Other special-status species known to occur within the study area, but which have not been included on State or federal threatened or endangered species lists, include the northern goshawk, sharp-shinned hawk, osprey, spotted owl, willow flycatcher, yellow warbler, and fisher. A rare (but unlisted) species of butterfly was taken at the McCloud Fishing Station in 1881; the taxonomic status of this subspecies is currently under review (Emmel pers. comm.).

Several major habitat types occur within the study area as defined for botanical resources. Some wildlife species occur in only one or a few of these habitat types, while other species are wide ranging throughout the full complement of available habitat types. Riparian habitats are particularly important; the high abundance and diversity of wildlife in riparian habitats is a function of several interrelated factors, including vegetation structure, microclimate conditions, edge effects, and availability of water, food, and cover (Thomas et al. 1979). Riparian habitats are attractive to a large array of wildlife species because the forest layers provide many foraging opportunities. Furthermore, contiguous stretches of riparian habitat provide migratory corridors for many birds, mammals (including mule deer), reptiles, and amphibians (Thomas et al. 1979). Riparian areas have high wildlife value; riparian vegetation along the McCloud River and Squaw Valley Creek probably supports a higher abundance and diversity of wildlife species per unit acreage than any other habitat in the study area.

Extraordinary Values

The McCloud River and Squaw Valley Creek drainages provide important habitat for a diversity of amphibians, reptiles, birds, and mammals, including many special-status species. Grazing pressure and logging have disturbed some of the slopes above the river (especially in the upper McCloud River), but the entire river channel has a wild character. The absence of dams, diversions, and significant development along each study segment contributes to high-quality habitats that sustain exceptional wildlife resources in northern California.

The exceptional wildlife resources within the study area are not unique. Similar resources and habitats are present in wilderness and remote areas throughout the State. Consequently, wildlife resources are not considered to be extraordinary in the McCloud River study area. Wildlife values, in concert with

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botanical and fishery resources, however, constitute an extraordinary ecological resource value when considered together.

FISHERY RESOURCES

Fishery resources comprise an important and integral part of existing natural resources in California. Aquatic environments--ranging from small mountain streams to large valley rivers and from small pristine ponds to large man-made impoundments--sustain a diverse array of fish species. The assemblage of fishes is unique and provides significant benefits to the people of California. California's fishery resources, both historically and presently, have contributed immensely to California's wealth of natural resources, as well as to its economy.

California fishes depend on the maintenance of aquatic communities in which they survive, grow, and reproduce. Land use activities and water resources development can modify habitats and increase, reduce, or eliminate fish populations. The California System currently provides protection to much of the important anadromous fishery habitat in California. One of the primary reasons cited for designating northcoast rivers to wild and scenic river status was to protect these important fisheries resources. Fishery resources are, therefore, considered critically important in the evaluation of rivers nominated for inclusion in the California System.

Fishery resource values of the McCloud River have been influenced significantly by water development but have always been considered to be exceptional. The historic fishery of the McCloud River included chinook salmon, steelhead trout, rainbow trout, and bull trout (formerly called Dolly Varden). The only native fish above the three waterfalls was upper McCloud River redband trout. The completion of Shasta Dam in 1945 and the subsequent filling of Shasta Lake inundated 16 miles of the McCloud River, eliminating all runs of anadromous fish (chinook salmon and steelhead trout). McCloud Dam, built upstream of Shasta Dam in 1965, further restricted fish movements and created two segregated fisheries. Bull trout, endemic in California to the McCloud River, was extirpated from California waters. The bull trout's decline has been attributed to several factors related to construction and operation of Shasta and McCloud Dams.

Upper McCloud River

The upper McCloud River fishery now consists of approximately equal numbers of wild rainbow and brown trout, with smaller populations of brook trout (Deinstadt pers. comm.). Wild populations of redband, brown, and brook trout also are

present throughout the upper McCloud River above Middle Falls and offer good fishing except at the numerous access points where hatchery trout are planted and high angler pressure reduces wild populations.

Catchable-sized rainbow trout are stocked annually by DFG at most road access points from the Bartle area to Lower Falls. This area is easily accessible and receives heavy fishing pressure (Strate and Underwood 1982). Generally, relatively few hatchery trout are found downstream of the plunge pool located below Lower Falls (Rode pers. comm.). Wild rainbow trout are abundant below the waterfalls and can reach 20 inches in length. A few brown trout are found in this area, too, but some are in poor condition because of the unfavorably cold water temperatures. The upper McCloud River maintains an excellent wild rainbow trout fishery. Private property and restricted access downstream of Lower Falls to McCloud Reservoir are major factors contributing to current trout population levels.

Lower McCloud River

Much of the lower McCloud River represents classic "pocket water." The present fishery is dominated by wild rainbow and brown trout. The most common fish is the native rainbow trout. It is a highly colorful and vigorous fish, whose fighting qualities have earned the lower McCloud River its reputation as one of the top wild trout fisheries in California. An average of 88 percent of the reported trout catch at the Preserve is rainbow trout, with anglers reporting about 12 percent of the caught trout 14 inches in length or larger. Rainbow trout over 20 inches in length are sometimes caught. (Rode 1987)

Brown trout are resident throughout the lower McCloud River but are greater in number in downstream areas. Because they reach large sizes (to 32 inches), brown trout add an exciting element to the wild trout fishing experience; anglers report about 19 percent of brown caught at the Preserve are 14 inches in length or larger. McCloud River brown trout undertake substantial migrations between the river and Shasta Lake. (Rode 1987)

A large section of the lower McCloud River is managed as a California Wild Trout Water. In 1976, the California Fish and Game Commission designated a 10.5-mile reach below McCloud Dam for special management and habitat protection. The California Wild Trout Program was established by the California Fish and Game Commission in 1971 to manage certain State waters exclusively for wild trout. The primary purpose of the Wild Trout Program is to identify, perpetuate, and enhance natural and attractive trout fisheries by emphasizing wild trout strains, in contrast to the majority of the State's accessible waters, which are managed by planting catchable-sized hatchery trout on a "put-and-take" basis.

Wild trout angling is considered a quality experience that provides the angler with an opportunity to fish in aesthetically pleasing and environmentally productive waters where trout populations are largely unaffected by the angling process. Stocking of catchable-sized trout is prohibited in Wild Trout Waters, and special angling regulations specific to each water can be adopted. Angling and gear restrictions within Wild Trout Waters on the lower McCloud River include a 2-trout bag limit from McCloud Dam to Ladybug Creek, 0-trout bag limit in the upper 2 miles of the Preserve (Ladybug Creek to southern boundary of Section 14), and complete fishing closure in the lower 4 miles of the Preserve. The method of take is restricted to artificial lures only with a single barbless hook. Other regulations are enforced on the Preserve as well.

The lower McCloud River fishery is noted for its relatively high catch rate with anglers reporting catches of 1.3 trout per angler hour in the Preserve. This rate is substantially higher than values recorded for three other northern California Wild Trout Waters, where rates ranged from 0.42 to 0.83 trout per hour. (Rode 1987)

Squaw Valley Creek

Squaw Valley Creek is the primary tributary of the McCloud River. The creek flows through a moderately steep bedrock channel, bordered on either side by steep canyon walls with numerous small shelves. The watershed is heavily forested within the study area, and stream shading is extensive. Fisheries habitat is in excellent condition and consists of interspersed riffles, runs, and bedrock pools.

Few data exist on the fish populations of Squaw Valley Creek. Recent DFG sampling indicates rainbow and brown trout comprise about 92 and 8 percent of the trout fishery, respectively (Deinstadt pers. comm.). Estimates from snorkeling surveys indicated 80 percent of the trout were rainbow trout (Rensink and Parmenter 1986). A few large rainbow and brown trout from the McCloud River may spawn in Squaw Valley Creek.

Special-Status Species

Redband trout are currently noted as a species of special concern (Johnson 1987) and were nominated for listing under the Endangered Species Act of 1973 (50 FR 37958-37967). Recently, redband trout endemic and restricted to the upper McCloud River have been found to be a genetically distinct subspecies of rainbow trout (Berg 1987). Upper McCloud River redband trout are present in the McCloud River near Algoma, in several tributaries upstream of Middle Falls, and in some isolated drainages in the area. Originally native to much of the Pacific Northwest,

redband trout populations have been dramatically reduced, primarily because of hybridization and competition with nonnative trout and destruction of critical habitat. Regionally, redband and redband-like trout exist in several McCloud River tributaries within and upstream of the study area, including Sheepheaven, Tate, Bull, Moosehead, Edson, and Swamp Creeks (Gerstung 1980).

Extraordinary Values

The McCloud River supports one of the premiere wild trout fisheries in California. Catch rates are high, the average size of both creeled and released trout has remained large, and a significant portion of the catch has consisted of trophy-sized trout in much of the river. The McCloud River has also played a significant historical role in the expansion of rainbow trout distribution throughout the world; the McCloud River was the source of many of the rainbow trout planted in the 1880s in eastern states and in many countries throughout the world.

The upper McCloud River contains extraordinary fishery resources from Lower Falls to Huckleberry Creek. The wild rainbow trout fishery here is exceptional and trophy-sized rainbow and brown trout can be caught. The McCloud River above Lower Falls does not maintain extraordinary fishery resources. The fishery here is dominated by hatchery-raised rainbow trout at most road access locations and relatively small wild trout a short distance from these heavy use areas. Although this fishery is rated as good, catchable "put-and-take" rainbow trout fisheries and fisheries for relatively small wild trout are quite common in California and do not represent extraordinary resources as defined in this report.

Redband trout habitat in the watershed lies within much of the upper study area. Redband trout, while ecologically significant in terms of trout zoogeography, speciation, and evolution in California, do not constitute extraordinary resources as defined in this report.

The lower McCloud River represents one of the finest wild trout streams in California, and the entire segment from 0.25 mile downstream from McCloud Dam to the McCloud Bridge near Shasta Lake is rated as extraordinary. Large populations of trophy-sized rainbow and brown trout are present throughout the segment, and the quality angling experience is unsurpassed in California.

Squaw Valley Creek supports a good trout fishery, primarily for wild rainbow trout and a few wild brown trout. The creek may also provide spawning habitat and recruitment for McCloud River fish. The Squaw Valley Creek study segment is rated as good and does not represent an extraordinary fishery.

RECREATIONAL RESOURCES

Water is recognized as an important feature of the outdoor recreation experience. Many of the most popular outdoor activities are dependent on streamflow. The presence of flowing water at streamside and instream recreation sites is without question an important factor in recreation site selection. Recreational use simultaneously is dependent upon and influences scenic, fishery, and wildlife values--values that determine wild and scenic river eligibility. Because of the intense competition for water resources in California, it is important to identify recreational needs for water and to protect extraordinary recreational opportunities.

The McCloud River watershed maintains opportunities for a wide variety of recreational activities. Most of the river's watershed is located within Shasta-Trinity National Forest. The McCloud River flows into Shasta Lake, which is part of the Whiskeytown-Shasta-Trinity National Recreation Area. Portions of the upper watershed are located on the slopes of Mt. Shasta, designated as a national recreation area. Two State parks, a national park, and a national monument exist within 90 miles of the McCloud River. In addition, numerous private recreational developments in the region and land controlled by PGandE, such as McCloud Reservoir, are open to public recreation use.

The McCloud River corridor offers opportunities for a number of recreational activities, including fishing, camping, hiking, nature observation and interpretation, and some limited opportunities for whitewater boating. One of the biggest factors limiting recreational use on the river is access. More than 35 miles of the 44-mile McCloud River study segment is privately owned. Some private lands, such as The Nature Conservancy property and much of the private land above Fowler's Campground, are accessible to the general public. Many other private lands are fenced and posted.

Camping

Five developed USFS campgrounds are located along the McCloud River. The three developed campgrounds along the upper McCloud River are Fowler's Camp, Cattle Camp, and Algoma. There is also a developed picnic ground at Lower Falls. Ah-Di-Na and McCloud Bridge are developed campgrounds on the lower McCloud River. Ash Camp is also a popular camping area, although it has no facilities.

River campgrounds are used heavily. Forty percent theoretical capacity is the nationally accepted level of maximum advisable occupancy of a developed camp site (U. S. Forest Service 1986). Use beyond that level deteriorates the site and reduces the quality of the recreational experience. Percent occupancy

at the river campgrounds ranges from 50 percent at Ah-Di-Na to 120 percent at Cattle Camp.

Fishing

The McCloud River is famous for its fishery resources and is considered by many to be one of California's premiere trout streams. DFG plants approximately 35,000 catchable-sized rainbow trout annually in the upper McCloud River above Lower Falls (Rode pers. comm.). Fishing for hatchery trout represents about 5,800 recreation visitor days (RVD) per year. (An RVD is 12 visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.) A fishery exists for wild trout throughout the upper McCloud River, and substantial fishing occurs for these wild trout. Quantitative estimates of fishing pressure are unavailable, but limited access reduces angling opportunities significantly. Field observations between Big Springs and McCloud Reservoir indicate that the recreational fishing potential is outstanding but susceptible to degradation if accessibility increased.

Special fishing regulations exist for the upper portion of the lower McCloud River. The river from McCloud Reservoir downstream to just below the Bald Mountain Creek river bend is open to the public for fishing. Reservations are needed to fish at the Preserve, and special angling regulations are enforced. The Nature Conservancy allows 10 anglers per day on the Preserve. Five spots are held for first come-first serve status; the remaining five spots are filled by reservation.

The lower McCloud River is well known throughout the State and country for trophy rainbow and brown trout fishing. It is not unusual to find people from outside California camping at Ah-Di-Na while visiting the McCloud River for its fishing and scenic experiences. The number of RVDs spent in this section of the river is unknown, but 1,800 people visited the Preserve in 1984. More than half of these recreationists came for the angling experience (Hesseldenz pers. comm.).

Recreational fishing on the 13 miles owned by private fishing clubs is limited. The McCloud River Club has 10 members, only five of whom are active. The Bollibokka Club membership size is larger at around 20-25 individuals. The number of RVDs spent by club members and the amount of fishing pressure exerted on the lower 13 miles of the river is very small.

Squaw Valley Creek receives very little fishing pressure although fishing is good in the lower sections of the creek and the area is quite scenic.

Hiking

The Pacific Crest National Scenic Trail (PCT) extends from Canada to the Mexican border, a distance of 2,600 miles. The PCT crosses the McCloud River near the confluence of Hawkins Creek with the lower McCloud River. A footbridge crosses the river at this point, and the trail follows along the north side of the river valley between Ash Camp and Ah-Di-Na. Just below the confluence of Cabin Creek and Squaw Valley Creek, the trail crosses Squaw Valley Creek by footbridge. The PCT is the only maintained trail in the McCloud Ranger District. Hiking and backpacking opportunities exist along the McCloud River but are limited by the lack of trails and access. The lower McCloud River and Squaw Valley Creek are surrounded by the East and West Girard roadless areas and are within a proposed wilderness area.

Whitewater Boating

A small amount of private boating, mostly kayaking, occurs on the upper McCloud River between Lower Falls and McCloud Reservoir. The number of raft trips is limited by the uncomfortably low water temperatures, suboptimum water conditions, low-flow problems at the put-in, and a long paddle across McCloud Reservoir to get to the take-out. No more than 300 float trips per year are made on the upper McCloud River (Phelps pers. comm.). The Hearst Corporation has protested all boating on the upper river, claiming it is a form of trespass. Kayakers use the upper river almost all year, and the scenery is spectacular.

Extraordinary Values

The McCloud River is most well known for its semipristine condition and trophy trout fishery. The quality of the angling experience alone results in an extraordinary rating for recreational resources throughout most of the McCloud River study segments. The river offers many diverse angling opportunities. Anglers can gain relatively easy vehicular access at the three waterfalls on the upper McCloud River and fish for hatchery trout. Trophy-sized wild trout can be caught at Ash Camp or Ah-Di-Na on the lower McCloud River, two other easily accessible locations. Extended hiking and scrambling opportunities to find secluded fishing spots on public land are also available. Anglers have the opportunity to fish under strictly catch-and-release regulations under a two-trout-per-day bag limit or under the standard 10-trout bag limit. Limited access reduces the value of the McCloud River to the public, but this limited access is a major factor prohibiting overuse of the area.

Rafting in the upper McCloud River is restricted to a narrow time of suitable flows each year. Logistic problems at put-in and take-out sites are considerable, and the legality of

public rafting through private property has not been resolved. Nonetheless, a few rafters each year float from Lower Falls to McCloud Reservoir. The trip is extraordinary because of the scenic qualities of the river corridor, which are unsurpassed in California. Hiking, backpacking, camping, kayaking, nature observation, and ecological values also contribute to the extraordinary recreational experience.

Extraordinary recreational resources are present from Upper Falls to Huckleberry Creek on the upper McCloud River. While camping, hiking, and fishing opportunities exist upstream of Upper Falls, and the level of use is high, these opportunities are not extraordinary. Riverside camping and hatchery trout fishing are common in California. Extraordinary scenic resources such as Big Springs, the three waterfalls, large summer flows, and a rugged canyon environment are absent upstream of Upper Falls, as are opportunities to fish for trophy-sized trout. Recreational resources, therefore, are rated as good upstream of Upper Falls.

Below Huckleberry Creek, the McCloud River exhibits impacts from McCloud Reservoir water level fluctuations. Rafting and other recreational opportunities are rated as fair in this segment, while fishing is very good.

Recreational resources from 0.25 mile downstream of McCloud Dam to the USFS bridge near Shasta Lake are extraordinary. This rating is based primarily on extraordinary fishing opportunities but is also based on hiking, camping, nature observation, and ecological values that contribute to the recreational experience. The short river segments above and below this reach are adversely influenced by the presence of McCloud Dam and Shasta Lake, respectively. Consequently, these segments do not contain extraordinary recreational resources.

Recreational opportunities on Squaw Valley Creek include hiking, backpacking, fishing, and nature observation. The river corridor is pristine, and recreation is limited to wilderness activities. Recreation is rated as good in Squaw Valley Creek but not extraordinary. The lack of a single extraordinary recreational opportunity precludes a higher overall rating.

SCENIC RESOURCES

All natural resource values contribute to scenic qualities. Unique in this respect, aesthetics are influenced by geologic, hydrologic, botanical, wildlife, fishery, recreational, and cultural resource values. Scenic qualities of a river corridor are sensitive and can be significantly reduced by inappropriate land use, water development, or overcrowding by recreationists. Quality aesthetic resources are a key component of designated wild and scenic rivers. All wild and scenic rivers typically

maintain aesthetic resources rated as good or extraordinary, and as a consequence, aesthetic resources are excellent indices of wild and scenic rivers.

The upper McCloud River drains a broad, flat plateau covered by coniferous forest. Mt. Shasta, with its snow- and glacier-covered flanks, rises from the plateau as the dominant feature in the landscape. The river cuts down through the broad plateau at Upper Falls and occupies a more canyon-like setting to McCloud Reservoir. Below McCloud Reservoir, the McCloud River drainage becomes much more mountainous as the river descends from 3,200 feet at McCloud Reservoir to 1,065 feet at Shasta Lake. The region is characterized by large, steep, v-shaped valleys covered with coniferous and oak forests. Peaks rise 2,000-3,000 feet above the river corridor.

The turquoise color frequently found in the McCloud River is caused by the discharge of glacial silt into the river from Mud Creek, which drains Mt. Shasta's Konwakiton Glacier. Depending on hydrologic conditions, the glacial silt periodically gives McCloud Reservoir and the river below a beautiful turquoise color. This distinctive water color, typical of streams and rivers found draining glacial valleys in British Columbia and Alaska, is unique in California.

Study segments of the McCloud River and Squaw Valley Creek were divided into 10 setting units (Figure 3-2). Each setting unit represents a fairly distinct viewshed although there is variability within, and transition between, setting units. Photographs of typical views from each setting unit are presented in Appendix D.

Upper McCloud River

The McCloud River moves through cobble-bottomed riffles and meandering, willow-lined reaches in this setting unit. The flat terrain limits views from this plateau region to fairly uniform foreground views of mixed conifer and scrub forest, with little variation in visual texture or form in the landscape. Near Lakin Dam, a small concrete diversion dam located near Upper Falls, the river meanders through flat meadows surrounded by willows. Timber management has affected the visual quality of the area. Dirt roads criss-cross the area, and the remains of past harvests are often present. Although the immediate river retains its natural appearance, there are no strong images in this setting unit, flows are relatively low, and the river does not stand out in comparison to other creeks in the region.

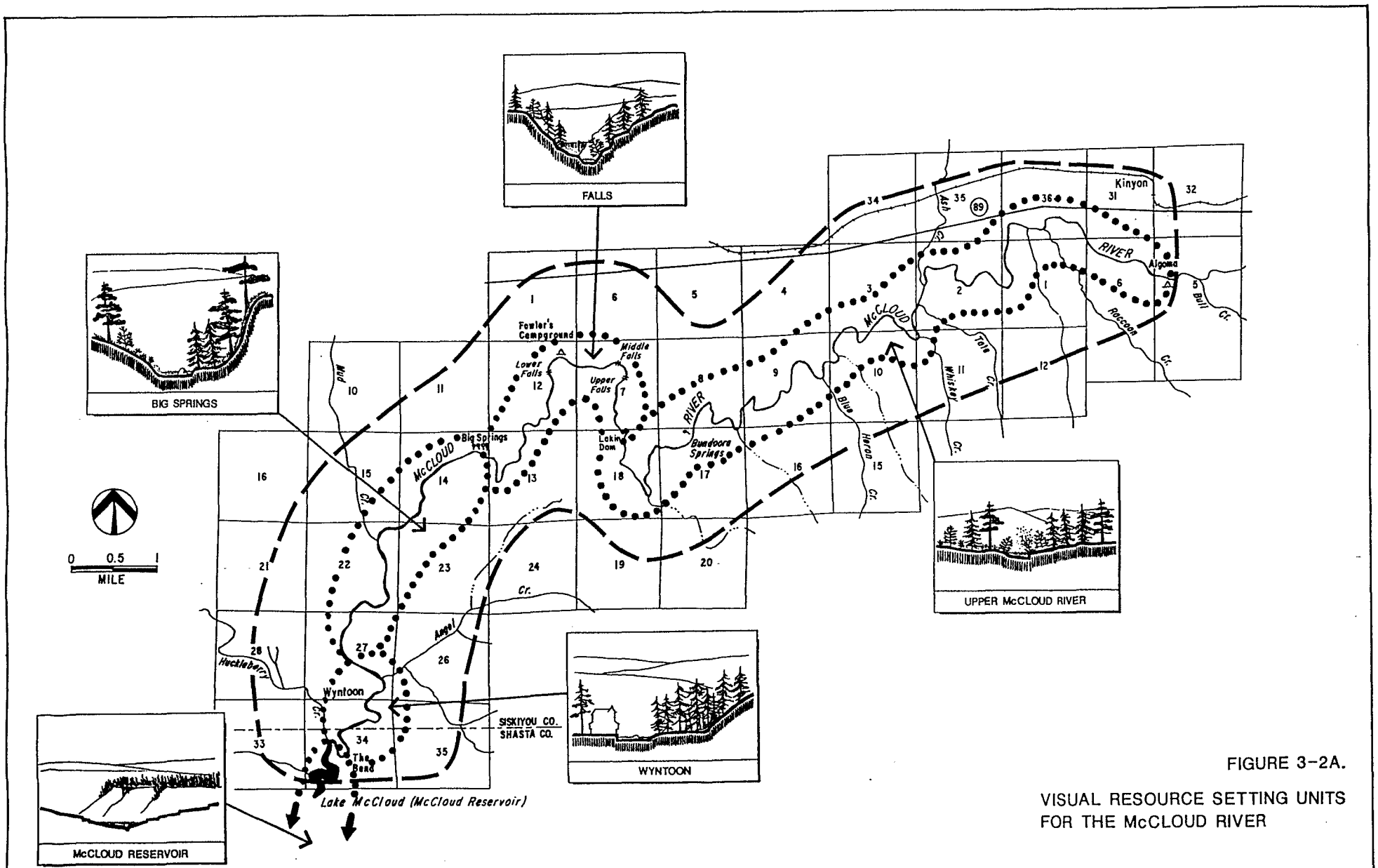

FIGURE 3-2A.

VISUAL RESOURCE SETTING UNITS FOR THE McCLOUD RIVER

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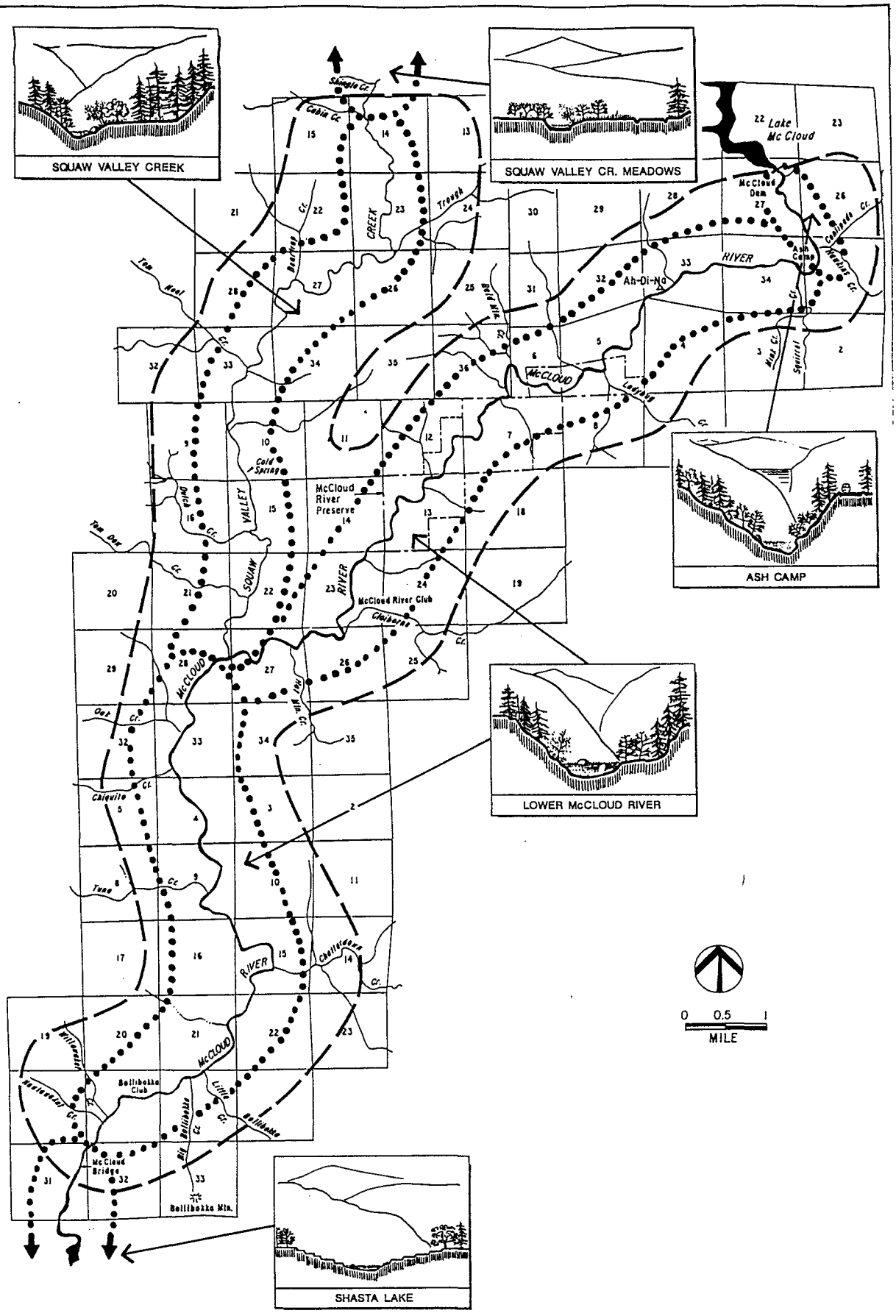

FIGURE 3-2B. VISUAL RESOURCE SETTING UNITS FOR THE McCLOUD RIVER

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Falls

This setting unit is composed of the river corridor from Upper Falls to above Big Springs. The river begins to drop out of the plateau in this area; the river remains in a v-shaped valley or canyon below this setting unit, while above it the river is much less constrained. Three significant waterfalls are located in the upper half of the setting unit. Upper Falls is a single, gushing waterfall that drops 20 or more feet through a fracture in the rock ledge that creates the falls. Below the falls is a large pool enclosed by an amphitheater-like bedrock arrangement. Middle Falls is 25- to 30-feet high. The water spreads out and comes over this fall in thin ribbons and spraying cascades. Wet rocks at the falls are coated with fresh, green moss, and the tightly enclosed basin surrounding the falls is filled with the mists and sounds of the falls. Lower Falls has a public picnic ground and viewing area located just downstream. This falls is a prominent water feature but is probably the least spectacular of the three.

Dirt roads, present along the river corridor throughout most of this setting unit, are set back and concealed by vegetation. These roads generally do not impact the visual quality of the views from the river. The strong images of the three waterfalls located in this short reach of river create memorable impressions. The visual quality rating of the river through this setting unit is extraordinary.

Big Springs

This 3-mile reach of river has exceptional scenic qualities. The river is mainly a series of deep riffles and runs, with few pools. Surrounding canyon slopes are covered by a fairly open canopy of mixed conifer forest, with an understory of scrub vegetation. At the upper end of the setting unit, large volumes of clean, clear water burst out of the dry hillside creating the striking impression of Big Springs. The lush, green color of the mosses around the springs and the blankets of green watercress floating on the spring water add to the intensity of the image. Some logging activity has occurred in the past, but the river corridor remains in a fairly pristine condition. The only signs of cultural modifications are the logging road bridge located approximately halfway between Big Springs and Wyntoon and a small, abandoned hut at Big Springs. The undisturbed nature of this corridor, large flows of astonishingly clear water, and the strong and unique images at Big Springs give the visual quality of this setting unit an extraordinary rating.

reservoir levels drop each year, more than 2 miles of the McCloud arm of the reservoir convert to a free-flowing river. The resulting bathtub ring and thick silt deposits below Huckleberry Creek make the river corridor appear barren and sterile. For this reason, the visual quality of this setting unit is rated as poor.

Ash Camp

This setting unit includes the river corridor from McCloud Dam downstream to the bend in the river just below Hawkins Creek. A road along the ridge parallels the river throughout this setting unit but is visually unobtrusive. The road leads to an undeveloped campground known as Ash Camp. A variety of scenic vistas of the river's large pools and cascading water exist from this road. The dam is a prominent visual feature in the landscape and can be considered a negative visual element. Except for a 0.25-mile reach immediately below the dam, the river corridor maintains a natural character. Natural positive features of this river dominate negative features in the viewscape. The visual quality rating in this setting unit is extraordinary if the upper 0.25-mile reach is excluded.

Lower McCloud River

This setting unit represents a long stretch of river from just below Hawkins Creek to the influences of Shasta Lake. Visual character remains similar throughout the entire setting unit despite variety in landform and waterscape prominence. The river generally appears pristine and wild. Steep, heavily forested mountain slopes, picturesque cascading whitewater, and deep, long, green- or turquoise-colored pools characterize the river corridor. Most of the river corridor is lined with large Douglas-fir or beautiful black and canyon oaks, which add to the grandeur of the setting.

A few buildings are located along this 25-mile stretch of river at The Nature Conservancy Preserve, the McCloud River Club, the mouth of Chatterdown Creek, and the Bollibokka Club. Dirt and gravel roads also come down to the river at these club headquarters, at the USFS Ah-Di-Na Campground, and across from the mouth of Chatterdown Creek. The total number of buildings is small compared to the length of the river, and the buildings themselves tend to fit into the visual settings. The Bollibokka Club access road parallels the river on the west side for several miles, but in most locations the road is high on the ridge and is not visible from the river. Past (25+ years) timber harvests can be seen from the Preserve at a few vista points, but time has allowed the visual landscape along the river to recover.

Vivid views, unique water color, and the pristine viewscape result in a visual quality rating of extraordinary in this setting unit.

Shasta Lake

This setting unit represents the mouth of the McCloud River where it drains into Shasta Lake. Water surface elevations on the reservoir fluctuate 60-120 vertical feet between spring and late fall. This fluctuation moves the mouth of the river up and down the arm of the reservoir. The location of the mouth can vary within a 2-mile distance, depending on season, runoff, and reservoir operations. At high levels, Shasta Lake extends a few hundred yards above the USFS bridge. At low levels, the mouth moves downriver a few miles from the USFS bridge, and a bathtub ring of steep, treeless slopes with mostly barren soil and rock is evident along the banks of the river.

Squaw Valley Creek Meadows

This setting unit represents the creek corridor north from Cabin Creek upstream to the study area boundary. This short reach of Squaw Valley Creek has a reduced stream gradient. Roads on both sides of the creek impinge on the creek corridor in many locations. Views from the creek itself are constrained to a small foreground area by the thick alder growth along the stream's edge. Bare and scrub-covered landslides and timber harvesting near the creek reduce its visual quality. Although there are some spectacular views of Mt. Shasta across the large meadows, the creek itself is not very scenic.

Squaw Valley Creek

Squaw Valley Creek is a major tributary to the McCloud River. This setting unit, a steep-sided, v-shaped valley in pristine condition, extends from Cabin Creek to the mouth of Squaw Valley Creek. A small one-lane scenic road winds down the valley to the entrance of the McCloud River Club. The road crosses the creek at five locations; otherwise it is located high on the valley slopes and is not visible from the creek. The small, one-lane bridges do not generally conflict with the natural character of the creek corridor.

Scenic resources along the creek corridor are of exceptional quality. There are a variety of views as the creek drops toward the river through sequences of riffles, pools, and whitewater sliding over water-worn bedrock. Large Douglas-fir stands and occasional oaks found along the slopes add majestic and colorful touches to the corridor. The visual quality of this setting unit is considered extraordinary.

Extraordinary Values

Considered as a whole, the visual resources of most of the McCloud River and Squaw Valley Creek study areas are extraordinary. Vivid views of large, pristine river valleys with beautiful white water and deep pools are rare in California. The McCloud offers these features but is special beyond that. Its water clarity above Huckleberry Creek and periodic turquoise color below give the river outstanding visual quality. The river also offers remarkable and unique visual images at the three waterfalls and Big Springs and the enchanting views of Wyntoon and The Bend. These combined features make the McCloud's visual resources worthy of the rating extraordinary.

Specifically, visual resources are extraordinary from Upper Falls to Huckleberry Creek and from 0.25-mile downstream of McCloud Dam to the USFS bridge crossing near Shasta Lake. Squaw Valley Creek maintains a pristine character that is extraordinary from Cabin Creek to the McCloud River.

CULTURAL AND HISTORIC RESOURCES

Cultural and historic resources typically do not determine eligibility for wild and scenic designation. Nonetheless, an area's historical resources, which survive as cultural legacies of those experiences that shape human and American history, represent important, sometimes irreplaceable, resources. Cultural and historic resources generally are concentrated near rivers, and significant resources are common along many California rivers. Cultural and historic resources also can contribute to the scenic and recreational resources of a river.

Cultural

The archaeological record suggests a human transition from a mobile subsistence strategy to a sedentary strategy, enabling large populations of prehistoric Wintu to inhabit the McCloud River watershed. The lower McCloud River was occupied in the nineteenth century by the Wintu Indians, while the upper McCloud River may have been used by both Wintu and Okwanuchu. Little is known about the Okwanuchu, who were extinct as a viable society by the mid-1800s (Theodoratus Cultural Research, Inc. 1981). The Wintu and much of their culture survives today despite their near extermination by contact with European-American society.

Wintu territory occupied most of Shasta and Trinity Counties and parts of Siskiyou and Tehama Counties. The Wintu held the headwaters of the Trinity and South Fork Trinity Rivers, and large portions of the Sacramento, McCloud, Squaw, and Cottonwood drainages (Theodoratus Cultural Research, Inc. 1984). There were an estimated 18,000 Wintu and 259 Wintu villages in

Shasta County in 1850. The McCloud River watershed was a major center of Wintu occupation, estimated to have supported 6,000-8,000 people (Guilford-Kardell 1980).

The family was the basic unit of Wintu society. Families were organized into permanent villages, and most social, political, and economic activities were organized at the village level. Villages, located along ridges and terraces adjacent to major streams, were led by chieftains who inherited their position but maintained their status through personal abilities. Villages combined to form larger groups that were identified with particular geographical areas. These larger groups were not formally organized or led, but an individual's membership in a group was an important part of his social identity. The groups occupying the McCloud River Valley were the Winimen and the Waimuk (Jensen and Reed 1979, Theodoratus Cultural Research, Inc. 1981).

Chinook salmon were a major food source of the Wintu. The Wintu also collected freshwater shellfish, steelhead, sucker, resident trout, and whitefish (Theodoratus Cultural Research, Inc. 1981). Black oak acorns were the primary plant food used by the Wintu. Families often claimed ownership of particular acorn-laden oak trees. The Wintu also collected a variety of seeds (buckeye), nuts, berries, fruits, fungi, tubers, and greens. Deer were hunted communally or individually year-round. Communal brown bear hunts and rabbit drives usually were conducted in the fall. A variety of small birds, rodents, and grasshoppers also was eaten by the Wintu (Theodoratus Cultural Research, Inc. 1981).

Wintu society was devastated by contact with European-American society in the nineteenth century. A malaria epidemic wiped out 75 percent of the Wintu living in the Central Valley between 1830 and 1833. American soldiers and settlers killed off the Wintu in the 1850s and 1860s. American economic activities damaged the environments on which the Wintu relied for subsistence. As a result, most of the Wintu social cohesion had dissolved by 1880, and only 395 Wintu were alive by 1910. Despite these impacts, the Wintu remain a viable Native American group, and much of their traditional culture survives today (Theodoratus Cultural Research, Inc. 1981).

In total, 45 archaeological sites have been recorded along the McCloud River between Algoma and Point McCloud (located approximately 2 miles downstream of the McCloud Bridge). These sites include eight Wintu villages. Additionally, there are 21 Wintu village locations that have not yet been located archaeologically. The sites between Ah-Di-Na and Ash Camp have been determined eligible for inclusion in the National Register, and other National Register eligible sites are likely to occur along the McCloud River (Henn pers. comm.). Excavations have been conducted at Samwel Cave and the Fowler's Campground site.

The identified prehistoric sites include 28 lithic scatters, one cave, four lithic scatters with house depressions, three sites with midden deposits, and one lithic quarry. Most prehistoric archaeological sites identified in the study area are Shasta or Wintu in origin. The 21 village locations not represented by known archaeological sites suggest that more large Wintu sites are likely to occur in the study area.

Historic

The McCloud River played an important role in the early exploration and settlement of Shasta and Siskiyou Counties. The southern Cascades were largely unexplored by Europeans until the early nineteenth century. The first expedition to traverse the McCloud River watershed was led by Alexander McLeod of the Hudson's Bay Company in 1828-29. McLeod's mission was to trap beaver in northern California before American trappers could make effective inroads into the area. McLeod pioneered the major fur trapping route through the southern Cascades, which followed the Pit River and crossed the McCloud River drainage at its mouth and headwaters.

The McCloud River was only sparsely settled by European-Americans prior to the 1880s. The region lacked productive gold deposits and was unaffected by the rapid development of the California Gold Rush. Rugged terrain and fear of the Wintu further inhibited settlement. In 1873, the upper McCloud River was home to only a few cattlemen and shepherds (Martin 1981), and only three homesteads were located along the lower McCloud River in 1875 (Cranfield 1984). John Muir described the early McCloud River pioneers as "various kinds of mountaineers, rare men, [and] queer characters. Their cabins were located with reference to game . . . [and were] made of sticks laid across each other without compass or square" (Muir 1888).

The completion of the first railway line to Strawberry Valley in 1886 opened up the upper McCloud River watershed to effective lumbering for the first time. As a result, 21 lumber mills began operating in the area between 1894 and 1920 (Cranfield 1984). The most successful of the logging operations were the McCloud River railroad and logging companies. Over 41,000 tons of lumber were removed from the McCloud area in the first year (Cranfield 1984). By 1907, two mills along the upper McCloud River produced 100 million board feet of lumber (Martin 1981).

The McCloud lumber and railway companies confined most activities to the flatter terrain in the upper McCloud River watershed above Wyntoon (Cranfield 1984). In the first 20 years of operation, the companies operated temporary camps throughout the region that could be dismantled and moved. Felled timber was transported to the rail line by steam traction engines, horse teams and big wheels, and steam donkey yarders. Lumber

then was transported by locomotive to the central mills at Ash Creek and McCloud. In the 1920s and 1930s, logging operations moved greater distances from the mills, and the companies began to construct permanent camps with shops and maintenance facilities. The McCloud River lumber and railroad companies, together representing one of the longest lived railroad logging systems in the United States (Hanft 1971, Vaughan 1985), were bought by U. S. Plywood Corporation in 1964.

The development of the lumber industry opened a new era in the history of the McCloud River. A company town was built around the original Squaw Valley mill. The town was originally known as Vandale but later the name was changed to McCloud. By 1909, the town consisted of a hotel, saloon, bank, livery stable, opera house, and more than 100 residences (Martin 1981). Many of the original company-built structures stand in McCloud today (Hanft 1971).

The lower McCloud River was unaffected by the lumber industry because of steep terrain. Cool forests and good fishing began to attract wealthy sportsmen from the Sacramento Valley by the turn of the century. Much of the land along the lower McCloud River was bought up by individuals and sports clubs. The Bollibokka Country Club was a fishermen's organization that built a log structure on the river north of Bollibokka Mountain in 1903. The original structure is still standing. The McCloud River Club was established in 1901. A clubhouse was erected on the river at the mouth of Claiborne Creek. The club burned down in 1904 and again in 1920, but the post-1920 structures stand today. Several cabins, a swinging bridge, two barns, a pump house, a trout holding tank, and a stone cellar were built at the resort between 1904 and 1936.

The most spectacular of the resorts is at The Bend on the upper McCloud River. The area was first developed in 1883 by Justin Sisson, who built a series of summer cottages at the location to rent to fishermen and hunters. The land later was acquired by Charles Wheeler, who leased a portion to Phoebe Hearst in 1903. Phoebe Hearst built a five-tiered, Bavarian-style castle on the property and named it Wyntoon. The castle burned down in 1930, but William Randolph Hearst replaced it with a Bavarian-style village of four stone and timber castles and numerous smaller buildings centered on a fountain imported from Europe. The estate, used by Hearst until his death in 1951, is still owned by the Hearst family (Swanberg 1961, Cranfield 1984).

Eleven historic sites are reported in the McCloud River area: Wyntoon, the Bollibokka Club, the Ah-Di-Na resort, two logging camps, the Swobe railroad maintenance camp associated with the McCloud lumber and railway companies, a lumber mill at the Algoma Campground, the Sisson-Fall River road, and three late nineteenth century cabin sites. Additional unrecorded but

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potentially significant historical sites may occur along both the McCloud River and Squaw Valley Creek.

Extraordinary Values

Archaeological sites in the McCloud River watershed are valuable resources from both scientific and cultural points of view. The archaeological record of northcentral California is only beginning to be understood, and the McCloud River area is likely to contain significant information pertaining to the last 7,000 years of human history in California. Unlike other areas in California, modern economic development along the McCloud River has been minimal, and public access to the area has always been limited, with the result that archaeological sites along the McCloud River tend to be well preserved, retaining their research potential (Henn pers. comm.).

Cultural resources of the McCloud River and Squaw Valley Creek constitute extraordinary values. The significance of the area to the prehistoric and ethnographic records of northcentral California is great. Important archaeological sites are located from Fowler's Campground to Shasta Lake on the McCloud River. Several sites are located along Squaw Valley Creek as well. Many additional sites are yet to be discovered. This area constitutes a major center of Wintu occupation and is considered to contain extraordinary values. The area upstream of Fowler's Campground, however, does not contain the diverse and abundant sites found downstream. Consequently, the McCloud River above Fowler's Campground does not contain extraordinary cultural resource values.

Important historical sites are related to the McCloud lumber and railroad companies and are restricted to the upper McCloud River. The McCloud River lumber and railroad companies played an important role in the economic development of the region, and the railroad and logging industries have attracted a good deal of interest from local railroad and history buffs (Hanft 1971). Certain sites, such as the lumber mill at the Algoma Campground, are located on the river. Many sites, however, are located within a broad geographical area. For this reason, historical resource values were rated as good but not extraordinary.

SCIENTIFIC, ECOLOGICAL, AND EDUCATIONAL RESOURCES

The lower McCloud River from 0.25 mile downstream of McCloud Dam to the McCloud River Bridge provides extraordinary scientific, ecological, and educational resources primarily because of the pristine and diverse natural resources and management priorities of The Nature Conservancy at the McCloud River Preserve. Geologic resources are valuable for education

and research because of the high diversity of rock types and geologic formations. The great diversity of plant species and communities, including an estimated 80 species of lichens, offers numerous opportunities for floristic and vegetation research. The McCloud River canyon maintains pristine, low-elevation habitat for diverse fish and wildlife populations. Cultural resources along the McCloud River are extensive and tend to be well preserved because of the low level of watershed development. Consequently, the diverse array of resource values comprise a significant and extraordinary resource value.

The Nature Conservancy is a private, nonprofit conservation organization dedicated to the acquisition and preservation of ecologically significant lands. The Nature Conservancy's efforts on the McCloud River Preserve are to protect the natural features of the Preserve, encourage scientific studies of natural communities and processes that aid in proper management decisions, and promote education and support through nonconsumptive public use of the Preserve. The Nature Conservancy has been responsible for a wealth of research studies on the natural communities within the Preserve. These studies have generated research interests outside of the Preserve as well.

The extensive aquatic resource and angler use data base compiled over the past 15 years at the Preserve is particularly valuable. Many facets of trout ecology in California, such as age structure and growth rates, population trends and movements, feeding habits, microhabitat utilization, angling efficiencies, hatchery and wild fish relationships, and interspecific competition are best studied in the McCloud River because of the existing data base.

The educational opportunities of the lower McCloud River are embodied in the research activities at the Preserve. Graduate students, interns, and researchers from many universities have studied the McCloud River Preserve and surrounding areas. The college student internship program provides needed research for the Preserve as well as valuable field experience for the participants. Interpretive trails and guides to the flora, fauna, and other natural resources of the area are available to the casual visitor.

The upper McCloud River does not maintain the diversity of resources found in the lower McCloud River, and resources are generally impacted to a greater degree by human disturbance. The Preserve's direction toward research studies in the lower McCloud River does not extend to the upper McCloud River. Consequently, the upper McCloud River does not maintain extraordinary scientific, ecological, and educational resource values, nor does Squaw Valley Creek offer such extraordinary resource values.

LAND, WATER, AND ECONOMIC USES

Chapter 4

LAND, WATER, AND ECONOMIC USES

Land, water, and economic uses are important factors that determine the eligibility, classification, and suitability of potential wild and scenic rivers. River eligibility can be determined by both land and water uses; these uses may impact extraordinary resource values and thereby influence eligibility. Classification for wild, scenic, or recreational status is wholly determined by land and water uses; land and water uses determine the degree of watershed development and, consequently, river classification. Land and water uses and their effect on regional and local economies are also important considerations in determining the suitability of a wild and scenic river designation. Land ownership, which affects land and water uses, can dictate management strategies for designated rivers.

LAND OWNERSHIP

Existing Ownership

Shasta-Trinity National Forest maps and contacts with State and county agency personnel were used to map existing land ownership (Figure 4-1). The Nature Conservancy provided additional input.

Regional

The forest and rangeland comprising the McCloud River watershed is nearly evenly divided between public and private ownership. Public lands are exclusively managed by the McCloud and Shasta Lake Ranger Districts of the Shasta-Trinity National Forest. Private lands are owned primarily by commercial timber and livestock companies, although the town of McCloud has other commercial and residential ownerships along State Highway 89.

The ownership pattern is complex. "Checkerboard" ownership, which includes alternating sections of public and private lands, is dominant above Shasta Lake along the lower McCloud River watershed and in the northern portions of the watershed east of Mt. Shasta. Adjacent to these areas are large blocks of federally managed land, separated by exclusively privately held blocks extending from Shasta Lake to McCloud Reservoir and eastward.

McCloud River Corridor

Private ownership dominates the river corridor (Figure 4-1). One-third of the study area is within the Shasta-Trinity National Forest, but the majority is held privately among five large ownerships: Champion International Corporation (Champion), the Hearst Corporation, The Nature Conservancy, the McCloud River Club, and the Bollibokka Club (Table 4-1). The latter two are fishing and hiking clubs.

Upper McCloud River. Although public lands surround the river at the upstream boundary of the study area and reach the river at Middle and Lower Falls, nearly 85 percent of the upper McCloud River is privately owned (Figure 4-1). The eastern or upstream private lands are owned by Champion, while the private lands from a point midway between Lower Falls and Big Springs are owned by the Hearst Corporation. The Champion ownership, however, is interrupted by four additional short reaches of publicly owned property.

Lower McCloud River. Three-quarters of the land along the lower McCloud River is privately owned (Figure 4-1). Nearly 1 mile downstream of McCloud Reservoir, lands of the Hearst Corporation give way to a 4-mile reach of publicly owned property. This is followed, in a downstream sequence to Shasta Lake, by lands of The Nature Conservancy, the McCloud River Club, and the Bollibokka Club. Interspersed among these three ownerships are five short reaches in public ownership. Lands south of the McCloud Bridge at Shasta Lake also are publicly owned.

Squaw Valley Creek. The upper 10 miles of Squaw Valley Creek consist of public lands, yet the area fronting on the creek's confluence with the McCloud River and much of the lowermost mile belongs to the McCloud River Club.

Reasonably Foreseeable Ownership

Land ownership in the study area has been and is expected to remain unchanged in the foreseeable future, with one important exception. Champion has proposed a land exchange with the Shasta-Trinity National Forest whereby all Champion holdings along the nominated segment of the upper McCloud River (2,045 acres) would be acquired for public use (Russum and Marshall pers. comms.). The proposed exchange has reached through the site clearance and appraisal stages and awaits final agreement of the participants. If the exchange is accomplished, public ownership would extend from the beginning of the study area downstream 14.5 miles to the Hearst properties. All lands surrounding the Upper, Middle, and Lower Falls would be included.

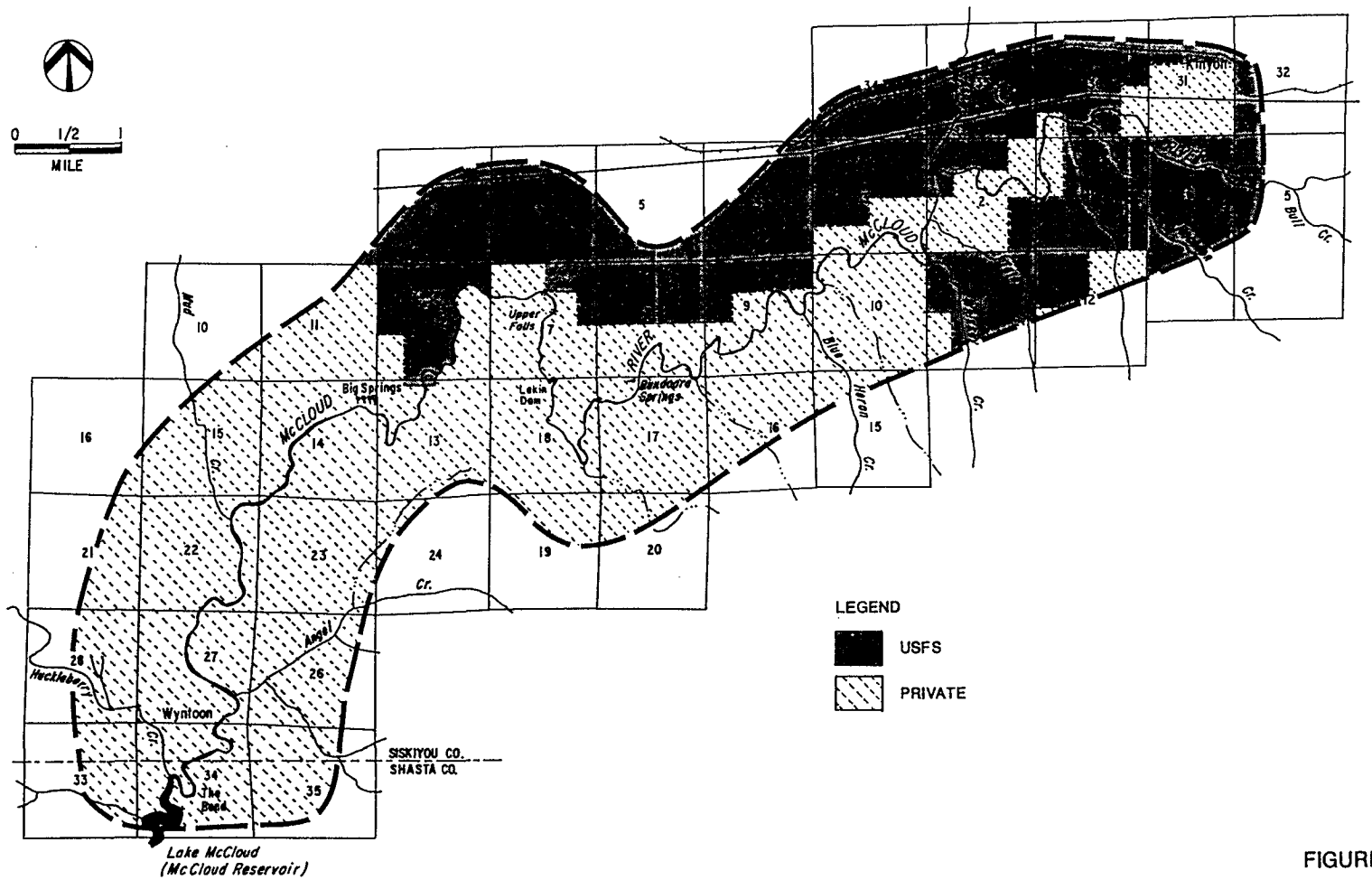

FIGURE 4-1A.

LAND OWNERSHIP MAP

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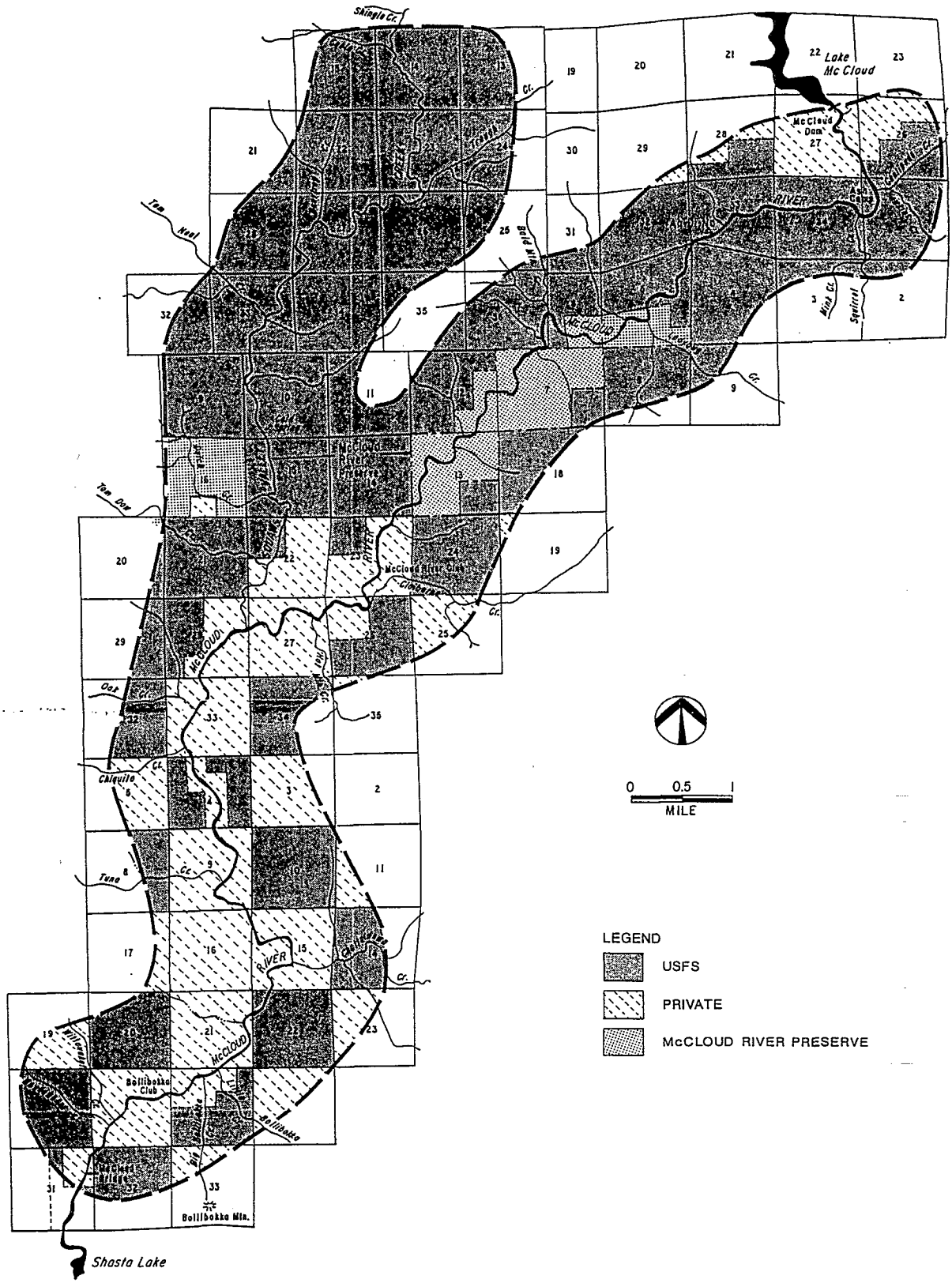

FIGURE 4-1B. LAND OWNERSHIP MAP

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Table 4-1. Land Ownership on the McCloud River
(river miles)

		Ownership						
		Public	Private					
River Segment	Total Length	Shasta-Trinity National Forest	Champion Corporation	Hearst Corporation	The Nature Conservancy	McCloud River Club	Bollibokka Club	Total Private
Upper McCloud River	20.9	3.3	11.2	6.4	0	0	0	17.6
Lower McCloud River	23.4	5.9	0	0.8	4.3	3.9	8.5	17.5
Squaw Valley Creek	10.5	9.5	0	0	0	1.0	0	1.0
Total	54.8	18.7	11.2	7.2	4.3	4.9	8.5	36.1
Percent of Total	100	34	20	13	8	9	16	66

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Public Land Management

Current or imminent management of public lands throughout the region, if present policies are unchanged, has recently been articulated by the Shasta-Trinity National Forest through formulation of the "Current Management Alternative" for use in its land and resource management planning process (U. S. Forest Service 1986). In general, the current policy represents a gradual expansion of lands used for timber production along the upper McCloud River to mountainous uplands and canyon slopes surrounding the lower McCloud River.

Upper McCloud River. Land suitability in this segment for timber production is generally moderate to high. Current planning involves intensive timber management near Algoma and a reduced intensity downstream. Below Algoma and in the vicinity of the falls, scheduled timber production occurs on flats north of the river, but cutting methods and stand rotation periods are modified to maintain a more natural setting, as seen from roadways, and to benefit deer habitat. In all of these localities and throughout the river's course, timber harvesting within at least 100 feet of the river's high water line is restricted to preserve riparian values such as stream shading, wildlife habitat, scenic value, and streambank stability. This reduction is accomplished through use of designated streambank management zones; the width and allowable harvest of these zones is determined on a case-by-case basis.

Public lands along the upper McCloud River are also employed for summer pasturing of sheep. A range allotment covers all public lands north of the river and is tied to concomitant use of Champion's lands north of the river. In general, sheep use upper flats above the river.

Small acreages of public land have been developed for camping. These campgrounds include Algoma (eight sites), Cattle Camp, and Fowler's (40 sites), which is about 1 mile from a developed picnic area at Lower Falls. All of these recreational developments are heavily used.

Lower McCloud River. Land suitability for timber harvest tends to be lower along and above the lower McCloud River, although areas of moderate to highly suitable timberland are present. Timber production has been increasingly practiced on these lands. Various prescriptions have been employed or planned near the river, ranging from intensive timber management to timber management modified to protect sensitive wildlife species (e.g., spotted owls) or visual quality (near Ah-Di-Na Campground and access roads). An exception applies to lands adjacent to the Bollibokka Club; public lands within 0.5 mile of the river are managed primarily to preserve riparian values. Higher slopes and uplands above the river, however, are increasingly committed to intensive timber management.

No livestock grazing is practiced on public lands along the lower McCloud River because of steep slopes, inaccessibility, and dense forest canopies (Russum pers. comm.).

A 17-unit campground at Ah-Di-Na has been developed along the lower McCloud River about 3 miles below McCloud Dam. This campground is used less than similar campgrounds on the upper McCloud River but nonetheless use at Ah-Di-Na surpasses levels considered optimum to maintain the quality of the recreational experience.

Squaw Valley Creek. Land suitability for timber production tends to be moderate to high along Squaw Valley Creek, although areas of low suitability are present. Beyond the streamside management zone, where tree removal is limited to protect riparian resources, current management entails a mix of intensive timber management and timber management modified to protect visual quality (along the road to the McCloud River Club) and wildlife.

Private Land Management

Upper McCloud River. Champion's lands are managed primarily for timber production, although sheep graze flats north of the river in this 11-mile streamside ownership. River recreation by the public also occurs extensively within the Champion ownership because of a network of forest management roads. The company prohibits overnight camping, but this use still occurs. Liability and costs of patrol and trash collection have prompted the offer to transfer ownership of these lands to the public as described earlier.

Hearst Corporation properties are managed for private recreation and timber production (Hesseldenz and Reeves pers. comms.). These properties are centered around a development complex immediately upstream of McCloud Reservoir called Wyntoon (Figure 4-1). Much of the remaining ownership is managed for timber production. Public recreation is not allowed on the Hearst Corporation properties.

Both private ownerships along the upper McCloud River support strong timber management programs that entail intensive forest management practices, including clearcutting, on higher site land occurring principally in flats above and away from the immediate river corridor (Reeves pers. comm.). As required by the Northern Forest District Rules of the State Board of Forestry, less intense or selective cutting is used within designated watercourse protection zones. These zones typically extend 150 feet from the edge of the McCloud River although the width varies according to the resource present (Reeves pers. comm.). The usual range of width of these zones is 50-200 feet based on a specified relationship to slope, although discretionary increases or decreases of up to 50 percent are allowable. The

primary constraints within these zones are that 50 percent of the overstory canopy shading the river and 50 percent of the understory vegetation present must be retained to moderate water temperature fluctuations and filter sediment from runoff (14 Cal. Adm. Code 936.5).

Board of Forestry rules are not intended to protect scenic or recreational values per se but rather to protect water quality. Accordingly, proposed timber harvests on private lands, such as the Champion and Hearst ownerships, are not modified by the State to protect visual quality in viewsheds seen from the river environment or otherwise modified beyond the immediate watercourse protection zone (Reeves pers. comm.).

Utility lines or corridors do not cross or parallel the upper McCloud River. The proposed California-Oregon Transmission Line route crosses the river upstream of the nominated segment between Bartle and Dead Horse Summit.

Lower McCloud River. Timber or other significant commodity production is not currently practiced on any of the three ownerships along the lower McCloud River. Management of these lands is based on fishery and other amenity resources. Both the Bollibokka Club and the McCloud River Club have harvested timber previously but currently have no logging plans. The primary objective of both organizations is to protect fishery and natural values for the enjoyment of their members. The Bollibokka Club is currently developing a management plan to enhance fishing and hiking uses (Hesseldenz pers. comm.).

The Nature Conservancy's primary objective for the McCloud River Preserve is to preserve natural ecosystems. Scientific and educational uses, although secondary, are generally compatible with the primary objective. The Nature Conservancy, with the participation of DFG, has recently completed a detailed study of fishery resources throughout the entire river, with the support of various fishermen's groups, PGandE, and each landowner along the lower McCloud River. A fishery restoration project may follow.

The Nature Conservancy also engages in carefully regulated public recreational use of portions of the McCloud River Preserve. This use is intended to reduce violations of fishing regulations that would otherwise occur and to engender greater public awareness of natural processes, biological diversity, and The Nature Conservancy's programs (Sheppard 1978).

Each of the three ownerships maintains a development center on each property, consisting of buildings and appurtenant utility systems. Private access roads serve the two fishing clubs, while access to the McCloud River Preserve is by trail from a USFS road paralleling the river below Ah-Di-Na Campground.

Overhead utility lines or corridors do not cross or parallel the lower McCloud River. A Sprint Corporation cable from the town of McCloud crosses the river on McCloud Dam and is undergrounded along the USFS road that parallels the river for 1 mile downstream of the dam. Both the cable and the road leave the river in the Hawkins Creek Canyon (Hesseldenz pers. comm.).

Reasonably Foreseeable Land Uses

Regional

No substantial changes in current land uses of the McCloud River watershed and surrounding region are expected to occur in the foreseeable future. The 1986 Draft Land and Resource Management Plan for the Shasta-Trinity National Forest proposed relatively little change in the Forest's overall management emphasis on timber production levels (U. S. Forest Service 1986).

Exchange of ownership between the private and public sector may be expected to continue. Ownership within each sector will tend toward consolidation and a reflection of the physical and biological terrain where land management is thus simplified (U. S. Forest Service 1986).

Recreational activity is expected to increase in the region faster than the rate of population growth, causing the USFS to anticipate growth of an intensive and innovative recreation program to resolve competing resource management needs and incompatible recreational activities. The Shasta-Trinity National Forest proposed management to meet the increased recreation demand, requiring development of new recreational facilities (e.g., campgrounds) and providing for suitable areas for dispersed recreational activities (U. S. Forest Service 1986). A corresponding gradual growth in private recreation development should also materialize, requiring some land-use conversions from commodity production to amenity development.

Public Land Management

The 1986 Draft Land and Resource Management Plan of the Shasta-Trinity National Forest represented a proposed shift from the current expansion of timber production to an emphasis on amenity values along the McCloud River. The revised draft currently in preparation is not expected to differ substantially from the 1986 draft regarding basic policy for the McCloud River, but proposed site-specific policy may change (Lyon and Fox pers. comms.). The Shasta-Trinity National Forest is proposing to manage the McCloud River from 4 miles upstream of Algoma to Shasta Lake as a national wild and scenic river and to

recommend such formal designation to the Congress. This management proposal would be specified in the adopted forest plan based on general policy prescribed in the National Wild and Scenic Rivers Act and the Guidelines. The USFS also can be expected to seek national wild and scenic river designation of Squaw Valley Creek in the 1988 Draft Land and Resource Management Plan (Lyon pers. comm.). These management objectives are not related to State wild and scenic river designation, which is a separate process.

Private Land Management

No changes in use of the private lands along the river are known to be planned for the foreseeable future (Cook, Hardy, and Hesseldenz pers. comms.). An exception would apply to any Champion lands transferred to public ownership; these lands would be managed as described earlier.

Significant changes in private land use are subject to approval of local governments. Lands along the upper McCloud River are almost entirely located in Siskiyou County. The lowermost 0.5-mile reach of the upper McCloud River and all of the lower McCloud River are within Shasta County. County General Plan land-use designations and associated zoning districts reveal the counties' current positions regarding appropriate land use, summarized as follows.

Upper McCloud River. All of the Champion and Hearst Corporation properties, except the retreat facilities on the Hearst properties, are zoned Timberland Production Zone (TPZ) (Cook and Hardy pers. comms.). This State-mandated zone, subject to some variation among the counties, provides for property tax assessment based only on timber productivity and not on development potential. In exchange for favorable taxation, land use is narrowly restricted to timber production activities, and conversions to other uses are difficult, requiring 10 years advance notice.

Approximately 300-400 acres of the Hearst Corporation properties are zoned Rural Residential/Agricultural, requiring a 40-acre minimum parcel size. This zone applies to the area developed with retreat facilities. Additional development in this area could ostensibly occur under this zoning designation. The large minimum parcel size is intended to limit development in favor of the important winter deer range present (Hardy pers. comm.). The landowner could apply to the county for an increase in density through a zoning change.

Lower McCloud River. The Shasta County General Plan designates all Preserve and fishing club properties as "timberland," which allows two possible zones: TPZ, and another timber production zone allowing smaller parcels of 40-acre minimum size, each of which could be improved with a dwelling. Recreation

developments such as these properties now support are allowed. As described earlier, only plans for improvement of the current uses are under consideration by these property owners at this time (Hesseldenz pers. comm.).

Squaw Valley Creek. The timberland designation also applies to all privately held lands on Squaw Valley Creek in Shasta County.

WATER USES

The McCloud River is an extremely important water resource to the State, providing high-quality water for agricultural, municipal, industrial, and instream beneficial uses. A percentage of the water that is transported to the southern part of the State comes from the McCloud River via the Sacramento River through the State Water Project's California Aqueduct. The McCloud River is situated in the Sacramento River basin and is included in the Sacramento River Basin Plan, which was implemented by the State Water Resources Control Board (SWRCB), Central Valley Region, in 1975. Existing and potential beneficial water uses for the McCloud River have been delineated in the 1975 basin plan. The basin plan identifies current and potential beneficial uses for major streams located within the basin. Beneficial uses are either consumptive or nonconsumptive. Consumptive uses, such as domestic, industrial, and agricultural uses, deplete water supplies. Nonconsumptive uses, such as power generation, recreation, and fish and wildlife habitat maintanance, do not signficantly deplete water supplies. Existing beneficial water uses on the McCloud River include power generation, municipal and agricultural supply, contact and noncontact recreation, and cold freshwater fisheries and wildlife habitat. Potential beneficial uses include additional power generation and water storage facilities. This section describes these existing and reasonably foreseeable water uses.

Existing Water Uses

Power Generation

Hydroelectric power generation is a major water use on the McCloud River. PGandE constructed McCloud Dam in 1965 to divert water from the McCloud River basin to the Pit River basin to generate hydroelectric power. Approximately 1,000 cfs is transported through the McCloud-Iron Canyon diversion tunnel to Iron Canyon Reservoir situated within the Pit River watershed. PGandE's James B. Black Powerhouse on the Pit River generates electricity from water released from Iron Canyon Reservoir.

Municipal and Agricultural

Municipal and agricultural water uses from the McCloud River are limited. The town of McCloud, the largest town in the immediate area, obtains water from upper and lower Elk Springs and Intake Springs, located on the slopes of Mt. Shasta. Lakin Dam, located on the upper McCloud River (Figure 2-2), is a 10-foot-high structure built by settlers in the early 1900s to divert water to the town of McCloud as an auxiliary water supply. Champion owns the water right to the water diverted at Lakin Dam, and the town of McCloud has an agreement with Champion for water use during dry years or emergencies. Currently, Champion uses small quantities of diverted water for irrigating approximately 400 acres of pasture, controlling dust on logging roads, and fighting forest fires. This diverted water has been used in the past to cool turbines at a nearby electric cogeneration facility at a lumber mill and other general purposes at the mill. Unused water diverted from the McCloud River is released into Squaw Valley Creek upstream of the study area. During low runoff years, this inflow represents a substantial amount of the flow in the upper section of Squaw Valley Creek. Water from Squaw Valley Creek is appropriated upstream from the study area for irrigating pasture, watering a golf course, and domestic use.

Contact and Noncontact Recreation

The McCloud River is an important recreational resource to the region, drawing visitors from all parts of the State and surrounding states. Visitors to the McCloud River have a wealth of opportunities to hike, camp, observe natural flora and fauna, and fish for trophy-sized trout. The McCloud River is well-known for its premium brown and rainbow trout fishery and is visited frequently by fishing enthusiasts.

Cold Freshwater Fisheries and Wildlife Habitat

Cold freshwater fisheries and wildlife habitat maintenance are other major water uses on the McCloud River. The river supports populations of brown and rainbow trout sought by fly fishermen. Many riparian-dependent wildlife species are found along the McCloud River, and adequate streamflows are a prerequisite for habitat maintenance. Relatively stable flows observed in the McCloud River are important to the perpetuation of a premium sport fishery. Streamflow patterns in the lower McCloud River are controlled by releases from McCloud Dam. These releases are conducted in accordance with license requirements established by the Federal Energy Regulatory Commission (FERC) in License Number 2106.

Reasonably Foreseeable Water Uses

Reasonably foreseeable water uses are expected to remain similar to existing uses. Several proposed water development projects were recently reasonably foreseeable and are discussed below.

Hydroelectric Power Generation

The McCloud River will continue to generate power as part of PGandE's McCloud River-Pit River interbasin project. Operational changes are not expected. The McCloud River and many of its tributaries have been of great interest over the years, however, to other hydroelectric developers and State flood control specialists. Several factors have led to increased pressure for hydroelectric development of free-flowing rivers and their tributaries. Fluctuating oil prices, environmental constraints, problems associated with conventional energy sources, and the increased demand from large California cities seeking independence from private and public electric utilities have renewed interest in developing new sources of hydroelectricity. Utility rates in California and the rest of the nation were dramatically and adversely affected by the oil crisis of the 1970s.

The City of Santa Clara proposed a hydroelectric system on the upper McCloud River in 1983. The proposed Santa Clara project (FERC Number 7556) consisted of three diversion dams and three powerhouses on the upper McCloud River. The first diversion dam in the project would divert approximately 130 cfs from Upper Falls. The second diversion dam would divert up to 465 cfs from between Upper and Middle Falls. The third diversion dam would inundate Big Springs and divert up to 2,580 cfs. Overall, the project would produce an estimated 287 million kilowatt hours of energy for use by the City of Santa Clara to meet its ever-increasing energy demands. A feasibility study demonstrated that the project was economically feasible but that impacts to the premium sport fishery and loss of recreation-generated income to the local economy were potentially significant impacts. The City of Santa Clara's Electric Resource Development Department dropped the project in November 1985.

Squaw Valley Creek also has been studied for potential hydroelectric development. Preliminary permits were filed in 1981 and 1982 for studying the hydroelectric potential of the creek. The McCloud Community Services District filed a preliminary permit in 1982 to study the feasibility of establishing a hydroelectric system on the creek. The project was dropped in 1984. At present no hydroelectric projects are proposed for development on the McCloud River.

Flood Control and Water Storage Facilities

McCloud and Shasta Dams have been instrumental in preventing downstream flooding in the McCloud and Sacramento River basins, respectively. Construction of an additional dam on the McCloud River for flood control purposes is highly unlikely because of the minimal level of development along the river and need for such a structure. There are no water storage facilities on the McCloud River built for water supply and no reasonably foreseeable need for such facilities at present.

In recent years, the U. S. Bureau of Reclamation and the Department of Water Resources have studied the feasibility of enlarging Shasta Dam. One alternative studied was to increase the height of the existing dam by 200 feet, which would enlarge the reservoir's storage capacity from the present 4.5 million acre-feet to 14 million acre-feet. This project would inundate the lower portions of the lower McCloud River. The capital cost of this project would be substantial, however, and California's water interests have concluded that other needs should take priority over the additional storage of an enlarged Shasta Lake. (California Department of Water Resources 1987)

ECONOMICS

The McCloud River area was developed around such interests as timber extraction, cattle ranching, and the railroad. Recreational services have increased in importance, while timber and cattle production have diminished. Continuing as the area's economic mainstay, natural resources supply raw materials to manufacturing centers such as Redding and Yreka and attract thousands of visitors annually from throughout northern and central California and southern Oregon.

Potential economic impacts of wild and scenic river designation will occur mostly within Siskiyou and Shasta Counties, although the McCloud area trades goods and services more extensively. Economic data are reported regularly for these administrative units, and the economic effects from such a designation were analyzed for the region comprising Shasta and Siskiyou Counties.

Population and Economic Structure

The combined population of Shasta and Siskiyou Counties was 110,865 in 1970. Over the subsequent decade, population increased by 40.2 percent to 155,447, reflecting a rapid rate of outmigration from urban areas in California. Between 1980 and 1986, the region's population grew by just 12.8 percent to 175,400. This slowing was induced by the economic depression in timber-dependent areas during the early 1980s.

Government, manufacturing, services, and retail trade were the region's leading economic sectors in earnings and employment in 1979 (Table 4-2). By 1984, services rose to second in both earnings and employment, with corresponding declines in manufacturing and retail trade. A significant aspect of this structural shift is indicated by the low average earnings in services relative to manufacturing.

Employment declined between 1979 and 1984 in government (1,050 jobs), manufacturing (880 jobs), and transportation and public utilities (125 jobs). These sectors, however, increased most rapidly in average earnings over this period. Wholesale trade, retail trade, and services showed moderately strong gains in both earnings and employment.

Measures of a region's economic development include gross sales, employment, and personal income. The magnitude of economic multipliers reflect the degree of economic development within a region. Large multipliers imply a high degree of economic development with considerable interdependence of a region's economic sectors. If a sector imports most of its supplies from other regions, multipliers for that sector will be small, and changes in output will have less impact on the local economy. If a sector has many suppliers located within the region, changes in output reverberate extensively throughout the local economy, causing large economic impacts. Thus, it follows that larger geographic regions tend to have larger multipliers.

The degree of economic development (or interdependence) was evaluated based on a comparison of economic multipliers for significant sectors in the Redding Bureau of Economic Analysis (BEA) Area and the State of California. The Redding BEA Area includes portions of Modoc, Lassen, Plumas, Sierra, Tehama, Shasta, and Siskiyou Counties. Specific data for Shasta and Siskiyou Counties are unavailable, but the economic structure of the Redding BEA Area is considered sufficiently representative of the Shasta and Siskiyou County economies. Significant sectors are those that contribute substantially to regional employment and sales and that could be affected if wild and scenic river designation restricts future production.

Lumber and wood products are relatively well integrated into the regional economy (Table 4-3) through dependence on local timber producers, foresters, loggers, and truckers, while paper and allied products are more dependent on imported supplies.

Personal Income and Unemployment

Earned income accounted for almost two-thirds of the region's personal income in 1979 (Table 4-4). Income distribution among income classes is shown in Table 4-5 for Shasta and Siskiyou Counties and for the State. Proportions of the

Table 4-2. Earnings, Employment, and Average Earnings for the Redding BEA Area, 1979 and 1984

Economic Sector	1979 Earnings (Million dollars)	1979 Earnings (Percent)	1979 Employment (Jobs)	1979 Employment (Percent)	1979 Average Earnings ($/job)	1984 Earnings (million dollars)	1984 Earnings (Percent)	1984 Employment (Jobs)	1984 Employment (Percent)	1984 Average Earnings ($/job)	Percent Change 1979-1984 Earnings	Percent Change 1979-1984 Employment	Percent Change 1979-1984 Average Earnings
Total agriculture	--	--	--	--	--	--	--	--	--	--	--	--	--
Construction and mining	--	--	--	--	--	--	--	--	--	--	--	--	--
Manufacturing	150	18.3	7,250	14.2	20,690	173	16.6	6,370	12.5	27,158	15.3	-12.1	31.3
Transportation and public utilities	76.9	9.4	3,750	7.4	20,507	102	9.8	3,625	7.1	28,138	32.6	- 3.3	37.2
Wholesale trade	36.2	4.4	2,100	4.1	17,238	51.1	4.9	2,325	4.6	21,978	41.2	10.7	27.5
Retail trade	108	13.2	9,225	18.1	11,707	136	13.1	10,190	20.0	13,346	25.9	11.7	14.0
Finance, insurance, and real estate	29.6	3.6	1,900	3.7	15,580	30.9	3.0	1,900	3.7	16,263	4.4	0	4.4
Services	132	16.1	8,850	17.4	14,915	193	18.6	10,275	20.1	18,783	46.2	16.1	25.9
Government	167	20.4	12,450	24.4	13,414	235	22.6	11,400	22.3	20,614	40.7	- 8.4	53.7
All sectors	819		50,900		16,090	1,040		51,075		20,362	27.0	0.3	26.6

Note: -- indicates information unreported to avoid disclosure.

Sources: U. S. Bureau of Economic Analysis (1986), California Employment Development Department (1987a,b).

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Table 4-3. Comparison of Economic Multipliers for Significant Economic Sectors in the Redding BEA Area and California

Sector	Redding BEA Area	California
Lumber and wood products	2.34	3.22
Paper and allied products	1.76	3.35
Wholesale and retail trade	2.26	3.45
Hotels and lodging places	2.30	3.81
Public utilities	1.94	3.19

Sources: California Department of Water Resources (1980) and U. S. Bureau of Economic Analysis (1977).

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Table 4-4. Personal Income by Source of Income for the Redding BEA Area, 1979 and 1984

Source of Income	1979 Million dollars	1979 Percent	1984 Million dollars	1984 Percent	Percent Change 1979-1984
Total earnings (by place of residence)	779	64.4	984	55.0	26.3
Dividends, interest, and rent	218	18.0	423	23.6	94.0
Transfer payments	212	17.5	382	21.4	80.2
Total personal income	1,209		1,789		
Per capita personal income (dollars)	8,007		10,592		

Source: U. S. Bureau of Economic Analysis (1986).

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Table 4-5. Percentage of Dependents by Adjusted Gross Income for Shasta and Siskiyou Counties and California, 1985

Adjusted Gross Income	Shasta County	Siskiyou County	California
Under $10,000	18.1	23.1	18.6
10,000-20,000	21.6	23.5	22.3
20,000-30,000	22.0	23.6	17.6
30,000-40,000	18.5	14.9	14.5
More than 40,000	19.7	14.8	27.0

Source: California Franchise Tax Board (1986).

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population in households with annual adjusted gross incomes of less than $20,000 are roughly similar for the region's counties and for the State. The region has a larger proportion of population than the State with incomes between $20,000 and $40,000, while the State's population has a correspondingly greater proportion with incomes in excess of $40,000.

The regional unemployment rate averaged 14.1 percent between 1977 and 1986. Unemployment increased to 19.4 percent during the depressed year of 1982 and was at its lowest level (11.6 percent) in over a decade in 1986. In general, the unemployment rate for this region is higher than in other more urbanized areas.

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ELIGIBILITY AND CLASSIFICATION

Chapter 5

ELIGIBILITY AND CLASSIFICATION

A primary objective of this study is to determine if entire river segments or any portion thereof within designated study boundaries meets eligibility requirements for inclusion in the California System. Once eligibility is established, appropriate classifications (wild, scenic, or recreational) are determined for eligible segments. This chapter describes the eligibility and classification processes and presents results for each.

The determination of extraordinary resource values and classification of eligible river segments entails professional judgments made by the study team. Established criteria are not absolute and do not automatically determine eligibility and classification. Accordingly, the river segment was evaluated with primary emphasis on the quality of the experience obtained in examining the river and overall impression of each resource value. The basis for this evaluation and the resulting judgments are documented in Chapter 3 and Volume II.

IDENTIFICATION AND DESCRIPTION OF RIVER SEGMENTS

Nominated study segments were divided into additional segments to provide greater accuracy in data collection, analyses, and recommendations (Figure 5-1). Each segment possesses certain resource and land use characteristics. Segment boundaries were relatively easy to establish because the aforementioned parameters are interdependent and typically changed in unison. Excessive segmentation was avoided to facilitate greater ease of management and administration of segments included within the California System. Segments for the McCloud River and Squaw Valley Creek were as follows:

Upper McCloud River

- Segment 1 - Algoma to Upper Falls
- Segment 2 - Segment 1 boundary to the northern boundary of Section 13 (T39N, R1W)
- Segment 3 - Segment 2 boundary to the confluence with Angel Creek
- Segment 4 - Segment 3 boundary to the confluence with Huckleberry Creek

Lower McCloud River

- o Segment 5 - McCloud Dam to 0.25 mile downstream of McCloud Dam
- o Segment 6 - Segment 5 boundary to the unnamed tributary (known locally as Parking Lot Creek) 0.5 mile upstream of the confluence with Ladybug Creek
- o Segment 7 - Segment 6 boundary to the unnamed tributary in the northern portion of Section 23 (T37N, R2W)
- o Segment 8 - Segment 7 boundary to the confluence with Squaw Valley Creek
- o Segment 9 - Segment 8 boundary to the northern boundary of Section 9 (T3EN, R3W)
- o Segment 10 - Segment 9 boundary to McCloud River Bridge

Squaw Valley Creek

- o Segment 11 - Northern boundary of Section 14 (T38N, R2W) to the confluence with Cabin Creek
- o Segment 12 - Segment 11 boundary to the confluence with Beartrap Creek
- o Segment 13 - Segment 12 boundary to the confluence with the McCloud River

River segments are described in the following paragraphs. Roads, trails, bridges, and developed locations in the study area are shown in Figure 5-2.

Segment 1 begins at Algoma Campground at an existing bridge. A diversion dam called Lakin Dam is located in the downstream portion of this segment. The terrain is flat, and several public and private roads either parallel or provide access to the river. A bridge crosses the river near Bundoora Springs, and timber management in this segment is pronounced. Water quality in this and other segments is good and essentially unaffected by human influences.

Segment 2 is easily accessible by public and private roads. This segment receives high use from campers at Fowler's Campground and travelers along State Highway 89. Campsites, roads, and parking areas are visible from the McCloud River at various locations.

Segment 3 is accessible by private roads only. Locked gates on these roads limit vehicular access to the McCloud River,

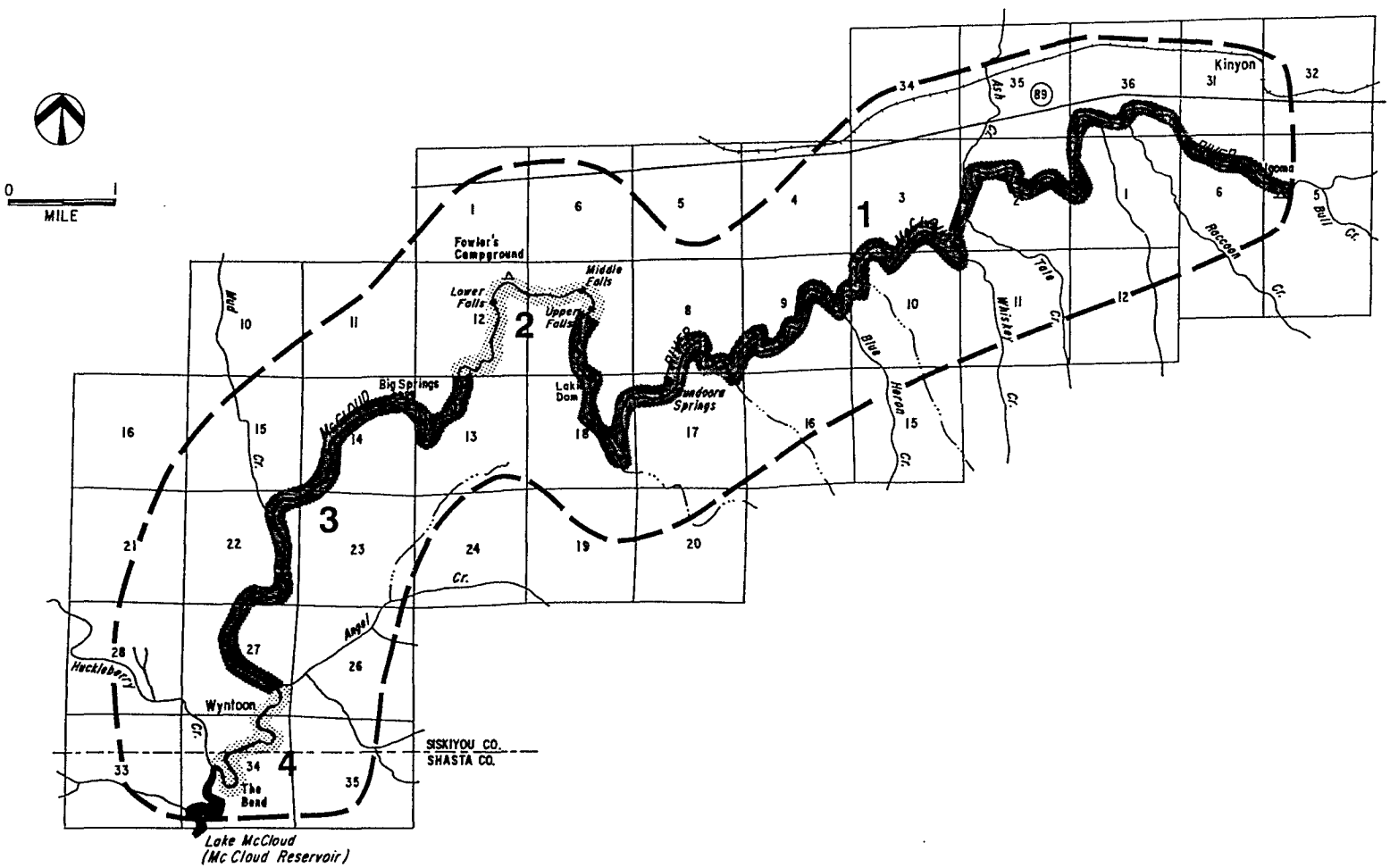

FIGURE 5-1A.

McCLOUD RIVER STUDY SEGMENTS

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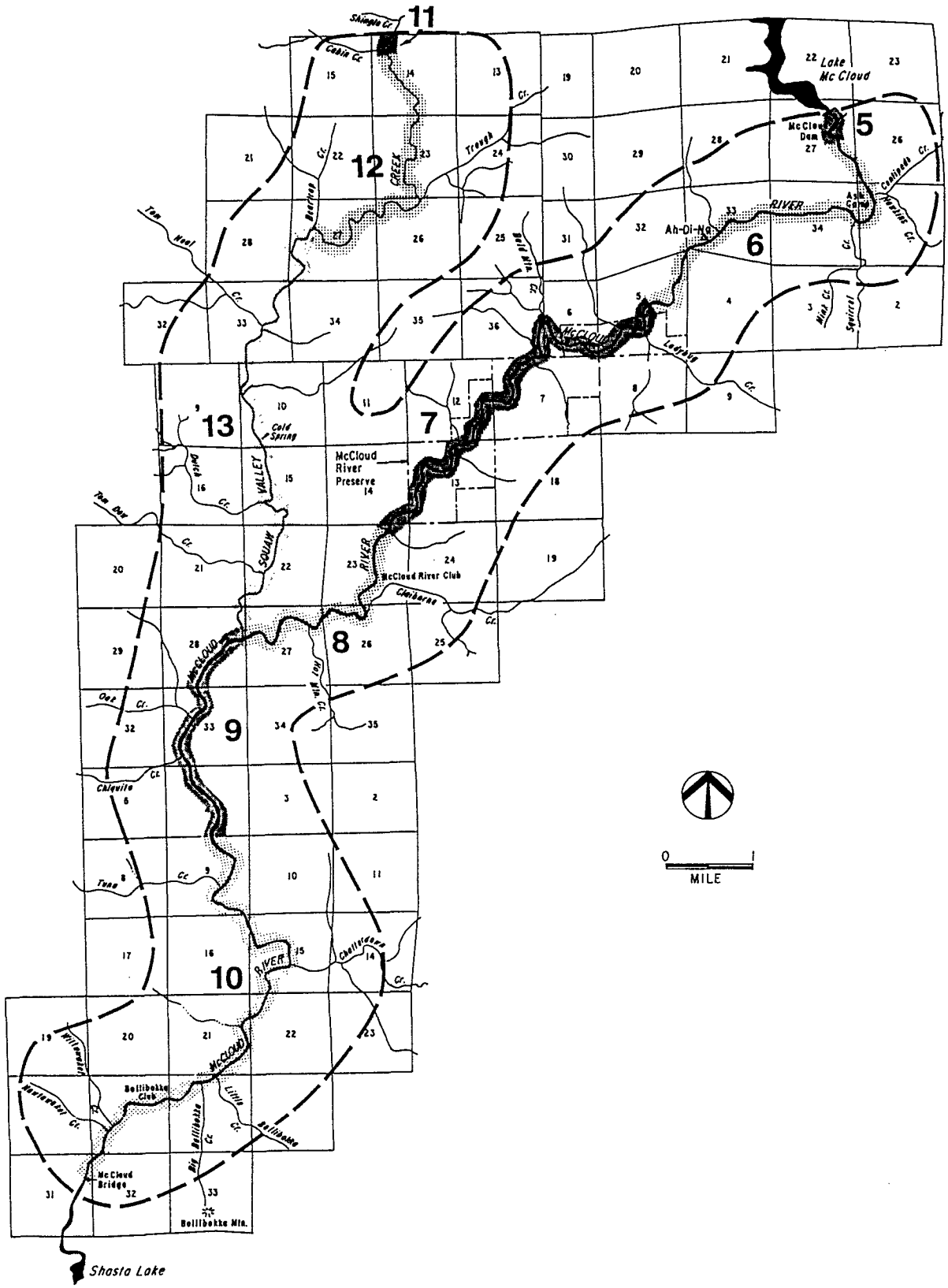

FIGURE 5-1B. McCLOUD RIVER STUDY SEGMENTS

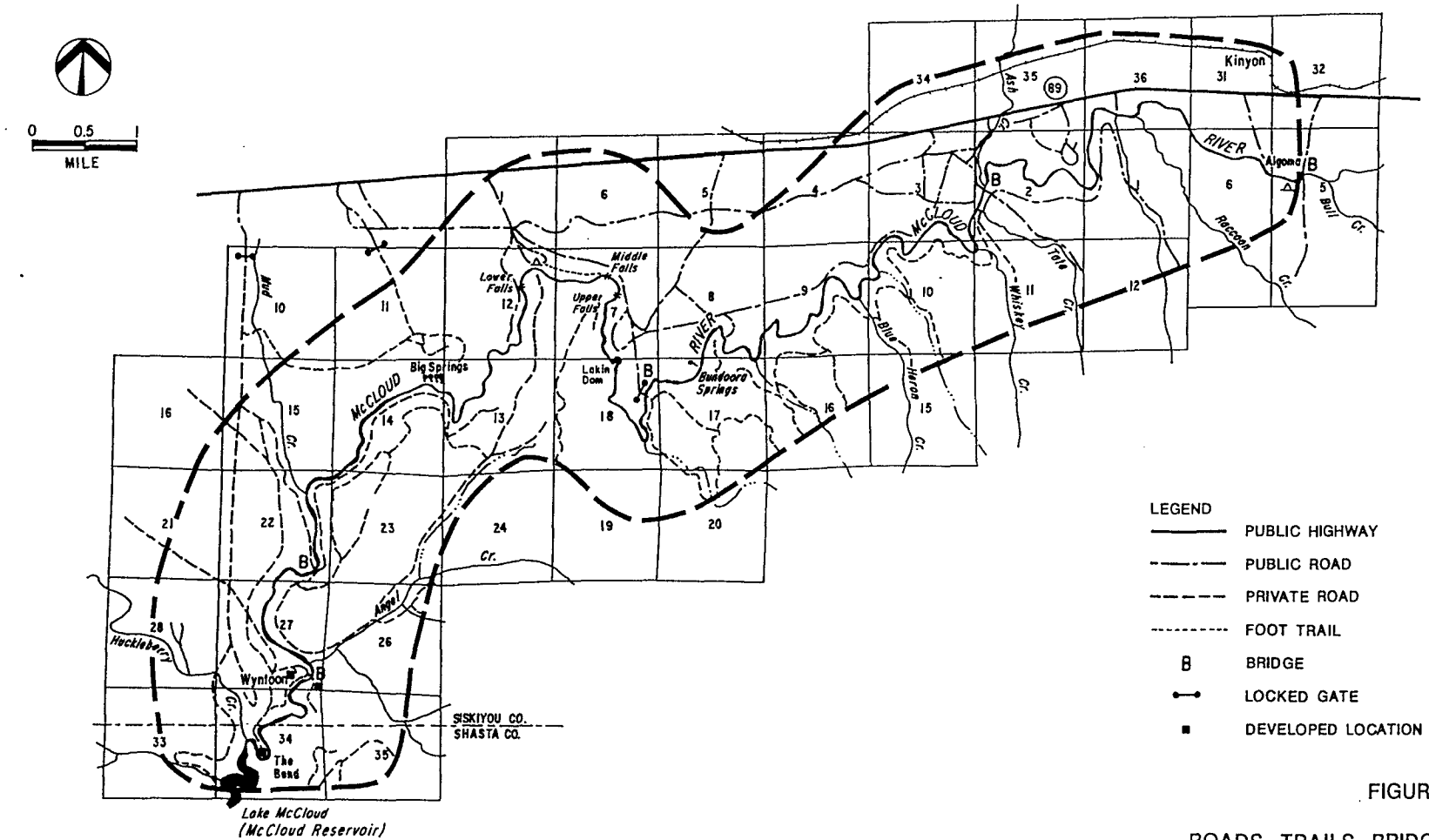

FIGURE 5-2A.

ROADS, TRAILS, BRIDGES, AND DEVELOPED LOCATIONS IN THE McCLOUD RIVER STUDY AREA

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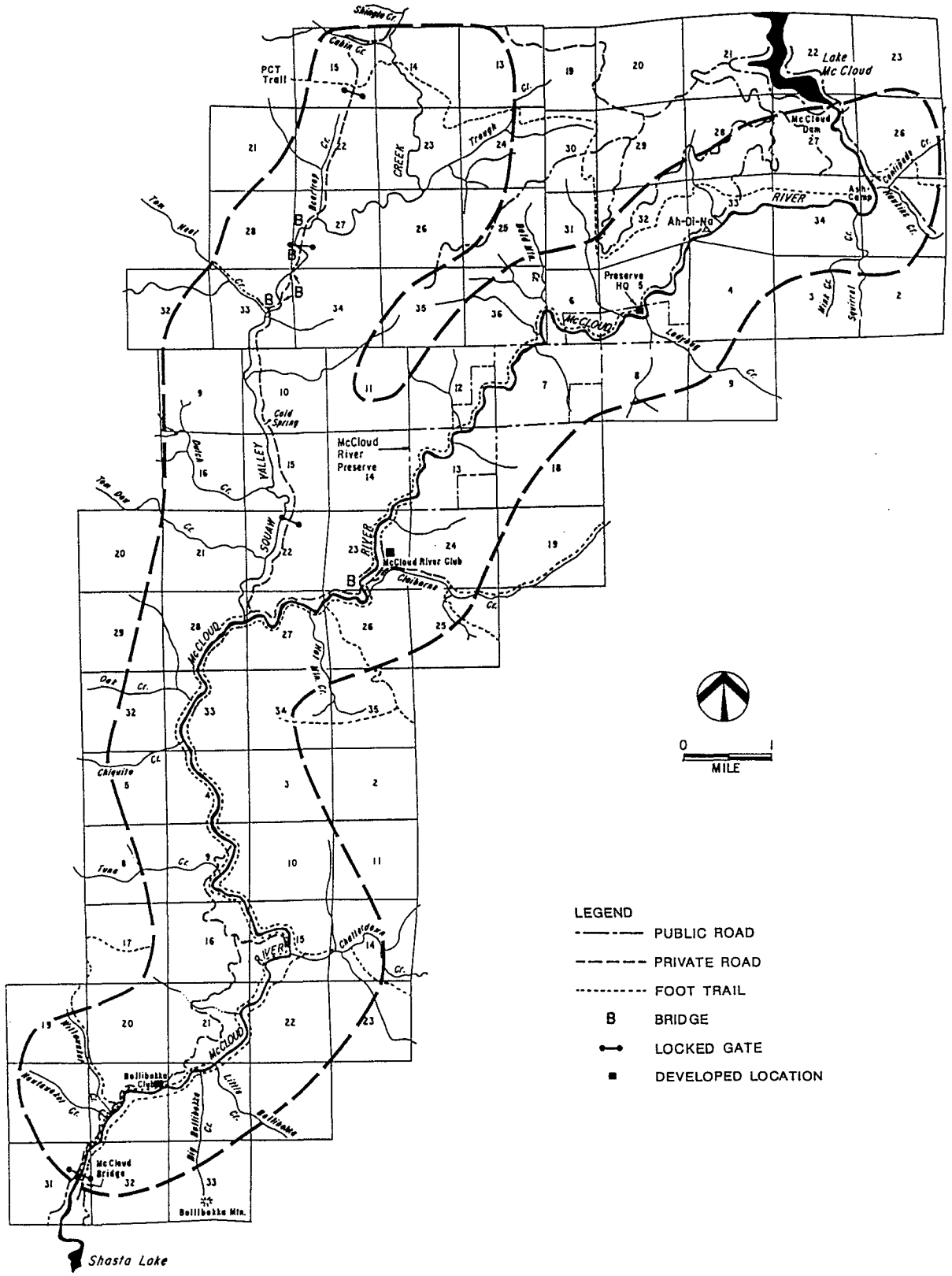

FIGURE 5-2B. ROADS, TRAILS, BRIDGES, AND DEVELOPED LOCATIONS IN THE McCLOUD RIVER STUDY AREA

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and private property in most areas prohibits public use. As expected, use of this segment by recreationists is limited. An old logging road bridge spans the river in a downstream portion of this segment. A gaging station is located near Big Springs, as is a small, abandoned hut. Logging activity has occurred in the past and is evident at several locations along the river.

Segment 4 is easily accessible by private roads only, and locked gates preclude public entry. Several buildings at Wyntoon and The Bend are significant structures. A bridge crosses the river near Wyntoon. A gaging station, footbridge, and riprapped bend in the river are other human disturbances along the river. The presence of these structures and high use by the residents are easily discernable from the McCloud River.

Segment 5 is the short segment of the lower McCloud River from McCloud Dam to 0.25 mile downstream. The dam dominates the setting in much of this segment. Most of the minimum instream flows below McCloud Dam and at Ah-Di-Nah specified by the FERC license agreement are made through pipes near the base of McCloud Dam. The road that crosses over the top of McCloud Dam continues along the river on the eastern side throughout this segment and impacts the creek significantly. The dam spillway and structure associated with the pipe outlets are other man-made features in this segment.

Segment 6 downstream of Hawkins Creek contains higher flows than Segment 5 because of additional accretion flows. A road parallels the upper portion of this segment to Hawkins Creek but is visually unobtrusive. The road leads to an undeveloped campground known as Ash Camp. Another public road provides access to the river at Ah-Di-Nah and parallels the river downstream to near the McCloud River Preserve. The public road and Segment 6 end at this point. A burned-out structure and parking and camping areas are present at Ah-Di-Nah.

Segment 7 is a remote canyon with access limited to a trail; motorized access is unavailable in this segment, which passes through the McCloud River Preserve. Two large cabins are located at the Preserve headquarters but are generally not visible from the river. A weir is installed and maintained during the fall in the river downstream from the cabins. The weir is used to collect fisheries data for research projects. There are no other structures in this segment. Past timber harvests can be seen from the Preserve at a few vista points, but the visual landscape along the river is unmodified.

Segment 8 encompasses the McCloud River Club access road, bridge, and headquarters. A private dirt road parallels most of the river in this segment and bridges the river at one location. Several small buildings comprise the McCloud River Club headquarters, but these buildings tend to blend well with the surroundings. There are no other structures in this segment.

Segment 9 has access limited to trails that parallel the river on both sides. There are no other human disturbances or structures. This segment represents a pristine, remote river canyon.

Segment 10 maintains a streamside foottrail along both sides of the river throughout the segment. An access road extends from the lower end of this segment to the Bollibokka Club and beyond on the western side of the river. A locked gate located near the McCloud Bridge precludes public use of the road. The road closely parallels the river up to the Bollibokka Club, but then ascends the slopes and is higher on the ridge and generally not visible from the river beyond the club. The road accesses the river at two locations beyond the Bollibokka Club. Several buildings are present at the Bollibokka Club headquarters, and a single cabin overlooks the river near Tuna Creek. A United States Geological Survey gaging station is located just downstream from Big Bollibokka Creek. The McCloud River bridge marks the lowermost portion of this segment. Shasta Lake significantly affects the area downstream of the bridge through periodic inundation.

Segment 11 is closely paralleled by a public dirt road on the east side. Landslides from the road have impacted the east side of the creek. Extensive timber harvesting activities on the west side of the creek have resulted in numerous slides into Squaw Valley Creek as well. A bridge spans the creek in this segment. Although no other structures are located in this segment, the shoreline has been impacted extensively from human disturbances.

Segment 12 is a remote canyon with access limited to the PCT crossing over a small footbridge near Cabin Creek. No other access or structures are present within this segment. The watershed and shorelines in this segment are essentially primitive.

Segment 13 is paralleled by a private dirt road throughout the segment. A locked gate located upstream precludes all motorized public access along Squaw Valley Creek. Despite the presence of this road, there are no other structures or human disturbances except several additional locked gates and five small bridges along the road.

ELIGIBILITY ANALYSIS

The California Act does not contain an established procedure or methodology for evaluating river eligibility. In essence, the presence of one or more extraordinary resource values qualifies a free-flowing river for eligibility. The California Act states that a river must be "free-flowing," that is without artificial impoundment, diversion, or other river modifications.

The Act clearly states, however, that such river modifications do not automatically bar any river's inclusion within the System. As one example, the lower American River, a State and federally designated river, is not a "free-flowing" river. The overriding factor here is the presence of extraordinary resource values. A river segment generally is eligible if it has flowing water and maintains at least one extraordinary resource value. In this context, all study segments meet the free-flowing river criterion.

Table 5-1 summarizes extraordinary resource values identified in Chapter 3 and described in greater detail in Volume II. Extraordinary resource values are present in Segments 2-4, 6-10, and 12-13. Water, fishery, recreational, scenic, and cultural resource values are all extraordinary on the McCloud River in Segments 2-4 and 6-10. Geologic resources are extraordinary in Segment 3 while scientific, ecological, and educational resources are extraordinary in Segments 6-10. Scenic and cultural resources are extraordinary in Segments 12 and 13 on Squaw Valley Creek. The presence of these extraordinary resources in free-flowing environments qualifies Segments 2-4, 6-10, and 12-13 as eligible for inclusion in the California Wild and Scenic Rivers System.

CLASSIFICATION ANALYSIS

Eligible segments are classified as wild, scenic, or recreational based on the condition of the river corridor at the time of the study. These classifications are defined in the California Act (Sec. 5093.53) as follows:

- Wild Rivers - "Those rivers or segments of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted." (Squaw Creek)

- Scenic Rivers - "Those rivers or segments 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 Rivers - "Those rivers or segments 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."

These definitions, in conjunction with supplemental criteria (47 FR 39454 et seq.), were used to classify all eligible river segments. It must be emphasized that eligibility criteria, such as the absence of artificial impoundments, diversion, or other river modifications, are not a part of the classification analysis; these criteria were applied in the eligibility analysis.

Table 5-1. Summary of Extraordinary Resource Values of the McCloud River

Resource	Upper McCloud River Segments					Lower McCloud River Segments							Squaw Valley Creek Segments			
	1	2	3	4	Entire River Segment	5	6	7	8	9	10	Entire River Segment	11	12	13	Entire River Segment
Geologic	no	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no
Water	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	no	no	no
Botanical	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
Wildlife	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
Fishery	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	no	no	no
Recreational	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	no	no	no
Scenic	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	yes	yes	no
Cultural	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	yes	yes	no
Scientific[a]	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	no
ELIGIBLE	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	no	no	yes	yes	no

[a] Includes ecological and educational resources.

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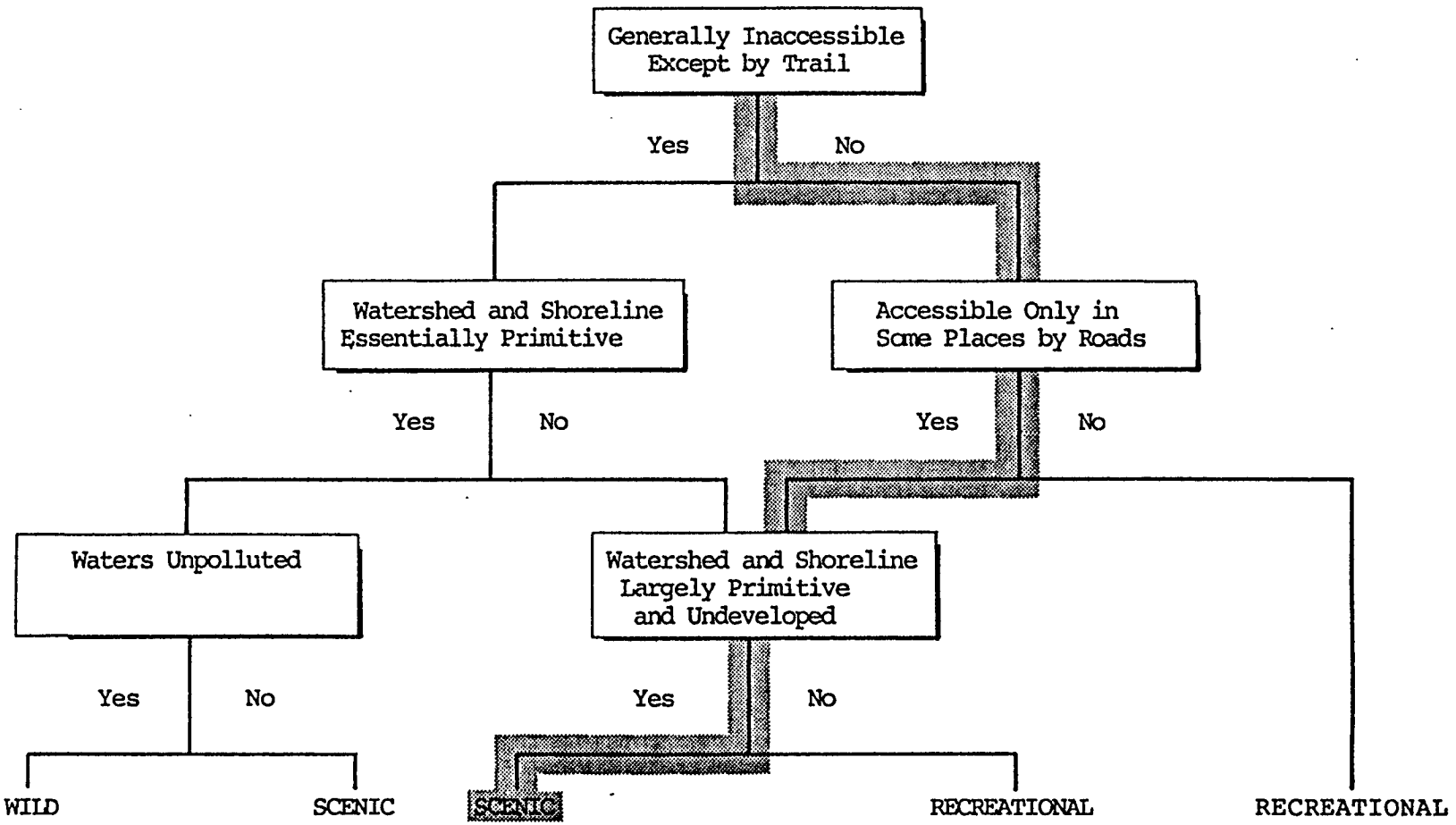
Two approaches can be used to illustrate classification analyses. A conceptual decision tree approach is presented in Figure 5-3 with the pathway for Segment 3 highlighted. The matrix approach, used in this analysis for all segments, is presented for the upper McCloud River, lower McCloud River, and Squaw Valley Creek in Tables 5-2, 5-3, and 5-4, respectively.

Segment 13 qualifies as a recreational river using strict application of classification criteria. This segment, however, has been classified as scenic because of unique characteristics. Although this segment is readily accessible by road, the road is private and entry is restricted to only a few individuals. Consequently, this segment is not "readily accessible by road" to the vast majority of the public. In addition, the watershed and shoreline are largely primitive and undeveloped. This river segment is more primitive than other scenic-designated river segments essentially because of minimal human intrusion and disturbance. For these reasons, Segment 13 is best managed as a scenic river, and this segment has been classified accordingly.

Figure 5-3. Conceptual Decision Tree Approach to Classification of River Segments



Notes: Classification assumes that river eligibility, including free-flowing river status, has been established. Segment 3 pathway highlighted for example.

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Table 5-2. Classification Analysis for the Upper McCloud River

● MEETS CRITERIA

SEGMENT	CLASSIFICATION WILD: Generally Inaccessible Except by Trail	CLASSIFICATION WILD: Watershed and Shoreline Essentially Primitive	CLASSIFICATION WILD: Waters Unpolluted	CLASSIFICATION SCENIC: Accessible Only in Some Places by Roads	CLASSIFICATION SCENIC: Watershed and Shoreline Largely Primitive and Undeveloped	CLASSIFICATION RECREATIONAL: Readily Accessible by Road or Railroad	CLASSIFICATION RECREATIONAL: Some Development Along Shoreline	CLASSIFICATION
1	INELIGIBLE							
2			●			●	●	RECREATIONAL
3			●	●	●			SCENIC
4			●			●	●	RECREATIONAL

Notes: Classification analysis assumes that river eligibility, including free-flowing river status, has been established. A segment must meet all criteria within a wild or scenic classification to be classified as wild or scenic. A segment must meet only one criterion within a recreational classification to be classified as recreational.

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Table 5-3. Classification Analysis for the Lower McCloud River

● MEETS CRITERIA

SEGMENT	CLASSIFICATION WILD: Generally Inaccessible Except by Trail	CLASSIFICATION WILD: Watershed and Shoreline Essentially Primitive	CLASSIFICATION WILD: Waters Unpolluted	CLASSIFICATION SCENIC: Accessible Only in Some Places by Roads	CLASSIFICATION SCENIC: Watershed and Shoreline Largely Primitive and Undeveloped	CLASSIFICATION SCENIC: Readily Accessible by Road or Railroad	CLASSIFICATION RECREATIONAL: Some Development Along Shoreline	CLASSIFICATION
5	INELIGIBLE							
6			●	●	●			SCENIC
7	●	●	●					WILD
8			●	●	●			SCENIC
9	●	●	●					WILD
10			●	●	●			SCENIC

Notes: Classification analysis assumes that river eligibility, including free-flowing river status, has been established. A segment must meet all criteria within a wild or scenic classification to be classified as wild or scenic. A segment must meet only one criterion within a recreational classification to be classified as recreational.

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Table 5-4. Classification Analysis for Squaw Valley Creek

● MEETS CRITERIA

SEGMENT	CLASSIFICATION WILD: Generally Inaccessible Except by Trail	CLASSIFICATION WILD: Watershed and Shoreline Essentially Primitive	CLASSIFICATION WILD: Waters Unpolluted	CLASSIFICATION SCENIC: Accessible Only in Some Places by Roads	CLASSIFICATION SCENIC: Watershed and Shoreline Largely Primitive and Undeveloped	CLASSIFICATION SCENIC: Readily Accessible by Road or Railroad	CLASSIFICATION RECREATIONAL: Some Development Along Shoreline	CLASSIFICATION
11	INELIGIBLE							
12	●	●	●					WILD
13			●		●	●		SCENIC (see text)

Notes: Classification analysis assumes that river eligibility, including free-flowing river status, has been established. A segment must meet all criteria within a wild or scenic classification to be classified as wild or scenic. A segment must meet only one criterion within a recreational classification to be classified as recreational.

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IMPACT ASSESSMENT

Chapter 6

IMPACT ASSESSMENT

This chapter describes impacts from wild and scenic river designation from several perspectives. Each perspective contributes to a full understanding of the ramifications of wild and scenic river designation. The five major categories of impact assessment include:

- o direct impacts on land and water uses,
- o indirect impacts on land and water uses,
- o impacts on resource values,
- o impacts on regional and local economies, and
- o impacts from classification.

Direct impacts on land and water uses result from provisions contained within the California Act as discussed in Chapter 1. Indirect impacts include the possible effects of other State, federal, and local laws on land and water uses. Impacts on resource values include the effects of designation on the resource values themselves. Impacts on the regional and local economies are dictated by the overall impact of designation, and constraints on land and water uses are evaluated accordingly. Finally, impacts from classification as wild, scenic, or recreational are discussed.

Impacts are discussed generally within the secondary study area. In certain instances, however, impacts are evaluated more effectively only in a regional setting. Land use impacts are discussed mostly for the secondary study area, while water use impacts are discussed for the region; the California Act contains language that could affect water use outside of the secondary study area.

Four general categories of impact are used in this analysis. Uses are either enhanced, curtailed, foreclosed, or unaffected by wild and scenic designation. Each category is defined as follows:

- o enhanced - a use is enhanced if it increases or is improved;
- o curtailed - a use is curtailed if it decreases or diminishes;

- foreclosed - a use is foreclosed if it will no longer be allowed; and
- unaffected - a use is unaffected if it will remain unchanged or uninfluenced.

DIRECT IMPACTS

Direct impacts to land and water uses are easiest to accurately evaluate because only the California Act is used to determine such impacts. A summary of direct impacts and use levels is presented in Table 6-1 and described below.

Timber Production

Extensive private lands along the upper McCloud River are used for timber production. Private, forested lands also dominate the lower McCloud River, but only a small portion is presently subject to timber harvest. The State's Forest Practice Rules for the Northern Forest District require that lands within 200 feet of a designated wild and scenic river be considered a special treatment area for purposes of timber management (14 Cal. Admin. Code 895.1). In these areas, "special consideration" must be given to silvicultural methods that are "compatible with the objectives for which the special area was established" (14 Cal. Admin. Code 933.4). Through the development of Timber Harvest Plans, the operator's forester and representatives of the California Department of Forestry and Fire Protection (CDFFP) are to agree on specific practices to protect these areas during any proposed timber harvest subject to State approval.

Special treatment areas will not significantly change current timber harvest practices or reduce timber production along designated rivers. Some form of reduced harvest or selective cutting already is required in the watercourse protection zone, which varies from 50 to 300 feet from the river's edge, depending on slope. The watercourse protection zone specifically requires retaining at least 50 percent of the overstory canopy and the understory vegetation and revegetation of disturbed soils. A significant further reduction in harvest to achieve compliance with special treatment area provisions would probably not be needed. The primary effects of creating special treatment areas from wild and scenic river designation, therefore, would be to widen the reduced-harvest zone somewhat on gently and moderately sloping grounds and to provide additional authority to CDFFP to assure protective practices in these areas. Watercourse protection has not been an issue of disagreement, however, on timberlands bordering the McCloud River. (Reeves pers. comm.)

Table 6-1. Summary of Direct Impacts from Wild and Scenic River Designation on Land and Water Uses

Type of Use	Current Use Level	Reasonably Foreseeable Use Level	Potential Impact
Grazing	Low	Low	Unaffected
Mining	None	Low	Unaffected
Timber production	None to Moderate	None to Moderate	Curtailed[a]
Recreation	High	High	Enhanced
Fish and wildlife habitat maintenance	High	High	Enhanced
Water supply	Low	Low	Unaffected curtailed, or foreclosed[b]
Hydroelectric power	High	High	Unaffected curtailed, or foreclosed[b]
Flood control	Low	Low	Unaffected curtailed, or foreclosed[b]
Water quality maintenance	Moderate	Moderate	Unaffected

[a] Only within 200 feet of designated river segments.

[b] Potential impact depends on specific project design and operation.

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Along the only other State wild and scenic river in the Northern Forest District, the North Fork American River, reductions in timber harvest intensities have been required by CDFFP upon recommendations by DFG throughout portions of the viewshed of the river (Mower pers. comm.). Some of these viewshed areas are substantially more distant than 200 feet. Working cooperatively with the USFS, DFG has been successful in reducing timber harvest intensities on public lands within the river's viewsheds. Neither the Fish and Game Code nor the California Wild and Scenic Rivers Act, however, confers authority on CDFFP (or DFG) to limit timber harvest activities on private lands for visual quality purposes beyond the 200-foot special treatment zone.

In conclusion, State designation of the McCloud River as a wild and scenic river may provide some further reduction in private land timber harvesting within 200 feet of the river's edge, although logging in most of this zone is already significantly reduced from the biological and economic potential. The possible additional reduction is therefore considered to be less than significant. No reductions beyond the 200-foot-wide corridor are implied by State wild and scenic river designation.

Timber management practices on public lands that are administered by the Shasta-Trinity National Forest would be unaffected by wild and scenic river designation. The USFS is expected to propose management of the river as if the river were a component of the National System. Such management would be intended to preserve the natural character and extraordinary values of the river and its immediate environment and would therefore be compatible with the intent of the California Act. It should be noted, however, that State designation would have no direct effect on USFS timber management practices.

Grazing

Grazing levels are low in the secondary study area and will continue to be low in the future. The California Act does not contain specific language affecting grazing use. Current grazing practices, which occur north of the upper McCloud River on Champion lands and intervening public lands, do not affect the extraordinary resource values, free-flowing status, or immediate environment of the McCloud River or Squaw Valley Creek. Grazing will be unaffected by direct impacts.

Mining

Little or no mining occurs within the secondary study area although some mineral extraction has occurred within the region. The California Act does not contain specific language affecting mining, and no special land use restrictions are necessary. Any

potential mining, however, could be affected if the river or immediate environment were endangered. The Legislature could also amend the Act in the future to exclude mining sites from the System and allow extraction and refining of newly discovered mineral resources. Such an amendment was used to develop strategic metals at a site within the Smith River watershed (Sec. 5093.66).

Recreation

Recreation is one of the primary uses of the secondary study area. Wild and scenic river designation would tend to focus public attention on recreational, scenic, biological, and other natural values of the McCloud River and Squaw Valley Creek. This awareness would stimulate river visitation but only slightly over levels that will be increasing in the future regardless of designation.

Interest may increase the use of private lands along the river for recreational activities. Wild and scenic designation will increase this use only slightly, however, in relation to the total additional demand placed on such rivers in the future from recreationists. USFS and private landowner management priorities to provide a quality recreational experience and generally maintain the watershed characteristics also will reduce overuse and future impacts.

Fish and Wildlife Habitat Maintenance

Fish and wildlife habitat maintenance within the study area consists of maintaining the natural environment. The Act generally will enhance this use by further protecting the free-flowing conditions and immediate environments of the McCloud River and Squaw Valley Creek. The Act further states that the director of DFG shall conduct studies specifically funded by the Legislature and will make recommendations relating to "enforcement requirements necessary to protect the System from fish or wildlife degradation, the development of information or statistical data necessary to provide the most beneficial management of the fisheries included within the System," and "Legislature action deemed necessary to protect the fishery and wildlife values of the System" (Sec. 5093.69). Consequently, DFG is given a specific mandate to manage and protect fish and wildlife resources on rivers within the System.

Increased recreation use from designation may affect fish and wildlife habitat and populations, but this impact is less than significant when compared to the increased recreational use expected in the future even without wild and scenic designation.

Water Development

Water development includes water supply, hydroelectric power generation, and flood control (including water quality maintenance) projects. Water development on the McCloud River is restricted to the McCloud Reservoir operations by PGandE. As specified in Sec. 5093.548 of the California Wild and Scenic Rivers Act:

> nothing in this chapter shall prejudice, alter, affect in any way, or interfere with the construction, maintenance, repair, or operation by the Pacific Gas and Electric Company of the existing McCloud-Pit development (FERC 2106) under its license, or prevent Pacific Gas and Electric from constructing a hydroelectric generating facility by retrofitting the existing McCloud Dam if the operation of the facility does not alter the existing flow regime below the dam.

The diversion of Lakin Dam does not significantly affect the free-flowing status of the McCloud River and is located in a segment ineligible for inclusion in the System because of a lack of extraordinary resource values. Continued water diversions at Lakin Dam will not significantly affect the free-flowing state or immediate environment of the McCloud River. Consequently, wild and scenic designation of downstream river segments will not affect Lakin Dam diversions.

Section 5093.56 of the Act states in part that:

> no department or agency of the state shall assist or cooperate, whether by loan, grant, license, or otherwise, with any department or agency of the federal, state, or local government, in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character of the river segments designated in Section 5093.54 as included in the system.

Without specific provisions to the contrary, designation of the McCloud River and Squaw Valley Creek into the System would foreclose water development within designated segments. The effects of State wild and scenic designation on water projects proposed upstream of nominated segments are uncertain. It is expected, however, that State water permitting agencies such as the SWRCB would closely scrutinize the environmental effects of any projects proposed upstream of nominated or designated wild and scenic river segments.

INDIRECT IMPACTS

Indirect impacts to land and water uses, as defined in this report, are difficult to evaluate and can only be broadly identified. These impacts depend on subsequent discretionary actions of federal, State, and local agencies and governments. Indirect impacts result from the implementation of existing laws or the creation of new laws beyond the California Act.

State and Local Laws

The California Act neither enlarges nor diminishes existing land use regulatory powers of State agencies and local governments (Sec. 5093.58). The Act does, however, require all such entities to exercise their existing powers in a manner consistent with policy and provisions of the Act (Sec. 5093.61). This exercise could take many forms. For example, local governments could enact general plan amendments and zoning ordinances to regulate the type and intensity of adjacent land use, including development of structures and other improvements. Although all economic uses of a parcel cannot be precluded without compensation, many potential uses could be curtailed.

These potential effects are speculative at this time, and no development projects or plans to change local land use regulation have been proposed or are known to be under evaluation. Local governments, particularly in rural areas, historically have not expanded land use regulatory powers.

Designated State wild and scenic rivers typically have not been managed by State or local governments in a manner that creates potential indirect impacts. There are no indications from State or local agencies and governments that this trend would not continue. Consequently, it is expected that indirect impacts to timber production, grazing, mining, recreation, fish and wildlife habitat maintenance, and water development will be either nonexistent or less than significant.

Federal Laws

The McCloud River and Squaw Valley Creek presently provide opportunities for various activities in relatively uncrowded and primitive conditions, and the USFS and private landowners will continue to manage the river for these values. Administration of uses and activities on public lands will be directed toward maintaining the natural environment of the area.

State designation of the McCloud River and Squaw Valley Creek will not influence federal designation into the National System. Rivers with potential for wild, scenic, or recreational status in the National System were inventoried in 1979-80

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(National Park Service 1982). The McCloud River from its source to McCloud Reservoir and from McCloud Dam to Shasta Lake was identified as candidate river segments. Squaw Valley Creek was not identified as a candidate river. Shasta-Trinity National Forest has completed eligibility studies on the McCloud River and determined that the McCloud River from Bartle to McCloud Reservoir and from McCloud Dam to Shasta Lake is eligible for inclusion in the National System (U. S. Forest Service 1986). Suitability studies and recommendations for designation have not been initiated by the USFS but are scheduled for completion (U. S. Forest Service 1986).

It is unlikely that this study will influence any suitability studies conducted by the USFS or other federal agencies. In 1980, only 31 percent of State-designated wild and scenic rivers were found eligible and suitable for inclusion in the National System. Although the Acts and river study processes are similar, it is evident that differences between the State and National Acts, perceived or real, have at times resulted in different conclusions regarding extraordinary resources and suitability. Eligibility and classification analyses conducted in this study and by the USFS show marked differences. It is expected that State wild and scenic designation will not influence national wild and scenic designation because the processes typically are independent and because eligibility and classification studies have already been completed by the USFS. Only if the Governor specifically requests inclusion within the National System will the results of this study influence potential federal designation. This request is contingent upon The Resources Agency making a recommendation to the Legislature for designation and the Legislature approving designation.

RESOURCE VALUE IMPACTS

Resource values will remain relatively unchanged if segments of the McCloud River and Squaw Valley Creek become components of the California System. The study area is relatively pristine, there are no reasonably foreseeable land or water uses that could adversely affect the existing environment, and public agencies will manage much of the public lands for national wild and scenic river designation. The only potential adverse impact to resources from wild and scenic designation is increased recreational use that diminishes resource values. There is an undetermined but finite capacity of the river environment to withstand increasing use without deterioration of resource values. Existing recreational activities would continue, and the levels of use will increase as the area becomes better known and other similar stream environments are impacted by human development. As stated previously, this impact is not considered significant because overall use is expected to increase to a much greater degree regardless of wild and scenic designation, and public agency management plans, and private management plans if unchanged, should control uses in the area.

The greatest impact to resource values would occur if some unforeseen land or water use incompatible with the intent of the California Act is proposed. In this instance, the Act's provisions to preserve designated rivers in their free-flowing state together with their immediate environments becomes important. The following discussion presents some of the potential impacts than can occur without protection from the Act.

Wild and scenic river designation will protect extraordinary recreational, scenic, and water resource values by precluding water impoundments or diversions that could affect these resources. Water development projects have the potential to greatly impact resource values; more than 100 possible categories of environmental impacts have been associated with small-scale hydroelectric development alone (Rochester et al. 1984). Most of these impacts are well described and are not only restricted to water impoundment and diversion effects. Greater impacts sometimes result from the associated land use activities. Construction and maintenance of access roads, pipelines, penstocks, power plants, transmission lines, maintenance facilities, and other project appurtenances can adversely affect all of the resource values present in the study area. Existing road access is limited in some portions of the study area, and road development in these areas could result in a significant expansion of motorized access opportunities. All resource values could be affected by increased access and human disturbance. Protected resources along the McCloud River and Squaw Valley Creek could increase in value if similar resources are adversely affected along unprotected waterways.

REGIONAL AND LOCAL ECONOMIC IMPACTS

Designation of the McCloud River and Squaw Valley Creek as components of the California System is not expected to affect production of timber, livestock, minerals, or any other commodities within lands adjacent to the river. Consequently, no impacts on the regional or local economies are expected within these sectors. The prestige of the area's recreation sites may be enhanced, resulting in some increase in demand for participation in fishing, camping, and related activities. Increased recreational use of the river would increase sales, employment, and personal income in industries that supply recreational support services, in particular, hotels and lodging places, eating and drinking establishments, grocery stores, and service stations. Measurable changes in sales of recreation services would be expected to have a minor beneficial impact on the regional and local economies. No basis is available for estimating the relative importance of the proposed wild and scenic designation as a contribution to overall future increases in recreation demand.

CLASSIFICATION IMPACTS

The effects of river classification as wild, scenic, or recreational are not explicit in the California Act. Generally, water development and other projects will not be allowed to adversely affect the free-flowing condition and natural character of a component of the California System (Secs. 5093.55, 5093.56). The natural character of a river influences to a large degree whether a river is classified as wild, scenic, or recreational (Chapter 5). For example, a wild river will have a natural character significantly different from a recreational river.

Classification does not affect the existing uses of a designated river because such uses dictate classification as wild, scenic, or recreational. For instance, an area with a high level of land use and human disturbance will be eligible only as a recreational area, and the natural character of the river and immediate environments will be managed accordingly. Classification, however, can affect future uses and resource values. A future project or action may be determined to have a significant impact on the natural character of a wild river but not on a recreational river. In this context, there are innate differences in classification. Wild rivers will be afforded the greatest protection, scenic rivers less protection, and recreational rivers the least protection.

COMPARISON WITH DESIGNATED STATE WILD AND SCENIC RIVERS

Chapter 7

COMPARISON WITH DESIGNATED STATE WILD AND SCENIC RIVERS

Designated State wild and scenic rivers are located within the Klamath, Trinity, Smith, Eel, and American River systems. These rivers were included as charter members of the California System, and eligibility and suitability studies were never prepared. Specific identification of extraordinary resource values on a segment-by-segment basis also was never initiated. The mainstem rivers in these systems are all components of the National System. All of the river segments except the North Fork American River qualified for inclusion on the basis of outstandingly remarkable anadromous fishery values. The lower American River was found to possess outstandingly remarkable recreational values and the Middle Fork of the Eel River possesses outstandingly remarkable whitewater boating (recreational) values. The North Fork American River contains outstandingly remarkable scenic, recreational, cultural, and water quality values.

With the exception of the American River, all other components of the California System are northcoast or Klamath basin rivers. The North Fork American River is the only component representing high elevation western Sierra rivers, while the lower American River represents a large, low elevation river in the Sacramento-San Joaquin River system. Extraordinary and other resource values of California's wild and scenic rivers, therefore, are rather limited in scope given the great diversity and array of free-flowing river segments in California.

The McCloud River and Squaw Valley Creek would represent unique components of the California System. With the exception of the North Fork American River, the McCloud River and Squaw Valley Creek are the only rivers with extraordinary nonanadromous fishery resource values. Geographically, the McCloud River and Squaw Valley Creek are located far from existing wild and scenic rivers, and the complex resource values are quite distinct on the McCloud River and Squaw Valley Creek. The recreational, scenic, cultural, fisheries, wildlife, botanical, water, geologic, and cultural resource values of the McCloud River and Squaw Valley Creek are not represented by any existing component of the California System. In this context, comparison with existing wild and scenic rivers is not particularly useful because of the great divergence in resource values and attributes between the McCloud River and Squaw Valley Creek and existing components of the California System.

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ALTERNATIVES AND CONCLUSIONS

Chapter 8

ALTERNATIVES AND CONCLUSIONS

Several alternatives are available for recommendation by The Resources Agency to the Legislature and Governor. One alternative, the no-designation alternative, is to recommend that none of the McCloud River or Squaw Valley Creek be included within the California Wild and Scenic Rivers System. Available data strongly refute the appropriateness of this alternative. Most of the McCloud River and Squaw Valley Creek is eligible for inclusion. In addition, wild and scenic river designation of these eligible segments will not significantly impact any current or reasonably foreseeable land or water uses or local and regional economies. Nondesignation would risk impact to extraordinary resource values, immediate environments, and free-flowing status from any inappropriate land or water uses. Such resource values already have been degraded or lost on many other rivers in the region.

Another alternative includes all of the eligible segments of the McCloud River but excludes Squaw Valley Creek entirely. Squaw Valley Creek does not maintain the wealth of extraordinary values found on the McCloud River. The scenic values of Squaw Valley Creek are extraordinary nonetheless and quite different from scenic values on the McCloud River. Squaw Valley Creek also contributes to the extraordinary resource values in the lower McCloud River by providing additional streamflow, cultural resource sites, and fisheries and wildlife habitat. For these reasons, the extension of wild and scenic river status from the McCloud River along Squaw Valley Creek is appropriate.

A third alternative is to include only part of the eligible candidate segments on the McCloud River and Squaw Valley Creek. As stated previously, designation of all eligible segments will not cause significant land, water, or economic impacts. The inclusion in the California System of only portions of the eligible segments does not fully protect the unique continuum of resource values and opportunities that are present.

A fourth alternative is to include all of the upper McCloud River, from Algoma to McCloud Reservoir, in the California System. An argument can be made that the presence of redband trout in the upper portions of this segment constitutes an extraordinary fishery resource value. Upper McCloud River redband trout have significant scientific value as a relict ancestral stock of modern coastal rainbow trout and have recreational value to anglers who enjoy pursuing unique strains of fish. In addition, recreational resources resulting from

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several USFS campgrounds and an intensive put-and-take fishery may be considered to constitute extraordinary recreational resource values. The presence of a single special-status species should not necessarily provide rationale for including a river segment into the California System. Fish, wildlife, and botanical special-status species have widespread distributions as a group and can be found in many watersheds in California. Including all such rivers into the California System without consideration of other resource values and attributes may not meet the intent of the California Wild and Scenic Rivers Act. Hatchery-supported fisheries and riverside campgrounds also are not considered unique in California. For these reasons, it was determined that the upper portion of the upper McCloud River segment did not contain extraordinary resource values and, therefore, was ineligible for inclusion within the California System.

The preferred alternative of the authors of this report is to include all eligible segments of the McCloud River and Squaw Valley Creek within the California Wild and Scenic Rivers System. These segments contain extraordinary resource values and would represent unique additions to the California System. Preservation of the study segments in their free-flowing state is considered presently to be the highest and most beneficial use of the water for the people of the State because of the presence of extraordinary resource values and less-than-significant impacts from designation on land and water uses and regional and local economies. Land and water uses generally will be maintained. It is therefore recommended that certain river segments be classified and added to the California Wild and Scenic Rivers System as follows:

McCloud River

- Upper Falls to the northern boundary of Section 13 (T39N, R1W) - RECREATIONAL classification
- the northern boundary of Section 13 (T39N, R1W) to the confluence with Angel Creek - SCENIC classification
- the confluence with Angel Creek to the confluence with Huckleberry Creek - RECREATIONAL classification
- 0.25 mile downstream from McCloud Dam to the unnamed tributary (known locally as Parking Lot Creek) 0.5 mile upstream of the confluence with Ladybug Creek - SCENIC classification
- 0.5 mile upstream of the confluence with Ladybug Creek to the unnamed tributary in the northern portion of Section 23 (T37N, R2W) - WILD classification

- the unnamed tributary in the northern portion of Section 23 (T37N, R2W) to the confluence with Squaw Valley Creek - SCENIC classification

- the confluence with Squaw Valley Creek to the northern boundary of Section 9 (T35N, R3W) - WILD classification

- the northern boundary of Section 9 (T35N, R3W) to the McCloud River Bridge - SCENIC classification

Squaw Valley Creek

- the confluence with Cabin Creek to the confluence with Beartrap Creek - WILD classification

- the confluence with Beartrap Creek to the confluence with the McCloud River - SCENIC classification

Classification of eligible river segments for this preferred alternative are shown in Figure 8-1.

Special land use restrictions or other provisions are not required to protect extraordinary resource values, immediate environments, free-flowing status, or land and water uses in the study area.

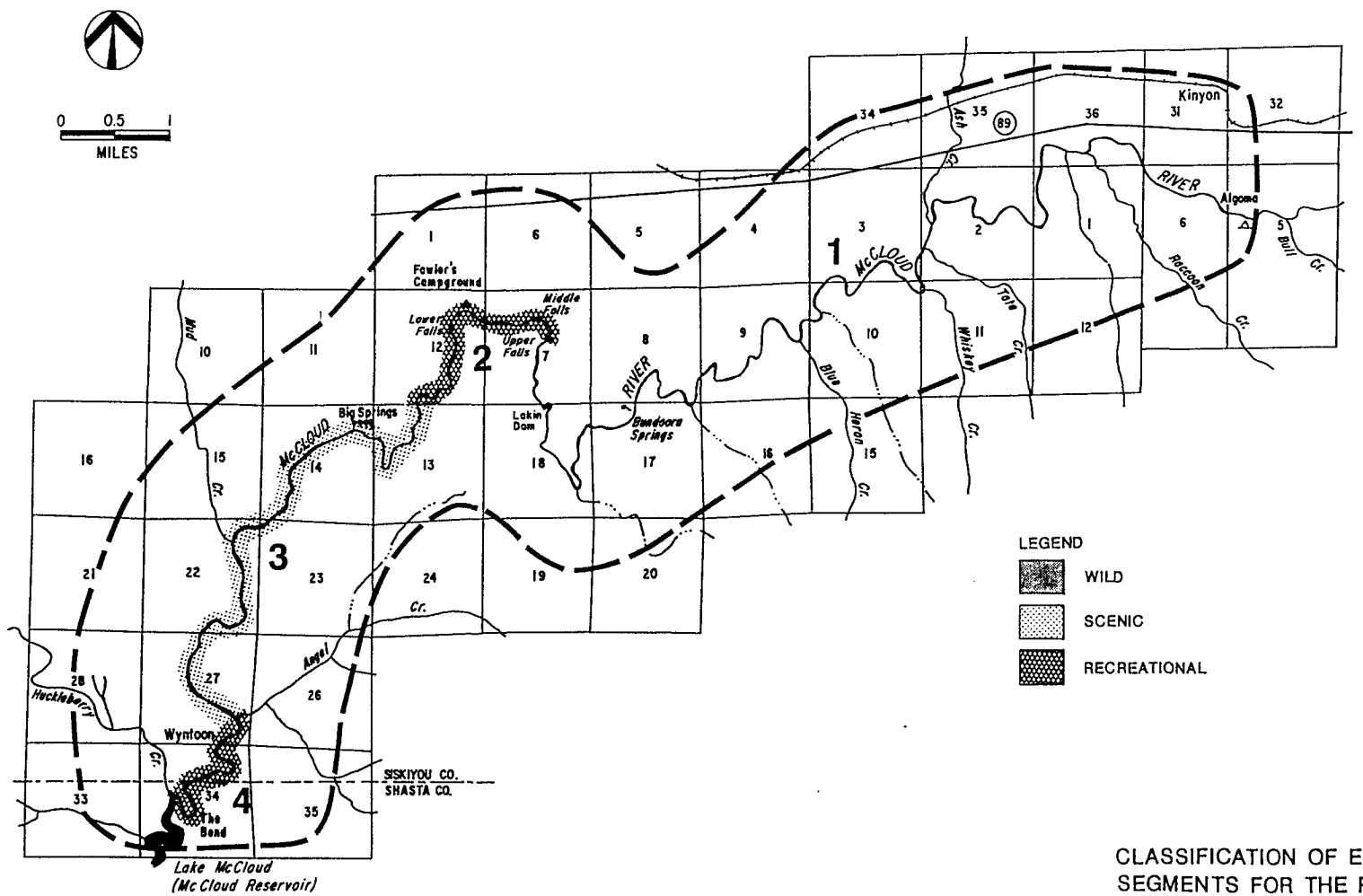

FIGURE 8-1A.
CLASSIFICATION OF ELIGIBLE RIVER SEGMENTS FOR THE PREFERRED ALTERNATIVE

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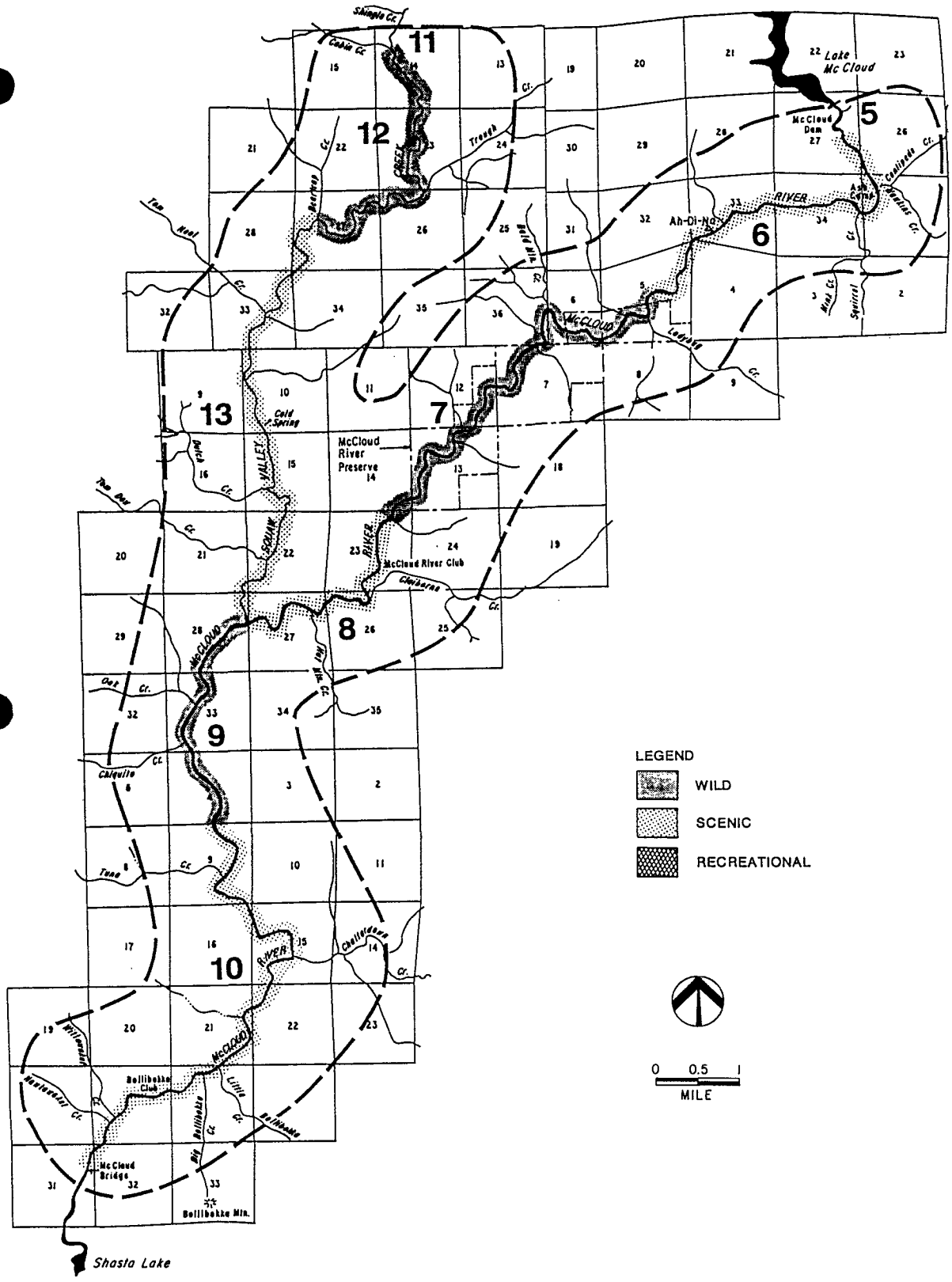

FIGURE 8-1B. CLASSIFICATION OF ELIGIBLE RIVER SEGMENTS FOR THE PREFERRED ALTERNATIVE

BIBLIOGRAPHY

Chapter 9

BIBLIOGRAPHY

REFERENCES CITED

Alt, D. D. and D. W. Hyndman. 1975. Roadside geology of northern California. Mountain Press Publishing. Missoula, MT. 244 pp.

Berg, W. 1987. Evolutionary genetics of rainbow trout, Parasalmo gairdnerii (Richardson). (Ph.D. dissertation.) University of California, Davis. Davis, CA. 126 pp.

California. Air Resources Board, Aerometric Data Division. 1984. California surface wind climatology. Sacramento, CA. 180 pp.

California. Department of Fish and Game. 1978. Toxic Substances Monitoring Program. (Water Quality Monitoring Report No. 79-25.) Fish and Wildlife Water Pollution Control Laboratory. Rancho Cordova, CA. Prepared for: State Water Resources Control Board, Sacramento. CA. 110 pp.

California. Department of Water Resources. 1980. Measuring economic impacts - the application of input-output analysis to California water resources problems. (DWR Bulletin 210.) Sacramento, CA. 171 pp.

_____. 1987. California water: looking to the future. (Bulletin 160-87.) Sacramento, CA. 122 pp.

California. Employment Development Department. 1987a. Annual planning information - Redding metropolitan statistical area 1987-1988. Sacramento, CA. 70 pp.

_____. 1987b. Annual planning information - Siskiyou County 1987-1988. Sacramento, CA. 68 pp.

California. Franchise Tax Board. 1986. Annual report. Sacramento, CA. 118 pp.

California. Natural Diversity Data Base. 1987. Unpublished data base analyses. Sacramento, CA.

Cranfield, C. 1984. A land use history of the McCloud River region, California. McCloud River Preserve. McCloud, California. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 149 pp.

Evans, J. R. 1977. Economic geology of the McCloud limestone. California Geology 30(6):123-132.

Gerstung, E. R. 1980. 1979 Annual report of the Threatened Salmonids Project. California Department of Fish and Game, Inland Fisheries Branch. Sacramento, CA. Unpublished report. 39 pp.

Guilford-Kardell, M. 1980. Some pre-contact Shasta County Wintu site locations: a correlation of the previously unpublished notes of Jeremiah Curtin and J. P. Harrington with later published, recorded and unrecorded data on the Dawpom, Wenemem Puidalpom, and Waimuk areas of Wintu population. (Occasional Papers of the Redding Museum No. 1.) Redding Museum and Art Center. Redding, CA. 131 pp.

Hanft, R. 1971. Pine across the mountain: California's McCloud River railroad. Golden West Books. San Marino, CA. 224 pp.

Hajek, A. E. 1975. Invertebrate fauna study. Unpublished report. 35 pp.

Harris, S. 1980. Fire and ice: the Cascade volcanoes. The Mountaineers and Pacific Search Press. Seattle, WA. 316 pp.

Hayes, M. P. 1975. A report on the birds and herpetofauna of the McCloud River Preserve. Unpublished report.

Hayes, M. P. and P. Kraai. 1975. Report on the mammals of the McCloud River Preserve. Unpublished report. 16 pp.

Hesseldenz, T. F. 1984. Developing a long-term protection plan for the McCloud River, California. Pp. 784-794 in R. E. Warner and K. M. Hendrix (eds.), California Riparian Systems, Ecology, Conservation and Production Management. University of California Press. Berkeley, CA. 1,035 pp.

Hill, M. 1977. Glaciers of Mt. Shasta. California Geology 30(4):75-80.

Jensen, P. M. and P. R. Reed. 1979. An anthropological overview and cultural resources inventory of the northern Sacramento Valley and southern Cascade Range. (CA-030-CT8-004.) U. S. Bureau of Land Management, Redding District Office. Redding, CA. 182 pp.

Johnson, J. E. 1987. Protected fishes of the United States and Canada. American Fisheries Society. Bethesda, MD. 42 pp.

Kunkel, G. 1975. Cryptograms of the McCloud River Preserve: a floristic survey. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 28 pp.

Mallory, J. I., R. G. Dixon, and W. R. Powell. 1978. Tables for the soil-vegetation map northwest quarter of the Big Bend quadrangle (15c-2), Siskiyou County, California. U. S. Forest Service, Pacific Southwest Forest and Range Experiment Station. Berkeley, CA. 7 pp.

Martin, I. B. 1981. Overview of the cultural historic resources of Euro-American and other immigrant groups in the Shasta-Trinity National Forest. (52-9A28-9-2974.) Geoscientific Systems and Consulting. Playa del Ray, CA. Prepared for: USDA, Forest Service, Shasta-Trinity Forest, Redding, CA. 150 pp.

Muir, J. 1888. Picturesque California, the Rocky Mountain and Pacific slope. J. Dewey Co. San Francisco, CA. 350 pp.

National Oceanic and Atmospheric Administration. 1985. Climatological Data Annual Summary: California 1985. National Climatic Data Center. Ashville, NC. 50 pp.

National Park Service. 1982. The nationwide rivers inventory: California component. Washington, DC. 35 pp.

Patterson, C. 1975. A preliminary report of the McCloud Preserve flora. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 26 pp.

Podolak, E. and S. Dudgeon. 1986. A floral inventory of the McCloud River Preserve. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 14 pp.

Rensink, G. and S. Parmenter. 1986. 1983 fisheries studies on the McCloud River Club, Lower Squaw Valley Creek, and the Lower McCloud River Preserve. The Nature Conservancy. McCloud, CA. Prepared for: The McCloud River Club, McCloud, CA. 36 pp.

Rode, M. 1987. California Wild Trout Management Program, McCloud River Wild Trout Area Management Plan (Draft). (Inland Fisheries Administrative Report No. 1987.) California Department of Fish and Game. Sacramento, CA. Unpublished report. 67 pp. + tables.

Rochester, H., Jr., J. Lloyd, and M. Farr. 1984. Physical impacts of small-scale hydroelectric facilities and their effects on fish and wildlife. (FWS/OBS-84/19.) U. S. Fish and Wildlife Service, Western Energy and Land Use Team. Fort Collins, CO. 191 pp.

Sheppard, J. 1978. McCloud River Preserve master plan. The Nature Conservancy. San Francisco, CA, Ca. 50 pp.

Smith, J. P., Jr. and R. York. 1984. Inventory of rare and endangered vascular plants of California. 3rd edition. Special Publication No. 1. California Native Plant Society. Sacramento, CA. 174 pp.

Strand, R. G. 1962. Geologic map of California: Redding sheet. California Department of Mines and Geology. San Francisco, CA. Map.

_____. 1963. Geologic map of California: Weed sheet. California Department of Mines and Geology. San Francisco, CA. Map.

Strate, B. and T. Underwood. 1982. McCloud River survey. Prepared for: U. S. Forest Service, McCloud Ranger District, McCloud, CA. Unpublished data.

Swanberg, W. A. 1961. Citizen Hearst: a biography of William Randolph Hearst. Charles Scribner's Sons. New York, NY. 555 pp.

Taylor, D. W. and G. L. Stebbins. 1978. A new species of Eupatorium (Asteraceae) from California. Madrono 25(4):218-220.

Theodoratus Cultural Research, Inc. 1981. Native American cultural overview: Shasta-Trinity National Forest. (53-9A28-9-2957.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 265 pp. + appendices.

_____. 1984. Ethnographic inventory for Public Law 95-341, north central California. (53-9A28-0-3130.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 150 pp.

Thomas, J. W., C. Maser, J. E. Rodeik. 1979. Wildlife habitats in managed rangelands--the Great Basin of southeastern Oregon riparian zones. (General Technical Report PNW-80.) USDA, Forest Service, Northwest Forest and Range Experiment Station. Portland, OR. 18 pp.

U. S. Bureau of Economic Analysis. 1977. Industry - specific output multipliers for BEA economic areas. Regional Economic Analysis Division. Washington DC. Ca. 100 pp.

_____. 1986. Local area personal income, 1979-1984. Washington, DC. Ca. 200 pp.

U. S. Forest Service. 1986. Draft environmental impact statement: Shasta-Trinity National Forests land and resource management plan. USDA, Shasta-Trinity National Forest. Redding, CA. Ca. 1,000 pp.

_____. 1987. Land and resource management planning handbook. USDA. Washington, DC. Various pagings.

U. S. General Accounting Office. 1986. Wild and scenic rivers - certain rivers not in national system generally retain original values. (Report No. GAO/RCED 87-39.) Washington, DC. Prepared for: Subcommittee on National Parks and Recreation, House of Representatives, Washington, DC. 157 pp.

Vaughan. T. 1985. The McCloud River Lumber Company: archaeological investigations at two historic camps. USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. 80 pp.

Wilson, E. C. 1970. Conocardium langerheimi sp. n. (Mollusca: Bivalva) in the lower Permian series of the McCloud limestone, northern California. (Contributions in Science No. 184.) Natural History Museum of Los Angeles County. Los Angeles, CA. 14 pp.

_____. 1982. Wolfcampian rugose and tabulate corals (Coelenterata: Anthozoa) from the lower Permian McCloud limestone of northern California. (Contribution in Science No. 337.) Natural History Museum of Los Angeles County. Los Angeles, CA. 90 pp.

_____. 1983. Stratigraphic range extensions and coral province affiliations of stony corals in the lower Permian McCloud limestone of California. P. 41 in Fourth International Symposium on Fossil Cnidaria, August 7-12, 1983. Abstracts. Washington, DC.

Personal Communications

Booth, R. August 27, 1987. Air Pollution Control Officer. Shasta County Air Pollution Control District, Redding, CA. Telephone conversation.

Brumley, T. November 3, 1987. Forest Biologist. Shasta-Trinity National Forest, Shasta Lake Ranger District, McCloud, CA. Telephone conversation.

Cook, D. January 21, 1988. Senior Planner. Shasta County Planning Department, Redding, CA. Telephone conversation.

Deinstadt, J. M. October 12, 1987. Fisheries Biologist. California Department of Fish and Game, Rancho Cordova, CA. Memo.

Emmel, J. F. December 31, 1986. California Conservator. The Nature Conservancy, Hemet, CA. Letter.

Fox, C. January 21, 1988. Environmental Coordinator. Shasta-Trinity National Forest, Redding, CA. Telephone conversation.

Hardy, D. January 22 and 25, 1988. Assistant Planner. Siskiyou County Planning Department, Yreka, CA. Telephone conversation.

Henn, W. Forest Archaeologist. Shasta-Trinity National Forest, Redding, CA. Telephone conversation.

Hesseldenz, T. October 13, 14, 15, 23, 30, 1987 and January 22, 1988. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Meeting and telephone conversations.

Lyon, D. January 22, 1988. Forest Recreation Staff Officer. Shasta-Trinity National Forest, Redding, CA. Telephone conversation.

Marshall, D. January 21, 1988. District Manager. Champion International Corporation, Inc., McCloud, CA. Telephone conversation.

Mower, J. January 21, 1988. Forest Advisor, Nevada and Placer Counties. California Department of Forestry and Fire Protection, Auburn, CA.

Phelps, K. November 3, 1987. Wildlife Biologist. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation.

Reeves, W. January 22, 1988. Forester III. California Department of Forestry and Fire Protection, Redding, CA. Telephone conversation.

Rode, M. October 14, 1987. Fisheries Biologist. California Department of Fish and Game, Mt. Shasta, CA. Meeting.

Russum, J. October 2, 9, and 16, 1987. Resource Officer. Shasta-Trinity National Forest, McCloud Ranger District, McCloud CA. Telephone conversation and meeting.

Van Susteren, P. December 3, 1987. Forest Lands and Minerals Staff Officer. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation.

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Chapter 10

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APPENDICES

Appendix A

CALIFORNIA WILD AND SCENIC RIVERS ACT

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Chapter 1.4

CALIFORNIA WILD AND SCENIC RIVERS ACT

Section

5093.50. Legislative declaration.
5093.51. Short title.
5093.52. Definitions.
5093.53. Classification of rivers.
5093.54. Components of system.
5093.541. Tributaries of Smith River.
5093.545. Revision and adoption of classification of rivers.
5093.546. Classification to be by statute; recommendation of legislation; land use restrictions.
5093.55. Restrictions on construction of dams, reservoirs, diversions, other impoundments, or water diversion facilities.
5093.56. Prohibition against governmental cooperation in projects affecting system; exception, Eel River.
5093.57. Eel River; flood protection.
5093.58. Powers of officials or agencies relating to land use regulation unaffected.
5093.59. Repealed.
5093.60. Coordination of activities.
5093.61. Local powers.
5093.62. Fish and wildlife.
5093.63. Eminent domain.
5093.64. Severability.

Section
5093.65. Kings River; construction of water impoundment facility; moratorium until January 1, 1979.
5093.66. Sites excluded from system; extraction and refinement of strategic metals; restrictions on mining in certain area; regulatory authority not otherwise modified or limited.
5093.67. Temporary impoundments for recreational purposes; portions of rivers in system classified as recreational; findings.
5093.68. Special treatment areas; provisions applicable; timber operations stop orders.
5093.69. Studies and recommendations.

Chapter 1.4 was added by Stats.1972, c. 1259, p. 2510, § 1.

Historical Note

Stanislaus River Protection Act of 1974

Addition of this Act, proposed by Initiative Measure, 1974, which would have added §§ 5093.66 to 5093.69, was rejected by the electors at the general election held Nov. 5, 1974.

Cross References

California recreational trails system plan, coordination of systems, see § 5071.7.

§ 5093.50. Legislative declaration

It is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state. The Legislature declares that such use of these rivers is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution. It is the purpose of this chapter to create a California Wild and Scenic Rivers System to be administered in accordance with the provisions of this chapter.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5692, § 1.)

Historical Note

The 1982 amendment substituted "Section 2 of Article X of the California Constitution" for "Section 3 of Article XIV of the State Constitution" at the end of the second sentence.

Notes of Decisions

In general 1
Estoppel 2

1. In general

Where the bond act (Water C. § 12930 et seq.) was approved by the voters and authorized the department of water resources to construct additional water development fa-

cilities in certain watersheds, a subsequent act of the legislature (Stats.1972, c. 1259) restricting such facilities would not prohibit construction unless a bond act amendment is approved by the voters. Op.Leg.Counsel, 1972 A.J. 7880.

2. Estoppel

State may not be estopped from asserting its rights to lands between high and low-water marks of navigable lake where there was no appreciable ebb and flow of tide. State of California v. Superior Court of Placer County (1981) 625 P.2d 256, 172 Cal. Rptr. 713, 29 C.3d 240, certiorari denied 102 S.Ct. 325, 454 U.S. 865, 70 L.Ed.2d 165, rehearing denied 102 S.Ct. 665, 454 U.S. 1094, 70 L.Ed.2d 635.

§ 5093.51. Short title

This chapter shall be known as the California Wild and Scenic Rivers Act.

(Added by Stats.1972, c. 1259, p. 2510, § 1.)

§ 5093.52. Definitions

As used in this chapter:

(a) "Secretary" means the Secretary of the Resources Agency.

(b) "Resources Agency" means the Secretary of the Resources Agency and such constituent units of the Resources Agency as the secretary deems necessary to accomplish the purposes of this chapter.

(c) "River" means the water, bed, and shoreline of rivers, streams, channels, lakes, bays, estuaries, marshes, wetlands and lagoons, up to the first line of permanently established riparian vegetation.

(d) "Free-flowing" means existing or flowing without artificial impoundment, diversion, or other modification of the river. The presence of low dams, diversion works, and other minor structures shall not automatically bar any river's inclusion within the system; provided, however, that this subdivision shall not be construed to authorize or encourage future construction of such structures on any component of the system.

(e) "System" means the California Wild and Scenic Rivers System.

(f) "Land use regulation" means the regulation by any state or local governmental entity, agency, or official of any activities which take place other than directly on the waters of the segments of the rivers designated in Section 5093.54.

(g) "Director" means the Director of Fish and Game.

(h) "Immediate environments" means the land immediately adjacent to the segments of the rivers designated in Section 5093.54.

(i) "Special treatment areas" means, for the purpose of this chapter, those areas defined as special treatment areas in Section 895.1 of Title 14 of the California Administrative Code, as in effect on January 1, 1981, as such definition is applicable to wild and scenic river segments designated from time to time in Section 5093.54.

(j) "Board" means the Board of Forestry.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5693, § 2.)

Historical Note

The 1982 amendment added, to the end of subd. (c), "up to the first line of permanently established riparian vegetation"; in the first sentence of subd. (d), deleted "in a natural condition" following "existing or flowing" and substituted "river" for "waterway"; and added subds. (f), (g), (h), (i), and (j).

Library References

Words and Phrases (Perm.Ed.)

§ 5093.53. Classification of rivers

Those rivers or segments of rivers included in the system shall be classified as one of the following:

(a) Wild rivers, which are those rivers or segments of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

(b) Scenic rivers, which are those rivers or segments of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

(c) Recreational rivers, which are those rivers or segments 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.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5693, § 3.)

Historical Note

The 1982 amendment, in the introductory provision, substituted "included" for "designated for inclusion" and deleted "by the secretary" following "shall be classified".

§ 5093.54. Components of system

The following rivers and segments thereof are designated as components of the system:

(a) Klamath River. The main stem from 100 yards below Iron Gate Dam to the Pacific Ocean; the Scott River from the mouth of Shackleford Creek west of Fort Jones to the river mouth near Hamburg; the Salmon River from Cecilville Bridge to the river mouth near Somesbar; the North Fork of the Salmon River from the intersection of the river with the south boundary of the Marble Mountain Wilderness Area to the river mouth; Wooley Creek from the western boundary of the Marble Mountain Wilderness Area to its confluence with the Salmon River.

(b) Trinity River. The main stem from 100 yards below Lewiston Dam to the river mouth at Weitchpec; the North Fork of the Trinity from the intersection of the river with the southern boundary of the Salmon-Trinity Primitive Area downstream to the river mouth at Helena; New River from the intersection of the river with the southern boundary of the Salmon-Trinity Primitive Area downstream to the river mouth near Burnt Ranch; South Fork of the Trinity from the junction of the river with State Highway Route 36 to the river mouth near Salver.

(c) Smith River. The main stem from the confluence of the Middle and South Forks to its mouth at the Pacific Ocean; the Middle Fork from its source about three miles south of Sanger Lake as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the middle of Section 7 T17N R5E; the Middle Fork from the middle of Section 7 T17N R5E to the middle of Section 6 T17N R5E; the Middle Fork from the middle of Section 6 T17N R5E to one-half mile upstream from the confluence with Knopki Creek; the Middle Fork from one-half mile upstream from the confluence with Knopki Creek to the confluence with the South Fork; Myrtle Creek from its source in Section 9 T17N R1E as depicted on 1952 USGS 15′ "Crescent City" topographic map to the middle of Section 28 T17N R1E; Myrtle Creek, from the middle of Section 28 T17N R1E to the confluence with the Middle Fork; Shelly Creek from its source in Section 1 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Patrick Creek; Kelly Creek from its source in Section 32 T17N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the Middle Fork; Packsaddle Creek from its source about 0.8 miles southwest of Broken Rib Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the eastern boundary of Section 3 T17N R1E; Packsaddle Creek from the eastern boundary of Section 3 T17N R4E to the northern boundary of Section 3 T17N R4E; Packsaddle Creek from the northern boundary of Section 3 T17N R4E to the confluence with the Middle Fork; East Fork Patrick Creek from its source in Section 10 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with West Fork Patrick Creek; West Fork Patrick Creek from its source in Section 18 T18N R3E as depicted on 1951 15′ "Gasquet" topographic map to the confluence with East Fork Patrick Creek; Griffin Creek from its source about 0.2 miles southwest of Hazel View Summit as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the Middle Fork; Knopki Creek from its source about 0.4 miles west of Sanger Peak as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with Middle Fork; Monkey Creek from its source in the northeast quadrant of Section 12 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the northern boundary of Section 26 T18N R3E; Monkey Creek from the northern boundary of Section 26 T18N R3E to the confluence with the Middle Fork; Patrick Creek from the junction of the East and West Forks of Patrick Creek to the confluence with Middle Fork; the North Fork from the California-Oregon boundary to the confluence with an unnamed tributary in the northern quarter Section 5 T18N R2E as depicted on 1951 USGS 15′

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"Gasquet" topographic map; the North Fork from the confluence with an unnamed tributary in northern quarter of Section 5 T18N R2E to the southern-most intersection of eastern boundary Section 5 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map; the North Fork from the southern-most intersection of the eastern boundary Section 5 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Stony Creek; the North Fork from the confluence with Stony Creek to the confluence with the Middle Fork; Diamond Creek from the California-Oregon state boundary to the confluence with High Plateau Creek; Diamond Creek from the confluence with High Plateau Creek to the confluence with the North Fork; Bear Creek from its source in Section 24 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Diamond Creek; Still Creek from its source in Section 11 T18N R1E as depicted on 1952 USGS 15′ "Crescent City" topographic map to the confluence with the North Fork Smith River; North Fork Diamond Creek from the California-Oregon state boundary to the confluence with Diamond Creek; High Plateau Creek from its source in Section 26 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to northern boundary Section 23 T18N R2E; High Plateau Creek from the northern boundary Section 23 T18N R2E to the confluence with Diamond Creek; the Siskiyou Fork from its source about 0.7 miles southeast of Broken Rib Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the South Siskiyou Fork; the Siskiyou Fork from its confluence with the South Siskiyou Fork to the confluence with the Middle Fork; the South Siskiyou Fork from its source about 0.6 miles southwest of Buck Lake as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the Siskiyou Fork; the South Fork from its source about 0.5 miles southwest of Bear Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to Blackhawk Bar; the South Fork from Blackhawk Bar to the confluence with the Middle Fork; Williams Creek from its source in Section 31 T14N R4E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with Eight Mile Creek; Eight Mile Creek from its source in Section 29 T14N R4E as depicted on 1955 USGS 15′ "Diilon Mountain" topographic map to the confluence with the South Fork; the Prescott Fork from its source about 0.5 miles southeast of Island Lake as depicted on 1955 USGS 15′ "Dillon Mountain" topographic map to the confluence with the South Fork; Quartz Creek from its source in Section 31 T16N R4E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with the South Fork; Jones Creek from its source in Section 36 T16N R3E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the middle of Section 5 T15N R3E; Jones Creek from the middle of Section 5 T15N R3E to the confluence with the South Fork; Hurdygurdy Creek from its source about 0.4 miles southwest of Bear Basin Butte as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the South Fork; Gordon Creek from its source in Section 18 T16N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the South Fork; Coon Creek from the junction of

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the two-source tributaries in the southwest quadrant of Section 31 T17N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the western boundary Section 14 T16N R2E; Coon Creek from the western boundary Section 14 T16N R2E to the confluence with the South Fork; Craigs Creek from its source in Section 36 T17N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the South Fork; Buck Creek from its source at Cedar Camp Spring as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with the South Fork; Muzzleloader Creek from its source in Section 2 T15N R3E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with Jones Creek; Canthook Creek from its source in Section 2 T15N R2E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with South Fork.

(d) Eel River. The main stem from 100 yards below Van Arsdale Dam to the Pacific Ocean; the South Fork of the Eel from the mouth of Section Four Creek near Branscomb to the river mouth below Weott; Middle Fork of the Eel from the intersection of the river with the southern boundary of the Middle Eel-Yolla Bolly Wilderness Area to the river mouth at Dos Rios; North Fork of the Eel from the Old Gilman Ranch downstream to the river mouth near Ramsey; Van Duzen River from Dinsmores Bridge downstream to the river mouth near Fortuna. It is the intent of the Legislature, with respect to the Eel River and its tributaries, that after an initial period of 12 years following the effective date of this chapter, the Department of Water Resources shall report to the Legislature as to the need for water supply and flood control projects on the Eel River and its tributaries, and the Legislature shall hold public hearings to determine whether legislation should be enacted to delete all or any segment of the river from the system.

(e) American River. The North Fork from its source to the Iowa Hill Bridge; the Lower American from Nimbus Dam to its junction with the Sacramento River.

(f) Other rivers which qualify for inclusion in the system may be recommended to the Legislature by the secretary.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5694, § 4.)

Historical Note

The 1982 amendment inserted, in the introductory provision, "and segments thereof"; substituted, near the end of subd. (b), "State Highway Route 36" for "State Highway 36"; and rewrote subd. (c), which previously read: "Smith River and all its tributaries, from the Oregon-California state boundary to the Pacific Ocean."

Section 19 of Stats.1982, c. 1481, p. 5710, provides:

"In enacting the provisions of this act, the Legislature intends to expedite and improve the efficient administration and enforcement of the provisions of the California Wild and Scenic Rivers Act while reserving its existing control and supervision of how these rivers are to be managed and not to affect in any way (1) litigation involving the action of the Secretary of the Interior on January 19, 1981, approving designation of certain California rivers as components of the National Wild and Scenic Rivers System, nor (2) any reconsideration by the Secretary of the Interior of the Governor's

application for designation by letter dated July 18, 1980."

Cross References

Excluded sites, notwithstanding this section, see § 5093.66.

§ 5093.541. Tributaries of Smith River

(a) Notwithstanding the fact that the tributaries of the Smith River specified in this subdivision are not included in the system, no dam, reservoir, diversion, or other water impoundment facility shall be constructed on any of the following tributaries of the Smith River:

(1) Dominie Creek.

(2) Rowdy Creek.

(3) South Fork Rowdy Creek.

(4) Savoy Creek.

(5) Little Mill Creek.

(6) Bummer Lake Creek.

(7) East Fork Mill Creek.

(8) West Branch Mill Creek.

(9) Rock Creek.

(10) Goose Creek.

(11) East Fork Goose Creek.

(12) Mill Creek.

(b) All state agencies exercising powers under any other provision of law with respect to the protection and restoration of fishery resources shall continue to exercise those powers in a manner to protect and restore fishery resources in the tributaries specified in subdivision (a). In carrying out the provisions of this subdivision, any exercise of powers shall be consistent with the provisions of Section 5093.58.

(Added by Stats.1982, c. 1481, p. 5697; § 5.)

Library References

Waters and Water Courses ⇐159, 160.
C.J.S. Waters §§ 129 et seq., 144 et seq.

§ 5093.545. Revision and adoption of classification of rivers

The classifications heretofore established by the secretary for the rivers or segments of rivers included in the system are revised and adopted as follows:

Rivers	Classification
(a) Klamath River: The Klamath River from the FERC Project 2082 downstream boundary in	

Rivers	Classification
Section 17 T47N R5W as shown on Exhibit K–7 sheet 1 dated May 25, 1962, to the river mouth at the Pacific Ocean	Recreational
(b) Scott River:	
(1) The Scott River from Shackleford Creek to McCarthy Creek	Recreational
(2) The Scott River from McCarthy Creek to Scott Bar	Scenic
(3) The Scott River from Scott Bar to the confluence with the Klamath River	Recreational
(c) Salmon River:	
(1) The Salmon River from the Forks of Salmon to the Lewis Creek confluence	Recreational
(2) The Salmon River from the Lewis Creek confluence to the Wooley Creek confluence	Scenic
(3) The Salmon River from the Wooley Creek confluence to the confluence with the Klamath River	Recreational
(4) The South Fork of the Salmon River from Cecilville to St. Claire Creek confluence	Recreational
(5) The South Fork from St. Claire Creek confluence to the Matthews Creek confluence	Scenic
(6) The South Fork from Matthews Creek confluence to the Forks of Salmon	Recreational
(7) The North Fork of the Salmon River from Marble Mountain Wilderness boundary to Mule Bridge Campground in Section 35 T12N R11W and Section 12 T11N R11W	Wild
(8) The North Fork from Mule Bridge Campground to the Forks of Salmon	Recreational
(9) Wooley Creek from the Marble Mountain Wilderness Area boundary to ½ mile upstream of the confluence with Salmon River	Wild
(10) Wooley Creek downstream most ½ mile above the confluence with the Salmon River	Recreational
(d) Trinity River:	
(1) The Trinity River from 100 yards below Lewiston Dam to Cedar Flat Creek confluence	Recreational
(2) The Trinity River from Cedar Flat Creek confluence to Gray Falls	Scenic
(3) The Trinity River from Gray Falls to the west boundary of Section 2 T8N R4E	Recreational

(d) Trinity River:—Cont'd

(4) The Trinity River from the west boundary of Section 2 T8N R4E to the confluence with the Klamath River at Weitchpec	Scenic
(5) The North Fork of the Trinity River from the Trinity Alps Primitive Area boundary to north boundary Section 20 T34N R11W	Wild
(6) The North Fork from the north boundary Section 20 T34N R11W to mouth	Recreational
(7) The South Fork Trinity River from Forest Glen to Hidden Valley Ranch	Wild
(8) The South Fork from Hidden Valley Ranch to the Naufus Creek confluence in Section 8 T1N R7E	Scenic
(9) The South Fork from the Naufus Creek confluence in Section 8 T1N R7E to Johnson Creek confluence near the boundary of Sections 13 and 14 T2N R6E	Wild
(10) The South Fork from Johnson Creek confluence near the boundary of Sections 13 and 14 T2N R6E to the boundary of Sections 25 and 36 T2N R6E	Scenic
(11) The South Fork from the boundary of Sections 25 and 36 T2N R6E to the footbridge near the mouth of Underwood Creek in Section 17 T4N R6E Humboldt Base and Meridian	Recreational
(12) The South Fork from the footbridge near the mouth of Underwood Creek in Section 17 T4N R6E to Todd Ranch in Section 18 T5N R5E	Wild
(13) The South Fork from Todd Ranch in Section 18 T5N R5E to the confluence with Main Trinity	Scenic
(14) New River from the Salmon Trinity Primitive Area boundary to the junction with the East Fork New River in Section 23 T7N R7E	Wild
(15) New River from the Junction with the East Fork New River in Section 23 T7N R7E to 100 yards below Panther Creek Campground in Section 18 T6N R7E	Recreational
(16) New River from 100 yards below Panther Creek Campground in Section 18 T6N R7E to Dyer Creek confluence in Section 25 T26N R6E	Scenic

(d) Trinity River:—Cont'd

(17) New River from Dyer Creek confluence in Section 25 T26N R6E to the confluence with Trinity River	Wild

(e) Smith River:

(1) Smith River from the confluence of the Middle and South Forks to its mouth at the Pacific Ocean	Recreational
(2) Middle Fork Smith River from its source about 3 miles south of Sanger Lake as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the middle of Section 7 T17N R5E	Wild
(3) Middle Fork Smith River from the middle of Section 7 T17N R5E to the middle of Section 6 T17N R5E	Scenic
(4) Middle Fork Smith River from middle of Section 6 T17N R5E to one-half mile upstream from the confluence with Knopki Creek	Wild
(5) Middle Fork Smith River from one-half mile upstream from the confluence with Knopki Creek to the confluence with South Fork Smith River	Recreational
(6) Myrtle Creek from its source in Section 9 T17N R1E as depicted on 1952 USGS 15′ "Crescent City" topographic map to the middle of Section 28 T17N R1E	Recreational
(7) Myrtle Creek from the middle of Section 28 T17N R1E to the confluence with the Middle Fork Smith River	Recreational
(8) Shelly Creek from its source in Section 1 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Patrick Creek	Recreational
(9) Kelly Creek from its source in Section 32 T17N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the Middle Fork Smith River	Recreational
(10) Packsaddle Creek from its source about 0.8 miles southwest of Broken Rib Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the eastern boundary of Section 3 T17N R1E	Recreational
(11) Packsaddle Creek from the eastern boundary of Section 3 T17N R4E to the northern boundary of Section 3 T17N	

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(e) Smith River:—Cont'd

R4E	Recreational
(12) Packsaddle Creek from the northern boundary of Section 3 T17N R4E to the confluence with the Middle Fork of Smith River	Recreational
(13) East Fork Patrick Creek from its source in Section 10 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the West Fork Patrick Creek	Recreational
(14) West Fork Patrick Creek from its source in Section 18 T18N R3E as depicted on 1951 15′ "Gasquet" topographic map to the confluence with the East Fork Patrick Creek	Recreational
(15) Griffin Creek from its source about 0.2 miles southwest of Hazel View Summit as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the Middle Fork Smith River	Recreational
(16) Knopki Creek from its source about 0.4 miles west of Sanger Peak as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the Middle Fork Smith River	Recreational
(17) Monkey Creek from its source in the northeast quadrant of Section 12 T18N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the northern boundary of Section 26 T18N R3E	Recreational
(18) Monkey Creek from the northern boundary of Section 26 T18N R3E to the confluence with the Middle Fork of Smith River	Recreational
(19) Patrick Creek from the junction of East and West Forks of Patrick Creek to the confluence with the Middle Fork Smith River	Recreational
(20) North Fork Smith River from the California-Oregon boundary to the confluence with an unnamed tributary in the northern quarter Section 5 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map	Wild
(21) North Fork Smith River from the confluence with an unnamed tributary in the northern quarter of Section 5 T18N	

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(e) Smith River:—Cont'd

R2E to the southern-most intersection of the eastern boundary of Section 5 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map	Scenic
(22) North Fork Smith River from the southern-most intersection of the eastern boundary Section 5 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Stony Creek	Wild
(23) North Fork Smith River from the confluence with Stony Creek to the confluence with the Middle Fork of the Smith River	Recreational
(24) Diamond Creek from the California-Oregon state boundary to the confluence with High Plateau Creek	Recreational
(25) Diamond Creek from the confluence with High Plateau Creek to the confluence with the North Fork Smith River	Recreational
(26) Bear Creek from its source in Section 24 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with Diamond Creek	Recreational
(27) Still Creek from its source in Section 11 T18N R1E as depicted on 1952 USGS 15′ "Crescent City" topographic map to the confluence with the North Fork Smith River	Recreational
(28) North Fork Diamond Creek from the California-Oregon state boundary to the confluence with Diamond Creek	Recreational
(29) High Plateau Creek from its source in Section 26 T18N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the northern boundary Section 23 T18N R2E	Recreational
(30) High Plateau Creek from the northern boundary Section 23 T18N R2E to the confluence with Diamond Creek	Recreational
(31) Siskiyou Fork of Smith River from its source about 0.7 miles southeast of Broken Rib Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the South Siskiyou Fork of the Smith River	Wild
(32) Siskiyou Fork of the Smith River from the confluence with the South Siskiyou	

(e) Smith River:—Cont'd

Fork of the Smith River to the confluence with the Middle Fork of the Smith River	Recreational
(33) South Siskiyou Fork of the Smith River from its source about 0.6 miles southwest of Buck Lake as depicted on 1956 USGS 15′ "Preston Peak" topographic map to the confluence with the Siskiyou Fork of the Smith River	Wild
(34) South Fork Smith River from its source about 0.5 mile southwest of Bear Mountain as depicted on 1956 USGS 15′ "Preston Peak" topographic map to Blackhawk Bar	Wild
(35) South Fork Smith River from Blackhawk Bar to the confluence with the Middle Fork Smith River	Recreational
(36) Williams Creek from its source in Section 31 T14N R4E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with Eight Mile Creek	Recreational
(37) Eight Mile Creek from its source in Section 29 T14N R4E as depicted on 1955 USGS 15′ "Dillon Mtn." topographic map to the confluence with the South Fork Smith River	Recreational
(38) Prescott Fork of the Smith River from its source about 0.5 miles southeast of Island Lake as depicted on 1955 USGS 15′ "Dillon Mtn." topographic map to the confluence with the South Fork Smith River	Recreational
(39) Quartz Creek from its source in Section 31 T16N R4E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with the South Fork Smith River	Recreational
(40) Jones Creek from its source in Section 36 T16N R3E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the middle of Section 5 T15N R3E	Recreational
(41) Jones Creek from the middle of Section 5 T15N R3E to the confluence with the South Fork of the Smith River	Recreational
(42) Hurdygurdy Creek from its source about 0.4 miles southwest of Bear Basin Butte as depicted on 1956 USGS 15′	

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(e) Smith River:—Cont'd

"Preston Peak" topographic map to the confluence with the South Fork Smith River	Recreational
(43) Gordon Creek from its source in Section 18 T16N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the South Fork Smith River	Recreational
(44) Coon Creek from the junction of the two source tributaries in the southwest quadrant of Section 31 T17N R3E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the western boundary of Section 14 T16N R2E	Recreational
(45) Coon Creek from the western boundary of Section 14 T16N R2E to the confluence with the South Fork Smith River	Recreational
(46) Craigs Creek from its source in Section 36 T17N R2E as depicted on 1951 USGS 15′ "Gasquet" topographic map to the confluence with the South Fork Smith River	Recreational
(47) Buck Creek from its source at Cedar Camp Spring as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with the South Fork Smith River	Recreational
(48) Muzzleloader Creek from its source in Section 2 T15N R3E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with Jones Creek	Recreational
(49) Canthook Creek from its source in Section 2 T15N R2E as depicted on 1952 USGS 15′ "Ship Mountain" topographic map to the confluence with the South Fork Smith River	Recreational

(f) Eel River:

(1) The Eel River from 100 yards below Van Arsdale Dam to the confluence with Tomki Creek	Recreational
(2) The Eel River from the confluence with Tomki Creek to the middle of Section 22 T19N R12W	Scenic
(3) The Eel River from the middle of Section 22 T19N R12W to the boundary between Sections 7 and 8 T19N R12W	Recreational
(4) The Eel River from the boundary be-	

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(f) Eel River:—Cont'd

tween Sections 7 and 8 T19N R12W to the confluence with Outlet Creek	Wild
(5) The Eel River from the confluence with Outlet Creek to the mouth at the Pacific Ocean	Recreational
(6) The South Fork of the Eel River from the mouth of Section Four Creek near Branscomb	Recreational
(7) The South Fork of the Eel River from Horseshoe Bend to the middle of Section 29 T23N R16W	Wild
(8) The South Fork of the Eel River from the middle of Section 29 T23N R16W to the confluence with the main Eel near Weott	Recreational
(9) Middle Fork of the Eel River from the intersection of the river with the southern boundary of the Middle Eel-Yolla Bolly Wilderness Area to the Eel River Ranger Station	Wild
(10) The Middle Fork of the Eel River from Eel River Ranger Station to Williams Creek	Recreational
(11) The Middle Fork of the Eel River from Williams Creek to the southern boundary of the northern quarter of Section 25 T22N R12W	Scenic
(12) The Middle Fork of the Eel River from the southern boundary of the northern quarter of Section 25 T22N R12W to the boundary between Sections 4 and 5 T21N R13W	Wild
(13) The Middle Fork of the Eel River from the boundary between Sections 4 and 5 T21N R13W to the confluence with main Eel at Dos Rios	Recreational
(14) The North Fork of the Eel River from the Old Gilman Ranch to the middle of Section 8 T24N R13W	Wild
(15) The North Fork of the Eel River from the middle of Section 8 T24N R13W to the boundary between Sections 12 and 13 T24N R14W	Recreational
(16) The North Fork of the Eel River from the boundary between Sections 12 and 13 T24N R14W to the confluence with main Eel	Wild

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(g) Van Duzen River:	
(1) The Van Duzen River from the Dinsmore Bridge to the powerline crossing above Little Larribee Creek	Scenic
(2) The Van Duzen River from the powerline crossing above Little Larribee Creek to the confluence with Eel River	Recreational
(h) Lower American River: The Lower American River from Nimbus Dam to its junction with the Sacramento River	Recreational
(i) North Fork American River:	
(1) The North Fork from the source of the North Fork American River to two and one-half miles above the Forest Hill-Soda Springs Road	Wild
(2) The North Fork from two and one-half miles above the Forest Hill-Soda Springs Road to one-half mile below the Forest Hill-Soda Springs Road	Scenic
(3) The North Fork from one-half mile below the Forest Hill-Soda Springs Road to one-quarter mile above the Iowa Hill Bridge	Wild
(4) The North Fork from one-quarter mile above the Iowa Hill Bridge to the Iowa Hill Bridge	Scenic

(Added by Stats.1982, c. 1481, p. 5697, § 6.)

Library References

Waters and Water Courses ⇐36, 37.
C.J.S. Waters §§ 2, 5, 7.

§ 5093.546. Classification to be by statute; recommendation of legislation; land use restrictions

Classification or reclassification of rivers or segments of rivers within the system as wild, scenic, or recreational shall be by statute. The secretary may recommend legislation to classify or reclassify rivers or segments of rivers within the system, and may include specific land use restrictions relative to each particular classification in such recommendations.

(Added by Stats.1982, c. 1481, p. 5706, § 7.)

§ 5093.55. Restrictions on construction of dams, reservoirs, diversions, other impoundments, or water diversion facilities

Except as provided in subdivision (d) of Section 5093.54, no dam, reservoir, diversion or other water impoundment facility, other than temporary flood storage facilities permitted pursuant to Section 5093.57, shall be constructed on any river designated in Section 5093.54 after the effective date of this chapter; nor shall any water diversion facility be constructed on any such river unless and until the secretary determines that such facility is needed to supply domestic water to the residents of the county or counties through which the river flows, and unless and until the secretary determines that facility will not adversely affect its free-flowing condition and natural character.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5707, § 8.)

Historical Note

The 1982 amendment inserted "diversion" preceding "or other water impoundment facility"; deleted "or directly affecting" following "shall be constructed on"; and substituted "and" for "or" preceding "natural character".

Notes of Decisions

1. In general

The terms "natural character" and "natural condition" as used in this section and § 5093.56, are not synonymous with the term "free-flow" and include other elements, for example, gravel deposits in the streambed and indigenous vegetation along the stream and its banks; "esthetic considerations" is an imprecise term and whether it is a factor to be considered will depend upon the submission of particular facts. 60 Ops.Atty.Gen. 4, 1-19-77.

The determination of what effects are adverse on a designated river is the primary responsibility of the secretary of the resources agency. Id.

§ 5093.56. Prohibition against governmental cooperation in projects affecting system; exception, Eel River

Except for geologic, hydrologic, economic, or any other technical studies deemed necessary or desirable by the Department of Water Resources in order to determine the feasibility of alternate sites for dams on the Eel River and its tributaries, which studies are hereby authorized, no department or agency of the state shall assist or cooperate, whether by loan, grant, license, or otherwise, with any department or agency of the federal, state, or local government, in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character of the river segments designated in Section 5093.54 as included in the system.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5707, § 9.)

Historical Note

The 1982 amendment substituted, at the end of the section, "dam, reservoir, diversion, or other water impoundment facility that could have an adverse affect on the free-flowing condition and natural character of the river segments designated in Section 5093.54 as included in the system" for "project that could have an adverse affect on the free-flowing, natural condition of the rivers included in the system".

Notes of Decisions

1. In general

The word "project" as used in this section includes any construction or planning activity which could have a direct adverse effect on the free-flowing natural condition of the rivers included in the system, even though such project is not located "on" the river. 60 Ops.Atty.Gen. 4, 1-19-77.

The department of fish and game is prohibited by this section from entering into agreements pursuant to Fish & G.C. § 1601 for any project which, while protective of fish and wildlife, would have an adverse effect on the free-flowing and natural condition of a protective river reach. Id.

§ 5093.57. Eel River; flood protection

Nothing in this chapter shall be construed to prohibit any measures for flood protection, structural or nonstructural, necessary for the protection of lives and property along the Eel River as described in subdivision (d) of Section 5093.54, except for dams, reservoirs, or other water impoundment structures; provided, however, that such measures for flood protection may include facilities for temporary flood storage or flood storage basins on tributaries of the Eel River.

(Added by Stats.1972, c. 1259, p. 2510, § 1.)

Notes of Decisions

1. In general

Stats.1972, c. 1259, permits all measures for flood protection along the Eel River, except for dams, reservoirs, or other water impoundment structures, including levees along the banks of the Eel River, flood plain zoning, and temporary flood storage basins on tributaries of the Eel River. Op.Leg. Counsel, 1972 A.J. 7795.

§ 5093.58. Powers of officials or agencies relating to land use regulation unaffected

This chapter neither diminishes the power of the secretary or any other state or local official or agency under any other statute, nor conveys any authority, express or implied, to the secretary or any state or local agency, commission, board, or official to adopt or implement any interim or permanent order, rule, regulation, guideline, or directive concerning land use regulation.

(Added by Stats.1982, c. 1481, p. 5707, § 11.)

Historical Note

Former § 5093.58, added by Stats.1972, c. 1259, p. 2510, § 1, relating to duties of the secretary, was repealed by Stats.1982, c. 1481, p. 5707, § 10.

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Cross References

Excluded sites, notwithstanding this section, see § 5093.66.

§ 5093.59. Repealed by Stats.1982, c. 1481, p. 5707, § 12

Historical Note

The repealed section, added by Stats. 1972, c. 1259, p. 2510, § 1, related to development of the management plan and hearings on it.

§ 5093.60. Coordination of activities

The Resources Agency shall be responsible for coordinating the activities of state agencies whose activities affect the rivers in the system with those of other state, local, and federal agencies with jurisdiction over matters which may affect the rivers.

(Added by Stats.1982, c. 1481, p. 5707, § 14.)

Historical Note

Former § 5093.60, added by Stats.1972, c. 1259, p. 2510, § 1, relating to administration of the system, was repealed by Stats.1982, c. 1481, p. 5707, § 13.

§ 5093.61. Local powers

All departments and agencies of the state and all local governmental agencies shall exercise their powers granted under any other provision of law in a manner consistent with the policy and provisions of this chapter.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1982, c. 1481, p. 5707, § 15.)

Historical Note

The 1982 amendment inserted "granted under any other provision of law" and "policy and"; and deleted the former second sentence, which read: "The Resources Agency shall cooperate with the appropriate water quality control agencies for the purpose of eliminating or diminishing the pollution of waters of the rivers included in the system."

Notes of Decisions

1. In general

All departments and agencies of the state and all local governmental agencies are prohibited by § 5093.56 and this section from assisting or cooperating with any department or agency of the federal, state or local government in any project having an adverse effect on the free-flowing or natural condition of any river protected by the California Wild and Scenic Rivers Act; all departments and agencies of the state and all local governmental agencies are prohibited from engaging in such activity by this section. 60 Ops.Atty.Gen. 4, 1-19-77.

§ 5093.62. Fish and wildlife

Nothing in this chapter shall affect the jurisdiction or responsibility of the state with regard to fish, wildlife, or their habitat. Hunting and

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fishing may be permitted on lands and waters administered as parts of the system under applicable state or federal laws and regulations.

(Added by Stats.1972, c. 1259, p. 2510, § 1. Amended by Stats.1981, c. 714, p. 2745, § 364; Stats.1982, c. 1481, p. 5707, § 16.)

Historical Note

The 1981 amendment substituted "of the state" for "or the state" following "jurisdiction or responsibility".

The 1982 amendment substituted "wildlife, or their habitat" for "and wildlife" at the end of the first sentence.

§ 5093.63. Eminent domain

Nothing in this chapter shall be construed to permit or require the reservation, use, or taking of private property for scenic, fishery, wildlife, or recreation purposes, for inclusion in the system or for other public use, without just compensation.

(Added by Stats.1972, c. 1259, p. 2510, § 1.)

§ 5093.64. Severability

If any provision of this chapter or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the chapter which can be given effect without the invalid provision or application, and to this end the provisions of this chapter are severable.

(Added by Stats.1972, c. 1259, p. 2510, § 1.)

Library References

Statutes ⇐64(1, 2).
C.J.S. Statutes § 92 et seq.

§ 5093.65. Kings River; construction of water impoundment facility; moratorium until Jan. 1, 1979

No construction of any dam, reservoir or other water impoundment facility shall be commenced prior to January 1, 1979, on the following portion of Kings River: The South (Main) Fork of the Kings River west of the western boundary of the Kings Canyon National Park (Cedar Grove area), and the Middle Fork of the Kings River west of the western boundary of the Kings Canyon National Park (Wilderness area), downstream to their confluence, and thence downstream to the entrance of their waters into Pine Flat Reservoir. It is not the intent of the Legislature by enactment of this section to designate any portion of the Kings River as a component of the system, and hydrologic, environmental, economic and engineering studies, surface and subsurface geologic exploration, and any other technical studies for the purpose of determining the feasibility of a multipurpose flood control, water conservation

and hydroelectric project on such portion of Kings River may be undertaken by any local agency or private organization.

(Added by Stats.1973, c. 499, p. 974, § 1.)

Library References

Health and Environment ⟹25.5(6).
C.J.S. Health and Environment §§ 106 et seq., 131.

§ 5093.66. Sites excluded from system; extraction and refinement of strategic metals; restrictions on mining in certain area; regulatory authority not otherwise modified or limited

(a) The Legislature hereby finds and declares that the enactment of this section is necessary in order to allow extraction and refinement of strategic metals at a site on Gasquet Mountain within the Smith River watershed.

(b) Notwithstanding subdivision (c) of Section 5093.54 or any other provisions of this chapter, Hardscrabble Creek and all of its tributaries, a tributary of the Smith River, are excluded from the system.

(c) Notwithstanding subdivision (a) of Section 5093.58 or any other provision of this chapter, Copper Creek and all of its tributaries, a tributary to the Smith River, located in Sections 26, 27, 28, 34, and 35 of Township 18 North, Range 1 East, within the County of Del Norte, are classified as recreational.

(d) In order to protect extraordinary scenic, recreational, fishery, or wildlife values within one-quarter mile of the north fork of the Smith River located in the County of Del Norte, no mining activity shall be permitted which would result in a significant adverse effect to these values within one-quarter mile of the north fork of the Smith River.

(e) Nothing in this section or Section 5093.67 is intended to modify or limit the regulatory authority of any state agency under any other provision of law.

(Added by Stats.1982, c. 14, p. 22, § 1, eff. Feb. 5, 1982. Amended by Stats.1982, c. 1336, p. 4959, § 12.)

Historical Note

The 1982 amendment, in subd. (a), inserted "the enactment of this section is necessary" and deleted, from the end of the subdivision, ", the provisions of this section are necessary"; in subd. (d), inserted "of the" preceding "Smith River", deleted "Sections 26, 27, 28, 34 and 35 of Township 18 North, Range 1 East, within" preceding "the county of Del Norte", and substituted "one-quarter mile of the north fork of the Smith River" for "the designated area".

Addition of a § 5093.66, proposed by Initiative Measure, 1974, designating components of the Stanislaus River as part of the California Wild and Scenic Rivers System, was rejected by the electors at the general election held Nov. 5, 1974.

Library References

Health and Environment ⟹25.5(3).
C.J.S. Health and Environment §§ 106 et seq., 129 et seq.

§ 5093.67. Temporary impoundments for recreational purposes; portions of rivers in system classified as recreational; findings

In order to enhance the recreational qualities of rivers where temporary summer recreational dams have been constructed in the past to improve water oriented recreational opportunities for the public, the secretary may authorize the emplacement of temporary impoundments for recreational purposes on portions of rivers included in the system which are classified as recreational, if the secretary finds all of the following:

(a) There has been a history of impoundments at the location for recreational purposes.

(b) The impoundment will not cause an adverse effect on the fishery values of the river.

(c) The impoundment will be removed before it would interfere with anadromous fisheries.

(d) The impoundment will improve the recreational opportunities for the public.

(e) The impoundment will not adversely affect navigation, scenic qualities, and public access.

(Added by Stats.1982, c. 14, p. 23, § 2, eff. Feb. 5, 1982.)

Historical Note

Addition of a § 5093.67, proposed by Initiative Measure, 1974, relating to measures for flood control and the inclusion of portions of the Stanislaus River in the wild and scenic rivers system, was rejected by the electors at the general election held Nov. 5, 1974.

Cross References

Regulatory authority not otherwise modified or limited, see § 5093.66.

Library References

Health and Environment ⟹25.5(3).
C.J.S. Health and Environment §§ 106 et seq., 129 et seq.

§ 5093.68. Special treatment areas; provisions applicable; timber operations stop orders

(a) Within the boundaries of special treatment areas, all of the following provisions shall apply, in addition to any other provisions whether by statute or regulation:

(1) A timber operator, whether licensed or not, shall be responsible for the actions of his or her employees. The registered professional forester who prepares and signs a timber harvesting plan, a timber management plan, or a notice of timber operations shall be responsible for its contents but shall not be responsible for implementation or execution of the plan or notice unless employed for that purpose.

(2) Any registered professional forester preparing a timber harvest plan shall certify that he or she or a qualified representative has personally inspected the plan area on the ground.

(3) Any person operating within the special treatment area who willfully violates any provision of Chapter 8 (commencing with Section 4511) of Division 4 or any rule or regulation of the State Board of Forestry adopted pursuant thereto that results in significant environmental damage shall be guilty of a misdemeanor punishable by a fine of not less than five hundred dollars ($500) or more than five thousand dollars ($5,000) or imprisonment for not more than one year in the county jail, or both. The person shall also be subject to civil damages to the state not to exceed ten thousand dollars ($10,000) for each misdemeanor violation.

(4) The Director of Forestry may require a bond or other evidence of financial responsibility from any timber operator whose ability to pay the civil damages provided for herein is reasonably deemed to be uncertain.

(b) In order to temporarily suspend timber operations which are being conducted within special treatment areas adjacent to wild and scenic rivers designated pursuant to Section 5093.54, while judicial remedies are pursued pursuant to this section, an inspecting forest officer of the Department of Forestry may issue a written timber operations stop order if, upon reasonable cause, the officer determines that a timber operation is being conducted or is about to be conducted in violation of Chapter 8 (commencing with Section 4511) of Division 4, or of rules and regulations adopted pursuant thereto, and that the violation or threatened violation would result in imminent and substantial damage to soil, water, or timber resources or to fish and wildlife habitat. A stop order shall apply only to those acts or omissions that are the proximate cause of the violation or that are reasonably foreseen would be the proximate cause of a violation. The stop order shall be effective immediately and throughout the next day.

(c) A supervising forest officer may, after an onsite investigation, extend a stop order issued pursuant to subdivision (b) for up to five days, excluding Saturday and Sunday, provided that he or she finds that the original stop order was issued upon reasonable cause. A stop order shall not be issued or extended for the same act or omission more than one time.

(d) Each stop order shall identify the specific act or omission that constitutes a violation or that is foreseen would constitute a violation, the specific timber operation that is to be stopped, and any corrective or mitigative actions that may be required.

(e) The Department of Forestry may terminate the stop order if the timber operator enters into a written agreement with the department assuring that he or she will resume operations in compliance with the provisions of Chapter 8 (commencing with Section 4511) of Division 4, and with the rules and regulations adopted pursuant thereto, and will correct any violation. The department may require a reasonable cash deposit or bond payable to the department as a condition of compliance with the agreement.

(f) Notice of the issuance of a stop order or an extension of a stop order shall be deemed to have been made to all persons working on the timber operation when a copy of the written order is delivered to the person in charge of operations at the time the order is issued or, if no persons are present at that time, then by posting a copy of the order conspicuously on the yarder or log loading equipment at a currently active landing on the timber operations site. If no persons are present at the site when the order is issued, the issuing officer shall deliver a copy of the order to the timber operator either in person or to the operator's address of record prior to the commencement of the next working day.

(g) As used in this section, "forest officer" means a registered professional forester employed by the Department of Forestry in a civil service classification of forester II or higher grade.

(h)(1) Failure of the timber operator or an employee of the timber operator, after receiving notice pursuant to this section, to comply with a validly issued stop order is a violation of this section and is punishable as provided in paragraph (3) of subdivision (a); provided, however, that, in all cases, the timber operator, and not an employee of the operator or any other person, shall be charged with that violation.

Each day or portion thereof that the violation continues shall constitute a new and separate offense.

(2) In determining the penalty for any timber operator guilty of violating a validly issued stop order, the court shall take into consideration all relevant circumstances, including, but not limited to, the following:

(A) The extent of harm to soil, water, or timber resources or to fish and wildlife habitat.

(B) Corrective action, if any, taken by the defendant.

(i) Nothing in this section shall prevent a timber operator from seeking an alternative writ as prescribed in Chapter 2 (commencing with Section 1084) of Title 1 of Part 3 of the Code of Civil Procedure, or as provided by any other provision of law.

(j)(1) If a timber operator believes that a forest officer lacked reasonable cause to issue or extend a stop order pursuant to this section, the timber operator may present a claim to the State Board of Control pursuant to Part 3 (commencing with Section 900) of Title 1 of the Government Code for compensation and damages resulting from the stopping of timber operations.

(2) If the State Board of Control finds that the forest officer lacked reasonable cause to issue or extend the stop order, the board shall award a sum of not less than one hundred dollars ($100), nor more than one thousand dollars ($1,000), per day for each day the order was in effect.

(Added by Stats.1982, c. 1481, p. 5708, § 17.)

Historical Note

Addition of a § 5093.68, which would have included portions of the Stanislaus River in the wild and scenic rivers system, would have authorized temporary flood control facilities but would have prevented construction of dams, was proposed by Initiative Measure, 1974, and was rejected by the electors at the general election held Nov. 5, 1974.

Library References

Logs and Logging ⇐7.
C.J.S. Logs and Logging § 31 et seq.

§ 5093.69. Studies and recommendations

(a) The Resources Agency shall conduct studies specifically funded by the Legislature relative to the condition of the system and may make recommendations to the Legislature for protection and enhancement of the system.

(b) The director shall conduct studies specifically funded by the Legislature and shall make recommendations relating to all of the following:

(1) The restoration of salmon and steelhead habitat in the system, including measures that can be taken to increase spawning populations, and provide at least 100 miles of reopened spawning and nursery areas each year until the year 1990.

(2) Enforcement requirements necessary to protect the system from fish or wildlife degradation.

(3) Development of information or statistical data necessary to provide the most beneficial management of the fisheries included within the system.

(4) Legislative action deemed necessary to protect the fishery and wildlife values of the system.

(Added by Stats.1982, c. 1481, p. 5710, § 18.)

Historical Note

Addition of a § 5093.69, which would have included portions of the Stanislaus River in the wild and scenic rivers system, would have authorized temporary flood control facilities but would have prevented construction of dams, was proposed by Initiative Measure, 1974, and was rejected by the electors at the general election held Nov. 5, 1974.

Section
5093.547. Potential additions to system; study and reports. [New]
5093.548. Potential additions to system; designation. [New]

§ 5093.50. Legislative declaration

Law Review Commentaries

Public trust after Lyon and Fogerty: Private interests and public expectations—a new balance. (1983) 16 U.C.D.Law Rev. 631.

Notes of Decisions

1. In general

State court opinion that, in deciding designation of rivers as wild and scenic river program, secretary of interior must take into account state court's conclusion that rivers could not be "permanently administered" under California Wild and Scenic Rivers Act (this section et seq.) was adequately considered during procedures to designate five rivers as components of national wild and scenic river program. County of Del Norte v. U.S. (C.A.1984) 732 F.2d 1462.

§ 5093.54. Components of system

The following rivers and segments thereof are designated as components of the system:

(a) Klamath River. The main stem from 100 yards below Iron Gate Dam to the Pacific Ocean; the Scott River from the mouth of Shackleford Creek west of Fort Jones to the river mouth near Hamburg; the Salmon River from Cecilville Bridge to the river mouth near Somesbar; the North Fork of the Salmon River from the intersection of the river with the south boundary of the Marble Mountain Wilderness Area to the river mouth; Wooley Creek from the western boundary of the Marble Mountain Wilderness Area to its confluence with the Salmon River.

(b) Trinity River. The main stem from 100 yards below Lewiston Dam to the river mouth at Weitchpec; the North Fork of the Trinity from the intersection of the river with the southern boundary of the Salmon-Trinity Primitive Area downstream to the river mouth at Helena; New River from the intersection of the river with the southern boundary of the Salmon-Trinity Primitive Area downstream to the river mouth near Burnt Ranch; South Fork of the Trinity from the junction of the river with State Highway Route 36 to the river mouth near Salver.

(c) Smith River. The main stem from the confluence of the Middle and South Forks to its mouth at the Pacific Ocean; the Middle Fork from its source about three miles south of Sanger Lake as depicted on 1956 USGS 15' "Preston Peak" topographic map to the middle of Section 7 T17N R5E; the Middle Fork from the middle of Section 7 T17N R5E to the middle of Section 6 T17N R5E; the Middle Fork from the middle of Section 6 T17N R5E to one-half mile upstream from the confluence with Knopki Creek; the Middle Fork from one-half mile upstream from the confluence with Knopki Creek to the confluence with the South Fork; Myrtle Creek from its source in Section 9 T17N R1E as depicted on 1952 USGS 15' "Crescent City" topographic map to the middle of Section 28 T17N R1E; Myrtle Creek, from the middle of Section 28 T17N R1E to the confluence with the Middle Fork; Shelly Creek from its source in Section 1 T18N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with Patrick Creek; Kelly Creek from its source in Section 32 T17N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with the Middle Fork; Packsaddle Creek from its source about 0.8 miles southwest of Broken Rib Mountain as depicted on 1956 USGS 15' "Preston Peak" topographic map to the eastern boundary of Section 3 T17N R1E; Packsaddle Creek from the eastern boundary of Section 3 T17N R4E to the northern boundary of Section 3 T17N R4E; Packsaddle Creek from the northern boundary of Section 3 T17N R4E to the confluence with the Middle Fork; East Fork Patrick Creek from its source in Section 10 T18N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with West Fork Patrick Creek; West Fork Patrick Creek from its source in Section 18 T18N R3E as depicted on 1951 15' "Gasquet" topographic map to the confluence with East Fork Patrick Creek; Griffin Creek from its source about 0.2 miles southwest of Hazel View Summit as depicted on 1956 USGS 15' "Preston Peak" topographic map to the confluence with the Middle Fork; Knopki Creek from its source about 0.4 miles west of Sanger. Peak as depicted on 1956 USGS 15' "Preston Peak" topographic map to the confluence with Middle Fork; Monkey Creek from its source in the northeast quadrant of Section 12 T18N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the northern boundary of Section 26 T18N R3E; Monkey Creek from the northern boundary of Section 26 T18N R3E to the confluence with the Middle Fork; Patrick Creek from the junction of the East and West Forks of Patrick Creek to the confluence with Middle Fork; the North Fork from the California-Oregon boundary to the confluence with an unnamed tributary in the northern quarter Section 5 T18N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map; the North Fork from the confluence with an unnamed tributary in northern quarter of Section 5 T18N R2E to the southern-most intersection of eastern boundary Section 5 T18N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map; the North Fork from the southern-most intersection of the eastern boundary Section 5 T18N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with Stony Creek; the North Fork from the confluence with Stony Creek to the confluence with the Middle Fork; Diamond Creek from the California-Oregon state boundary to the confluence with High Plateau Creek; Diamond Creek from the confluence with High Plateau Creek to the confluence with the North Fork; Bear Creek from its source in Section 24 T18N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with Diamond Creek; Still Creek from its source in Section 11 T18N R1E as depicted on 1952 USGS 15' "Crescent City" topographic map to the confluence with the North Fork Smith River; North Fork Diamond Creek from the California-Oregon state boundary to the confluence with Diamond Creek; High Plateau Creek from its source in Section 26 T18N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map to northern boundary Section 23 T18N R2E; High Plateau Creek from the northern boundary Section 23 T18N R2E to the confluence with Diamond Creek; the Siskiyou Fork from its source

about 0.7 miles southeast of Broken Rib Mountain as depicted on 1956 USGS 15' "Preston Peak" topographic map to the confluence with the South Siskiyou Fork; the Siskiyou Fork from its confluence with the South Siskiyou Fork to the confluence with the Middle Fork; the South Siskiyou Fork from its source about 0.6 miles southwest of Buck Lake as depicted on 1956 USGS 15' "Preston Peak" topographic map to the confluence with the Siskiyou Fork; the South Fork from its source about 0.5 miles southwest of Bear Mountain as depicted on 1956 USGS 15' "Preston Peak" topographic map to Blackhawk Bar; the South Fork from Blackhawk Bar to the confluence with the Middle Fork; Williams Creek from its source in Section 31 T14N R4E as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the confluence with Eight Mile Creek; Eight Mile Creek from its source in Section 29 T14N R4E as depicted on 1955 USGS 15' "Dillon Mountain" topographic map to the confluence with the South Fork; the Prescott Fork from its source about 0.5 miles southeast of Island Lake as depicted on 1955 USGS 15' "Dillon Mountain" topographic map to the confluence with the South Fork; Quartz Creek from its source in Section 31 T16N R4E as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the confluence with the South Fork; Jones Creek from its source in Section 36 T16N R3E as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the middle of Section 5 T15N R3E; Jones Creek from the middle of Section 5 T15N R3E to the confluence with the South Fork; Hurdygurdy Creek from its source about 0.4 miles southwest of Bear Basin Butte as depicted on 1956 USGS 15' "Preston Peak" topographic map to the confluence with the South Fork; Gordon Creek from its source in Section 18 T16N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with the South Fork; Coon Creek from the junction of the two-source tributaries in the southwest quadrant of Section 31 T17N R3E as depicted on 1951 USGS 15' "Gasquet" topographic map to the western boundary Section 14 T16N R2E;. Coon Creek from the western boundary Section 14 T16N R2E to the confluence with the South Fork; Craigs Creek from its source in Section 36 T17N R2E as depicted on 1951 USGS 15' "Gasquet" topographic map to the confluence with the South Fork; Buck Creek from its source at Cedar Camp Spring as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the confluence with the South Fork; Muzzleloader Creek from its source in Section 2 T15N R3E as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the confluence with Jones Creek; Canthook Creek from its source in Section 2 T15N R2E as depicted on 1952 USGS 15' "Ship Mountain" topographic map to the confluence with South Fork.

(d) Eel River. The main stem from 100 yards below Van Arsdale Dam to the Pacific Ocean; the South Fork of the Eel from the mouth of Section Four Creek near Branscomb to the river mouth below Weott; Middle Fork of the Eel from the intersection of the river with the southern boundary of the Middle Eel-Yolla Bolly Wilderness Area to the river mouth at Dos Rios; North Fork of the Eel from the Old Gilman Ranch downstream to the river mouth near Ramsey; Van Duzen River from Dinsmores Bridge downstream to the river mouth near Fortuna. • • •

(e) American River. The North Fork from its source to the Iowa Hill Bridge; the Lower American from Nimbus Dam to its junction with the Sacramento River.

(f) Other rivers which qualify for inclusion in the system may be recommended to the Legislature by the secretary.

(Amended by Stats.1986, c. 894, § 1.)

§ 5093.547. Potential additions to system; study and reports

(a)(1) The secretary shall study and submit to the Governor and the Legislature reports on the suitability or nonsuitability for addition to the system of rivers or segments thereof which are designated by the Legislature as potential additions to the system. The secretary shall report to the Legislature his or her recommendations and proposals with respect to the designation of a river or segment.

(2) With respect to the rivers and segments thereof designated in Section 5093.548, the secretary shall complete the studies and submit the reports to the Governor and the Legislature not later than January 1, 1989.

(b) Each report, including maps and illustrations, shall show, among other things, the area included within the report, the characteristics which do or do not make the area a worthy addition to the system, the current status of land ownership and use in the immediate environment, and the reasonably foreseeable potential uses of the land and water which will be enhanced, foreclosed, or curtailed if the river or river segment were included in the system.

(Added by Stats.1986, c. 894, § 2.)

Underline indicates changes or additions by amendment

§ 5093.548. Potential additions to system; designation

The following rivers and segments thereof are hereby designated for potential addition to the system:

(a) Carson River. The East Fork from the Hangman's Bridge crossing of State Highway Route 89 to the California-Nevada border.

(b) West Walker River. The main stem from its source to the confluence with Rock Creek near the town of Walker; Leavitt Creek from its source to the confluence with the main stem of the West Walker River.

(c) McCloud River. The main stem from Algoma to the confluence with Lake McCloud; the main stem from McCloud Dam to Shasta Lake; Squaw Valley Creek from the northern boundary of Section 14 T38N R3W to its confluence with the main stem of the McCloud River; except that nothing in this chapter shall prejudice, alter, affect in any way, or interfere with the construction, maintenance, repair, or operation by the Pacific Gas and Electric Company of the existing McCloud-Pit development (FERC 2106) under its license, or prevent Pacific Gas and Electric from constructing a hydroelectric generating facility by retrofitting the existing McCloud Dam if the operation of the facility does not alter the existing flow regime below the dam.

(Added by Stats.1986, c. 894, § 3.)

§ 5093.55. Restrictions on construction of dams, reservoirs, diversions, other impoundments, or water diversion facilities

(a) Other than temporary flood storage facilities permitted pursuant to Section 5093.57, no dam, reservoir, diversion, or other water impoundment facility * * * shall be constructed on any river and segment thereof designated in Section 5093.54 * * *; nor shall any water diversion facility be constructed on any such river and segment unless and until the secretary determines that the facility is needed to supply domestic water to the residents of the county or counties through which the river and segment flows, and unless and until the secretary determines that the facility will not adversely affect the free-flowing condition and natural character of the river and segment.

(b) No dam, reservoir, diversion, or other water impoundment facility shall be constructed on any river and segment thereof designated in Section 5093.548 for study by the secretary as a potential addition to the system until January 1, 1990.

(Amended by Stats.1986, c. 894, § 4.)

Law Review Commentaries

States' rights in hydroelectric development: Interrelation between California water law and section 27 of the Federal Power Act. (1984) 18 U.S.F.L.Rev. 535.

§ 5093.56. Prohibition against governmental cooperation in projects affecting system

No department or agency of the state shall assist or cooperate, whether by loan, grant, license, or otherwise, with any department or agency of the federal, state, or local government, in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character of (1) the river and segments thereof designated in Section 5093.54 as included in the system, and (2) the rivers and segments thereof designated in Section 5093.548 for study by the secretary as potential additions to the system until January 1, 1990.

(Amended by Stats.1986, c. 894, § 5.)

Appendix B

NATIONAL WILD AND SCENIC RIVERS ACT

WILD AND SCENIC RIVERS ACT

(Enacted by Public Law 90-542, October 2, 1968, 82 Stat. 906; 16 U.S.C. 1271 *et seq.*; Amended by PL 92-560, October 25, 1972; PL 93-279, May 10, 1974; PL 93-621, January 3, 1975; PL 94-199, December 31, 1975; PL 94-273, April 21, 1976; PL 94-407, September 11, 1976; PL 94-486, October 12, 1976; Affected by *PL 95-91*, August 4, 1977; Amended by PL 95-625, November 10, 1978; PL 96-87, October 12, 1979; PL 96-199, March 5, 1980; PL 96-312, July 23, 1980; PL 96-344, September 8, 1980; PL 96-487, December 2, 1980; PL 96-580, December 23, 1980; Affected by *PL 98-231*, March 14, 1984; Amended by PL 98-323, June 19, 1984; PL 98-406, August 28, 1984; PL 98-425, September 28, 1984; PL 98-444, October 4, 1984; PL 98-484, October 17, 1984; PL 98-494, October 19, 1984; PL 99-530, October 27, 1986; PL 99-590, October 30, 1986; PL 99-663, November 17, 1986; PL 100-33, May 7, 1987)

Sec. 1. (a) This Act may be cited as the "Wild and Scenic Rivers Act".

(b) 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 that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States 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 vital national conservation purposes.

(c) The purpose of this Act is to implement this policy by instituting a national wild and scenic rivers system, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

Sec. 2. (a) The national wild and scenic rivers system shall comprise rivers (i) that are authorized for inclusion therein by Act of Congress, or (ii) that are designated as wild, scenic or recreational rivers by or pursuant to an act of the legislature of the State or States through which they flow, that are to be permanently administered as wild, scenic or recreational rivers by an agency or political subdivision of the State or States concerned, that are found by the Secretary of the Interior, upon application of the Governor of the State or the Governors of the States concerned, or a person or persons thereunto duly appointed by him or them, to meet the criteria established in this Act and such criteria supplementary thereto as he may prescribe, and that are approved by him for inclusion in the system, including, upon application of the Governor of the State concerned, the Allagash Wilderness Waterway, Maine; that segment of the Wolf River, Wisconsin, which flows through Langlade County; and that segment of the New River in North Carolina extending from its confluence with Dog Creek downstream approximately 26.5 miles to the Virginia State line. Upon receipt of an application under clause (ii) of this subsection, the Secretary shall notify the Federal Energy Regulatory Commission and publish such application in the Federal Register. Each river designated under clause (ii) shall be administered by the State or political subdivision thereof without expense to the United States other than for administration and management of federally owned lands. For purposes of the preceding sentence, amounts made available to any State or political subdivision under the Land and Water Conservation Act of 1965 or any other provision of law shall not be treated as an expense to the United States. Nothing in this subsection shall be construed to provide for the transfer to, or administration by, a State or local author-

ity of any federally owned lands which are within the boundaries of any river included within the system under clause (ii).

[2(a) amended by PL 94-407]

(b) A wild, scenic or recreational river area eligible to be included in the system is a free-flowing stream and the the values referred to in section 1, subsection (b) of this Act. Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion, in the national wild and scenic rivers system and, if included, shall be classified, designated, and administered as one of the following:

(1) 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.

(2) Scenic river areas — Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely developed, but accessible in places by roads.

(3) 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.

Sec. 3. (a) The following rivers and the land adjacent thereto are hereby designated as components of the national wild and scenic rivers systems:

(1) CLEARWATER, MIDDLE FORK, IDAHO. — The Middle Fork from the town of Kooskia upstream to the town of Lowell; the Lochsa River from its junction with the Selway at Lowell forming the Middle Fork, upstream to the Powell Ranger Station; and the Selway River from Lowell upstream to its origin; to be administered by the Secretary of Agriculture.

(2) ELEVEN POINT, MISSOURI. — The segment of the river extending downstream from Thomasville to State Highway 142; to be administered by the Secretary of Agriculture.

(3) FEATHER, CALIFORNIA. — The entire Middle Fork downstream from the confluence of its tributary streams one kilometer south of Beckwourth, California; to be administered by the Secretary of Agriculture.

(4) RIO GRANDE, NEW MEXICO. — The segment extending from the Colorado State line downstream to the State Highway 96 crossing, and the lower four miles of the Red River; to be administered by the Secretary of the Interior.

(5) ROGUE, OREGON. — The segment of the river extending from the mouth of the Applegate River downstream to the Lobster Creek Bridge; to be administered by agencies of the Departments of the Interior or Agriculture as agreed upon by the Secretaries of said Departments or as directed by the President.

(6) SAINT CROIX, MINNESOTA AND WISCONSIN. — The segment between the dam near Taylors Falls, Minnesota, and the dam near Gordon, Wisconsin, and its tributary, the Namekagon, from Lake Namekagon downstream to its confluence with the Saint Croix; to be administered by the Secretary of the Interior: *Provided*, That except as may be required in connection with items (a) and (b) of this paragraph, no funds available to carry out the provisions of this Act may be expended for the acquisition or development of lands in connection with, or for administration under this Act of, that portion of the Saint Croix River between the dam near Taylors Falls, Minnesota, and the upstream end of Big Island in Wisconsin, until sixty days after the date on which the Secretary has transmitted to the President of the Senate and Speaker of the House of Representatives a proposed cooperative agreement between the Northern States Power Company and the United States (a) whereby the company agrees to convey to the United States, without charge, appropriate interests in certain of its lands between the dam near Taylors Falls, Minnesota, and the upstream end of Big Island in Wisconsin, including the company's right, title, and interest to approximately one hundred acres per mile, and (b) providing for the use and development of other lands and interests in land retained by the company between said points adjacent to the river in a manner which shall complement and not be inconsistent with the purposes for which the lands and interests in land donated by the company are administered under this Act. A one-thousand-three-hundred-and-eighty-acre portion of the area commonly known as the Velie Estate, located adjacent to the Saint Croix River in Douglas County, Wisconsin, as depicted on the map entitled 'Boundary Map/Velie Estate — Saint Croix National Scenic Riverway', dated September 1980, and numbered 630-90,001, may be acquired by the Secretary without regard to any acreage limitation set forth in subsection (b) of this section or subsection (a) or (b) of section 6 of this Act. Said agreement may also include provision for State or local governmental participation as authorized under subsection (e) of section 10 of this Act.

[3(a)(6) amended by PL 96-580]

(7) SALMON, MIDDLE FORK, IDAHO. — From its origin to its confluence with the main Salmon River; to be administered by the Secretary of Agriculture.

(8) WOLF, WISCONSIN. — From the Langlade-Menominee County line downstream to Keshena Falls; to be administered by the Secretary of the Interior.

(9) LOWER SAINT CROIX, MINNESOTA AND WISCONSIN. — The segment between the dam near Taylors Falls and its confluence with the Mississippi River: *Provided*, (1) That the upper twenty-seven miles of this river segment shall be administered by the Secretary of the Interior; and (ii) That the lower twenty-five miles shall be designated by the Secretary upon his approval of an application for such designation made by the Governors of the States of Minnesota and Wisconsin.

(10) CHATTOOGA, NORTH CAROLINA, SOUTH CAROLINA, GEORGIA. — The Segment from 0.8 miles below Cashiers Lake in North Carolina to Tugaloo Reservoir, and the West Fork Chattooga River from its junction with Chattooga upstream 7.3 miles, as generally depicted on the boundary map entitled 'Proposed Wild and Scenic Chattooga River and Corridor Boundary', dated August 1973; to be administered by the Secretary of Agriculture: *Provided*, That the Secretary of Agriculture shall take such action as is provided for under subsection (b) of this section within one year from the date of enactment of this paragraph (10): *Provided further*, That for the purposes of this river, there are authorized to be appropriated not more than $5,200,000 for the acquisition of lands and interests in lands and not more than $809,000 for development.

(11) RAPID RIVER, IDAHO. — The segment from the headwaters of the main stem to the national forest boundary and the segment of the West Fork from the wilderness boundary downstream to the confluence with the main stem, as a wild river.

(12) SNAKE, IDAHO AND OREGON. — The segment from Hells Canyon Dam downstream to Pittsburgh Landing, as a wild river; and the segment from Pittsburgh Landing downstream to an eastward extension of the north boundary of section 1, township 5 north, range 47 east, Willamette meridian, as a scenic river.

(13) FLATHEAD, MONTANA. — The North Fork from the Canadian border downstream to its confluence with the Middle Fork; the Middle Fork from its headwaters to its confluence to the South Fork; and the South Fork from its origin to the Hungry Horse Reservoir, as generally depicted on the map entitled 'Proposed Flathead Wild and Scenic River Boundary Location' dated February 1976; to be administered by agencies of the Departments of the Interior and Agriculture as agreed upon by the Secretaries of such Departments or as directed by the President. Action required to be taken under subsection (b) of this section shall be taken within one year from the date of enactment of this paragraph. For the purposes of this river, there are authorized to be appropriated not more than $6,719,000 for the acquisition of lands and interests in lands. No funds authorized to be appropriated pursuant to this paragraph shall be available prior to October 1, 1977.

(14) MISSOURI, MONTANA. — The segment from Fort Benton one hundred and forty-nine miles downstream to Robinson Bridge, as generally depicted on the boundary map entitled 'Missouri Breaks Freeflowing River Proposal', dated October 1975, to be administered by the Secretary of the Interior. For the purposes of this river, there are authorized to be appropriated not more than $1,800,000 for the acquisition of lands and interests in lands. No funds authorized to be appropriated pursuant to this paragraph shall be available prior to October 1, 1977.

(15) OBED, TENNESSEE. — The segment from the western edge of the Catoosa Wildlife Management Area to the confluence with the Emory River; Clear Creek from the Morgan County line to the confluence with the Obed River, Daddys Creek from the Morgan County line to the confluence with the Obed River; and the Emory River from the confluence with the Obed River to the Nemo Bridge as generally depicted and classified on the stream classification map dated December 1973. The Secretary of the Interior shall take such action, with the participation of the State of Tennessee as is provided for under subsection (b) within one year following the date of enactment of this paragraph. The development plan required by such subsection (b) shall include cooperative agreements between the State of Tennessee acting through the Wildlife Resources Agency and the Secretary of the Interior. Lands within the Wild and Scenic River boundaries that are currently part of the Catoosa Wildlife Management Area shall continue to be owned and managed by the Tennessee Wildlife Resources Agency in such a way as to protect the wildlife resources and primitive character of the area, and without further development of roads, campsites, or associated recreational facilities unless deemed necessary by that agency for wildlife management practices. The Obed Wild and Scenic River shall be managed by the Secretary of the Interior. For the purposes of carrying out the provisions of this Act with respect to this river, there are authorized to be appropriated such sums as may be necessary, but not to exceed $2,000,000 for the acquisition of lands or interests in lands and not to exceed $400,000 for development. No funds authorized to be appropriated pursuant to this paragraph shall be available prior to October 1, 1977.

(16) PERE MARQUETTE, MICHIGAN. — The segment downstream from the junction of the Middle and Little South Branches to its junction with United States Highway 31 as generally depicted on the boundary map entitled 'Proposed Boundary Location, Pere Marquette Wild and Scenic River,'; to be administered by the Secretary of Agriculture. After consultation with State and local governments and the interested public, the Secretary shall take such action as is provided for under subsection (b) with respect to the segment referred to in this paragraph within one year from the date of enactment of this paragraph. Any development or management plan prepared pursuant to subsection (b) shall include (a) provisions for the dissemination of information to river users and (b) such regulations relating to the recreational and other uses of the river as may be necessary in order to protect the area comprising such river (including lands contiguous or adjacent thereto) from damage or destruction by reason of overuse and to protect its scenic, historic, esthetic and scientific values. Such regulations shall further contain procedures and means which shall be utilized in the enforcement of such development and management plan. For the purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph, there are authorized to be appropriated not more than $8,125,000 for the acquisition of lands or interests in lands and $402,000 for development.

(17) RIO GRANDE, TEXAS. — The segment on the United States side of the river from river mile 842.3 above Mariscal Canyon downstream to river mile 651.1 at the Terrell-Val Verde County line; to be administered by the Secretary of the Interior. The Secretary shall, within two years after the date of enactment of this paragraph, take such action with respect to the segment referred to in this paragraph as is provided for under subsection (b). The action required by such subsection (b) shall be undertaken by the Secretary, after consultation with the United States Commissioner, International Boundary and Water Commission, United States and Mexico, and appropriate officials of the State of Texas and its political subdivisions. The development plan required by subsection (b) shall be construed to be a general management plan only for the United States side of the river and such plan shall include, but not be limited to, the establishment of a detailed boundary which shall include an average of not more than 160 acres per mile. Nothing in this Act shall be construed to be in conflict with —

(A) the commitments or agreements of the United States made by or in pursuance of the treaty between the United States and Mexico regarding the utilization of the Colorado and Tijuana Rivers and of the Rio Grande, signed at Washington, February 1944 (59 Stat. 1219), or

(B) the treaty between the United States and Mexico regarding maintenance of the Rio Grande and Colorado River as the international boundary between the United States and Mexico, signed November 23, 1970.

For purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph, there are authorized to be appropriated such sums as may be necessary, but not more than $1,650,000 for the acquisition of lands and interests in lands and not more than $1,800,000 for development."

(18) SKAGIT, WASHINGTON. — The segment from the pipeline crossing at Sedro-Woolley upstream to and including the mouth of Bacon Creek; the Cascade River from its mouth to the junction of its North and South Forks; the South Fork to the boundary of the Glacier Peak Wilderness Area; the Suiattle River from its mouth to the boundary of the Glacier Peak Wilderness Area at Milk Creek; the Sauk River from its mouth to its junction with Elliott Creek; the North Fork of the Sauk River from its junction with the South Fork of the Sauk to the boundary of the Glacier Peak Wilderness Area; as generally depicted on the boundary map entitled 'Skagit River — River Area Boundary'; all segments to be administered by the Secretary of Agriculture. Riprapping related to natural channels with natural rock along the shorelines of the Skagit segment to preserve and protect agricultural land shall not be considered inconsistent with the values for which such segment is designated. After consultation with affected Federal agencies, State and local government and the interested public, the Secretary shall take such action as is provided for under subsection (b) with respect to the segments referred to in this paragraph within one year from the date of enactment of this paragraph; as part of such action, the Secretary of Agriculture shall investigate that portion of the North Fork of the Cascade River from its confluence with the South Fork to the boundary of the North Cascades National Park and if such portion is found to qualify for inclusion, it shall be treated as a component of the Wild and Scenic Rivers System designated under this section upon publication by the Secretary of notification to that effect in the Federal Register. For the purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph there are authorized to be appropriated not more than $11,734,000 for the acquisition of lands or interest in lands and not more than $332,000 for development.

(19) UPPER DELAWARE RIVER, NEW YORK AND PENNSYLVANIA. — The segment of the Up-

per Delaware River from the confluence of the East and the West branches below Hancock, New York to the existing railroad bridge immediately downstream of Cherry Island in the vicinity of Sparrow Bush, New York, as depicted on the boundary map entitled 'The Upper Delaware Scenic and Recreational River,' dated April 1978; to be administered by the Secretary of the Interior. Subsection (b) of this section shall not apply, and the boundaries and classifications of the river shall be specified on the map referred to in the preceding sentence, except to the extent that such boundaries or classifications are modified pursuant to section 704(c) of the National Parks and Recreation Act of 1978. Such boundaries and classifications shall be published in the Federal Register and shall not become effective until ninety days after they have been forwarded to the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate. For purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph there are authorized to be appropriated such sums as may be necessary.

[3(a)(19) amended by PL 96-87]

(20) DELAWARE, NEW YORK, PENNSYLVANIA, AND NEW JERSEY. — The segment from the point where the river crosses the northern boundary of the Delaware Water Gap National Recreation Area to the point where the river crosses the southern boundary of such recreation area; to be administered by the Secretary of the Interior. For purposes of carrying out this Act with respect to the river designated by this paragraph, there are authorized to be appropriated such sums as may be necessary. Action required to be taken under subsection (b) of this section with respect to such segment shall be taken within one year from the date of enactment of this paragraph, except that, with respect to such segment, in lieu of the boundaries provided for in such subsection (b), the boundaries shall be the banks of the river. Any visitors facilities established for purposes of use and enjoyment of the river under the authority of the Act establishing the Delaware Water Gap National Recreation Area shall be compatible with the purposes of this Act and shall be located at an appropriate distance from the river.

(21) AMERICAN, CALIFORNIA. — The North Fork from a point 0.3 mile above Heath Springs downstream to a point approximately 1,000 feet upstream of the Colfax-Iowa Hill Bridge, including the Gold Run Addition Area, as generally depicted on the map entitled 'Proposed Boundary Maps' contained in Appendix I of the document dated January 1978 and entitled 'A Proposal: North Fork American Wild and Scenic River' published by the United States Forest Service, Department of Agriculture; to be designated as a wild river and to be administered by agencies of the Department of Interior and Agriculture as agreed upon by the Secretaries of such Departments or as directed by the President. Action required to be taken under subsection (b) shall be taken within one year after the date of the enactment of this paragraph; in applying such subsection (b) in the case of the Gold Run Addition Area, the acreage limitation specified therein shall not apply and in applying section 6(g)(3), January 1 of the calendar year preceding the calendar year in which this paragraph is enacted shall be substituted for January 1, 1967. For purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph, there are authorized to be appropriated not more than $850,000 for the acquisition of lands and interests in land and not more than $765,000 for development.

(22) MISSOURI RIVER, NEBRASKA, SOUTH DAKOTA. — The segment from Gavins Point Dam, South Dakota, fifty-nine miles downstream to Ponca State Park, Nebraska, as generally depicted in the document entitled 'Review Report for Water Resources Development, South Dakota, Nebraska, North Dakota, Montana', prepared by the Division Engineer, Missouri River Division, Corps of Engineers, dated August 1977 (hereinafter in this paragraph referred to as the 'August 1977 Report'). Such segment shall be administered as a recreational river by the Secretary. The Secretary shall enter into a written cooperative agreement with the Secretary of the Army (acting through the Chief of Engineers) for construction and maintenance of bank stabilization work and appropriate recreational development. After public notice and consultation with the State and local governments, other interested organizations and associations, and the interested public, the Secretary shall take such action as is required pursuant to subsection (b) within one year from the date of enactment of this section. In administering such river, the Secretary shall, to the extent, and in a manner, consistent with this section —

(A) provide (i) for the construction by the United States of such recreation river features and streambank stabilization structures as the Secretary of the Army (acting through the Chief of Engineers) deems necessary and advisable in connection with the segment designated by this paragraph, and (ii) for the operation and maintenance of all streambank stabilization structures constructed in connection with such segment (including both structures constructed before the date of enactment of this paragraph and structures constructed after such date, and including both structures constructed under the authority of this section and structures constructed under the authority of any other Act); and

(B) permit access for such pumping and associated pipelines as may be necessary to assure an adequate supply of water for owners of land adjacent to such segment and for fish, wildlife, and recreational uses outside the river corridor established pursuant to this paragraph.

The streambank structures to be constructed and maintained under subparagraph (A) shall include, but not be limited to, structures at such sites as are specified with respect to such segment on pages 62 and 63 of the August 1977 Report, except that sites for such structures may be relocated to the extent deemed necessary by the Secretary of the Army (acting through the Chief of Engineers) by reason of physical changes in the river or river area. The Secretary of the Army (acting through the Chief of Engineers) shall condition the construction or maintenance of any streambank stabilization structure or of any recreational river feature at any site under paragraph (A)(i) upon the availability to the United States of such land and interests in land in such ownership as he deems necessary to carry out such construction or maintenance and to protect and enhance the river in accordance with the purposes of this Act. Administration of the river segment designated by this paragraph shall be in coordination with, and pursuant to the advice of a Recreational River Advisory Group which shall be established by the Secretary. Such Group may include in its membership, representatives of the affected States and political subdivisions thereof, affected Federal agencies, and such organized private groups as the Secretary deems desirable. Notwithstanding the authority to the contrary contained in subsection 6(a) of this Act, no land or interests in land may be acquired without the consent of the owner: *Provided*, That not to exceed 5 per centum of the acreage within the designated river boundaries may be acquired in less than fee title without the consent of the owner, in such instance of the Secretary's determination that activities are occurring, or threatening to occur thereon which constitute serious damage or threat to the integrity of the river corridor, in accordance with the values for which this river was designated. For purposes of carrying out the provisions of this Act with respect to the river designated by this paragraph, there are authorized to be appropriated not to exceed $21,000,000, for acquisition of lands and interests in lands and for development."

[3(a)(22) amended by PL 96-344]

(23) SAINT JOE, IDAHO. — The segment above the confluence of the North Fork of the Saint Joe River to Spruce Tree Campground, as a recreational river; the segment above Spruce Tree Campground to Saint Joe Lake, as a wild river, as generally depicted on the map entitled 'Saint Joe River Corridor Map' on file with the Chief of the Forest Service and dated September 1978; to be administered by the Secretary of Agriculture. Notwithstanding any other provision of law, the classification of the Saint Joe River under this paragraph and the subsequent development plan for the river prepared by the Secretary of Agriculture shall at no time interfere with or restrict the maintenance, use, or access to existing or future roads within the adjacent lands nor interfere with or restrict present use of or future construction of bridges across that portion of the Saint Joe designated as a 'recreational river' under this paragraph. Dredge or placer mining shall be prohibited within the banks or beds of the main stem of the Saint Joe and its tributary streams in their entirety above the confluence of the main stem with the North Fork of the river. Nothing in this Act shall be deemed to prohibit the removal of sand and gravel above the high water mark of the Saint Joe River and its tributaries within the river corridor by or under the authority of any public body or its agents for the purposes of construction or maintenance of roads. The Secretary shall take such action as is required under subsection (b) of this section within one year from the date of enactment of this paragraph. For the purposes of this river, there are authorized to be appropriated not more than $1,000,000 for the acquisition of lands or interest in lands.

(24)(A) SALMON, IDAHO. — The segment of the main river from the mouth of the North Fork of the Salmon River downstream to Long Tom Bar in the following classes:

(i) the forty-six mile segment from the mouth of the North Fork of the Salmon River to Corn Creek as a recreational river, and

(ii) the seventy-nine-mile segment from Corn Creek to Long Tom Bar as a wild river; all as generally depicted on a map entitled "Salmon River" dated November 1979, which is on file and available for public inspection in the Office of the Chief, Forest Service, United States Department of Agriculture.

(B) This segment shall be administered by the Secretary of Agriculture: *Provided*, That after consultation with State and local governments and the interested public, the Secretary shall take such action as is required by subsection (b) of this section within one year from the date of enactment of this paragraph.

(C) The use of motorboats (including motorized jetboats) within this segment of the Salmon River shall be permitted to continue at a level not less than the level of use which occurred during calendar year 1978.

(D) Subject to existing rights of the State of Idaho, including the right of access, with respect to the beds of navigable streams, tributaries or rivers, dredge and placer mining in any form including any use of machinery

for the removal of sand and gravel for mining purposes shall be prohibited within the segment of the Salmon River designated as a component of the Wild and Scenic Rivers System by this paragraph; within the fifty-three-mile segment of the Salmon River from Hammer Creek downstream to the confluence of the Snake River; and within the Middle Fork of the Salmon River; and its tributary streams in their entirety: *Provided,* That nothing in this paragraph shall be deemed to prohibit the removal of sand and gravel, outside the boundaries of the River of No Return Wilderness or the Gospel-Hump Wilderness, above the high water mark of the Salmon River or the Middle Fork and its tributaries for the purposes of construction or maintenance of public roads: *Provided further,* That this paragraph shall not apply to any written mineral leases approved by the Board of Land Commissioners of the State of Idaho prior to January 1, 1980.

[*Editor's note:* PL 98-231 renamed the River of No Return Wilderness, the "Frank Church — River of No Return Wilderness."]

(E) The provisions of section 7(a) of this Act with respect to the licensing of dams, water conduits, reservoirs, powerhouses, transmission lines or other project works, shall apply to the fifty-three-mile segment of the Salmon River from Hammer Creek downstream to the confluence of the Snake River.

(F) For the purposes of the segment of the Salmon River designated as a component of the Wild and Scenic Rivers System by this paragraph, there is hereby authorized to be appropriated from the Land and Water Conservation Fund, after October 1, 1980, not more than $6,200,000 for the acquisition of lands and interests in lands.

[3(a)(24) added by PL 96-312]

(25) ALAGNAK, ALASKA. — That segment of the main stem and the major tributary to the Alagnak, the Nonvianuk River, within Katmai National Preserve; to be administered by the Secretary of the Interior.

(26) ALATNA, ALASKA. — The main stem within the Gates of the Arctic National Park; to be administered by the Secretary of the Interior.

(27) ANIAKCHAK, ALASKA. — That portion of the river, including its major tributaries, Hidden Creek, Mystery Creek, Albert Johnson Creek, and North Fork Aniakchak River, within the Aniakchak National Monument and National Preserve; to be administered by the Secretary of the Interior.

(28) CHARLEY, ALASKA. — The entire river, including its major tributaries, Copper Creek, Bonanza Creek, Hosford Creek, Derwent Creek, Flat-Orthmer Creek, Crescent Creek, and Moraine Creek, within the Yukon-Charley Rivers National Preserve; to be administered by the Secretary of the Interior.

(29) CHILIKADROTNA, ALASKA. — That portion of the river within the Lake Clark National Park and Preserve; to be administered by the Secretary of the Interior.

(30) JOHN, ALASKA. — That portion of the river within the Gates of the Arctic National Park; to be administered by the Secretary of the Interior.

(31) KOBUK, ALASKA. — That portion within the Gates of the Arctic National Park and Preserve; to be administered by the Secretary of the Interior.

(32) MULCHATNA, ALASKA. — That portion within the Lake Clark National Park and Preserve; to be administered by the Secretary of the Interior.

(33) NOATAK, ALASKA. — The river from its source in the Gates of the Arctic National Park to its confluence with the Kelly River in the Noatak National Preserve; to be administered by the Secretary of the Interior.

(34) NORTH FORK OF THE KOYUKUK, ALASKA. — That portion within the Gates of the Arctic National Park; to be administered by the Secretary of the Interior.

(35) SALMON, ALASKA. — That portion within the Kobuk Valley National Park; to be administered by the Secretary of the Interior.

(36) TINAYGUK, ALASKA. — That portion within the Gates of the Arctic National Park; to be administered by the Secretary of the Interior.

(37) TLIKAKILA, ALASKA. — That portion within the Lake Clark National Park; to be administered by the Secretary of the Interior.

(38) ANDREAFSKY, ALASKA. — That portion from its source, including all headwaters, and the East Fork, within the boundary of the Yukon Delta National Wildlife Refuge; to be administered by the Secretary of the Interior.

(39) IVISHAK, ALASKA. — That portion from its source, including all headwaters and an unnamed tributary from Porcupine Lake within the boundary of the Arctic National Wildlife Range; to be administered by the Secretary of the Interior.

(40) NOWITNA, ALASKA. — That portion from the point where the river crosses the west limit of township 18 south, range 22 east, Kateel River meridian, to its confluence with the Yukon River within the boundaries of the Nowitna National Wildlife Refuge; to be administered by the Secretary of the Interior.

(41) SELAWIK, ALASKA. — That portion from a fork of the headwaters in township 12 north, range 10 east, Kateel River meridian to the confluence of the

Kugarak River; within the Selawik National Wildlife Refuge to be administered by the Secretary of the Interior.

(42) SHEENJEK, ALASKA. — The segment within the Arctic National Wildlife Refuge; to be administered by the Secretary of the Interior.

(43) WIND, ALASKA. — That portion from its source, including all headwaters and one unnamed tributary in township 13 south, within the boundaries of the Arctic National Wildlife Refuge; to be administered by the Secretary of the Interior.

(44) ALAGNAK, ALASKA. — Those segments or portions of the main stem and Nonvianuk tributary lying outside and westward of the Katmai National Park/Preserve and running to the west boundary of township 13 south, range 43 west; to be administered by the Secretary of the Interior.

(45) BEAVER CREEK, ALASKA. — The segment of the main stem from the vicinity of the confluence of the Bear and Champion Creeks downstream to its exit from the northeast corner of township 12 north, range 6 east, Fairbanks meridian within the White Mountains National Recreation Area, and the Yukon Flats National Wildlife Refuge, to be administered by the Secretary of the Interior.

(46) BIRCH CREEK, ALASKA. — The segment of the main stem from the south side of Steese Highway in township 7 north, range 10 east, Fairbanks meridian, downstream to the south side of the Steese Highway in township 10 north, range 16 east; to be administered by the Secretary of the Interior.

(47) DELTA, ALASKA. — The segment from and including all of the Tangle Lakes to a point one-half mile north of Black Rapids; to be administered by the Secretary of the Interior.

(48) FORTYMILE, ALASKA. — The main stem within the State of Alaska; O'Brien Creek; South Fork; Napoleon Creek, Franklin Creek, Uhler Creek, Walker Fork downstream from the confluence of Liberty Creek; Wade Creek; Mosquito Fork downstream from the vicinity of Kechumstuk; West Fork Dennison Fork downstream from the confluence of Logging Cabin Creek; Dennison Fork downstream from the confluence of West Fork Dennison Fork; Logging Cabin Creek; North Fork; Hutchison Creek; Champion Creek; the Middle Fork downstream from the confluence of Joseph Creek; and Joseph Creek; to be administered by the Secretary of the Interior.

(49) GULKANA, ALASKA. — The main stem from the outlet of Paxson Lake in township 12 north, range 2 west, Copper River meridian to the confluence with Sourdough Creek; the south branch of the west fork from the outlet of an unnamed lake in sections 10 and 15, township 10 north, range 7 west, Copper River meridian to the confluence with the west fork; the north branch from the outlet of two unnamed lakes, one in sections 24 and 25, the second in sections 9 and 10, township 11 north, range 8 west, Copper River meridian to the confluence with the west fork; the west fork from its confluence with the north and south branches downstream to its confluence with the main stem; the middle fork from the outlet of Dickey Lake in township 13 north, range 5 west, Copper River meridian to the confluence with the main stem; to be classified as a wild river area and to be administered by the Secretary of the Interior.

(50) UNALAKLEET, ALASKA. — The segment of the main stem from the headwaters in township 12 south, range 3 west, Kateel River meridian extending downstream approximately 65 miles to the western boundary of township 18 south, range 8 west; to be administered by the Secretary of the Interior.

[3(a)(25)—(50) added by PL 96-487]

(51) Verde, Arizona.—The segment from the boundary between national forest and private land in sections 26 and 27, township 13 north, range 5 east, Gila Salt River meridian, downstream to the confluence with Red Creek, as generally depicted on a map entitled 'Verde River—Wild and Scenic River,' dated March 1984, which is on file and available for public inspection in the Office of the Chief, Forest Service, United States Department of Agriculture; to be administered by the Secretary of Agriculture. This designation shall not prevent water users receiving Central Arizona Project water allocations from diverting that water through an exchange agreement with downstream water users in accordance with Arizona water law. After consultation with State and local governments and the interested public and within two years after the date of enactment of this paragraph, the Secretary shall take such action as is required under subsection (b) of this section.

[3(a)(51) added PL 98-406]

(52) AU SABLE, MICHIGAN. — The segment of the main stem from the project boundary of the Mio Pond project downstream to the project boundary at Alcona Pond project as generally depicted on a map entitled 'Au Sable River' which is on file and available for public inspection in the Office of the Chief, Forest Service, United States Department of Agriculture; to be administered by the Secretary of Agriculture.

[Second 3(a)(51) added by PL 98-444; redesignated as (52) by PL 99-530 and PL 99-590]

(53) TUOLUME, California. — The main river from its sources on Mount Dana and Mount Lyell in Yosemite National Park to Don Pedro Reservoir consisting of approximately 83 miles as generally depicted on the proposed boundary map entitled 'Alternative A' contained in the Draft Tuolumne Wild and Scenic River

Study and Environmental Impact Statement published by the United States Department of the Interior and Department of Agriculture in May 1979; to be administered by the Secretary of the Interior and the Secretary of Agriculture. After consultation with State and local governments and the interested public and within two years from the date of enactment of this paragraph, the Secretary shall take such action as is required under subsection (b) of this section. Nothing in this Act shall preclude the licensing, development, operation, or maintenance of water resources facilities on those portions of the North Fork, Middle Fork or South Fork of the Tuolumne or Clavey Rivers that are outside the boundary of the wild and scenic river area as designated in this section. Nothing in this section is intended or shall be construed to affect any rights, obligations, privileges, or benefits granted under any prior authority of law including chapter 4 of the Act of December 19, 1913, commonly referred to as the Raker Act (38 Stat. 242) and including any agreement or administrative ruling entered into or made effective before the enactment of this paragraph. For fiscal years commencing after September 30, 1985, there are authorized to be appropriated such sums as may be necessary to implement the provisions of this subsection.

[3(a)(52) added by PL 98-425; redesignated as (53) by PL 99-530 and PL 99-590]

(54) ILLINOIS, OREGON: The segment from the boundary of the Siskiyou National Forest downstream to its confluence with the Rogue River as generally depicted on a map entitled 'Illinois River Study' and is also part of a report entitled 'A Proposal: Illinois Wild and Scenic River'; to be administered by the Secretary of Agriculture. After consultation with State and local governments and the interested public, the Secretary shall take such action as is required under subsection (b) of this section within one year from the date of enactment of this paragraph. For the purposes of this Act with respect to the river designated by this paragraph, effective October 1, 1984, there are authorized to be appropriated such sums as necessary for the acquisition of lands or interests in lands, and such sums as necessary for development.

[Second 3(a)(52) added by PL 98-494; redesignated as (54) by PL 99-530 and PL 99-590]

(55) OWYHEE, OREGON: The South Fork from the Idaho-Oregon State line downstream to Three Forks; the Owyhee River from Three Forks downstream to China Gulch; and the Owyhee River downstream from Crooked Creek to the Owyhee Reservoir as generally depicted on a map entitled 'Owyhee, Oregon' dated April 1984; all three segments to be administered as a wild river by the Secretary of the Interior. After consultation with State and local governments and the interested public, the Secretary shall take such appropriate action as is required under subsection (b) of this section within one year from the date of enactment of this paragraph. For the purposes of this Act with respect to the river designated by this paragraph, effective October 1, 1984, there are authorized to be appropriated such sums as necessary for the acquisition of lands or interests and such sums as necessary for development.

[3(a)(53) added by PL 98-494; redesignated as (55) by PL 99-530, and PL 99-590]

(56) HORSEPASTURE, NORTH CAROLINA. — The segment from Bohaynee Road (N.C. 281) downstream approximately 4.25 miles to where the segment ends at Lake Jocassee, to be administered by the Secretary of Agriculture. Notwithstanding any limitation of section 6 of this Act, the Secretary is authorized to utilize the authority of this Act and those pertaining to the National Forests to acquire by purchase with donated or appropriated funds, donation, exchange or otherwise, such non-Federal lands or interests in lands within, near, or adjacent to the designated segments of the river which the Secretary determines will protect or enhance the scenic and natural values of the river.

[3(a)(56) added by PL 99-530]

[The second 3(a)(56) was added by PL 99-590]

(56) CACHE LA POUDRE, COLORADO. — The following segments as generally depicted on the proposed boundary map numbered FS-56 and dated March 1986, published by the United States Department of Agriculture, each to be administered by the Secretary of Agriculture; except that those portions of the segments so designated which are within the boundary of the Rocky Mountain National Park shall continue to be administered by the Secretary of the Interior:

(A) Beginning at Poudre Lake downstream to the confluence of Joe Wright Creek, as a wild river. This segment to be designated the "Peter H. Dominick Wild River Area".

(B) Downstream from the confluence of Joe Wright Creek to a point where the river intersects the easterly north-south line of the west half southwest quarter of section 1, township 8 north, range 71 west of the sixth principal meridian, as a recreational river.

(C) South Fork of the Cache la Poudre River from its source to the Commanche Peak Wilderness Boundary, approximately four miles, as a wild river.

(D) Beginning at the Commanche Peak Wilderness Boundary to a point on the South Fork of the Cache la Poudre River in section 1, township 7 north, range 73

west of the sixth principal meridian, at elevation 8050 mean sea level, as a recreational river.

(E) South Fork of the Cache la Poudre River from its intersection with the easterly section line of section 30, township 8 north, range 72 west of the sixth principal meridian, to confluence of the main stem of the Cache la Poudre River, as a wild river.

With respect to the portions of the river segments designated by this paragraph which are within the boundaries of Rocky Mountain National Park, the requirements of subsection (b) of this section shall be fulfilled by the Secretary of the Interior through appropriate revisions to the general management plan for the park, and the boundaries, classification, and development plans for such portions need not be published in the Federal Register. Such revisions to the general management plan for the park shall assure that no development or use of parklands shall be undertaken that is inconsistent with the designation of such river segments as a wild river. For the purposes of the segments designated by this paragraph, there are authorized to be appropriated $500,000 for the development and $2,500,000 for land acquisition.

[*Editor's note:* Sections 102 through 104 of PL 99-590 contain provisions pertaining to the Cache la Poudre River and are published at the end of this Act.]

(57) SALINE BAYOU, LOUISIANA. — The segment from Saline Lake upstream to the Kisatchie National Forest, as generally depicted on the Proposed Boundary Map, numbered FS-57, and dated March 1986; to be administered by the Secretary of Agriculture. For the purposes of the segment designated by this paragraph, there are authorized to be appropriated for fiscal years commencing after September 30, 1986, not to exceed $1,000,000 for the acquisition of lands and interests in lands and for development.

[3(a)(57) and (58) added by PL 99-590]

(58) BLACK CREEK, MISSISSIPPI. — The segment from Fairley Bridge Landing upstream to Moody's Landing is generally depicted on a map entitled "Black Creek Wild and Scenic River", numbered FS-58 and dated March 1986, to be administered by the Secretary of Agriculture as a scenic river area under section 2(b)(2). For the purposes of the segment designated by this paragraph, there are authorized to be appropriated up to $3,000,000 for the acquisition of lands and interests in lands and for development.

[*Editor's note:* The following uncodified subsections were added by PL 99-663]

( ) Klickitat, Washington: The segment from its confluence with Wheeler Creek, Washington, near the town of Pitt, Washington, to its confluence with the Columbia River; to be classified as a recreation river and to be administered by the Secretary of Agriculture.

( ) White Salmon, Washington: The segment from its confluence with Gilmer Creek, Washington, near the town of B Z Corner, Washington, to its confluence with Buck Creek, Washington; to be classified as a scenic river and to be administered by the Secretary of Agriculture.

(b) The agency charged with the administration of each component of the national wild and scenic rivers system designed by subsection (a) of this section shall, within one year from the date of designation of such component under subsection (a) (except where a different date is provided in subsection (a)), establish detailed boundaries therefor; determine which of the classes outlined in section 2, subsection (b), of this Act best fit the river or its various segments. Notice of the availability of the boundaries and classification, and subsequent boundary amendments shall be published in the Federal Register and shall not become effective until ninety days after they have been forwarded to the President of the Senate and the Speaker of the House of Representatives.

[3(b) revised by PL 99-590]

(c) Maps of all boundaries and descriptions of the classifications of designated river segments, and subsequent amendments to such boundaries, shall be available for public inspection in the offices of the administering agency in the District of Columbia and in locations convenient to the designated river.

[3(c) and (d) added by PL 99-590]

(d)(1) For rivers designated on or after January 1, 1986, the Federal agency charged with the administration of each component of the National Wild and Scenic Rivers System shall prepare a comprehensive management plan for such river segment to provide for the protection of the river values. The plan shall address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of this Act. The plan shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands. The plan shall be prepared, after consultation with State and local governments and the interested public within 3 full fiscal years after the date of designation. Notice of the completion and availability of such plans shall be published in the Federal Register.

(2) For rivers designated before January 1, 1986, all boundaries, classifications, and plans shall be reviewed for conformity within the requirements of this subsection within 10 years through regular agency planning processes.

Sec. 4. (a) The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or nonsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system. The President shall report to the Congress his recommendations and proposals with respect to the designation of each such river or section thereof under this Act. Such studies shall be completed and such reports shall be made to the Congress with respect to all rivers named in subparagraphs 5 (a) (1) through (27) of this Act no later than October 2, 1978. In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers (i) with respect to which there is the greatest likelihood of developments which, if undertaken, would render the rivers unsuitable for inclusion in the national wild and scenic rivers system, and (ii) which possess the greatest proportion of private land within their areas. Every such study and plan shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act (79 Stat.244; 42 U.S.C. 1962 et seq.).

Each report, including maps and illustrations, shall show among other things the area included within the report; the characteristics which do or do not make the area a worthy addition to the 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 area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system. Each such report shall be printed as a Senate or House document.

(b) Before submitting any such report to the President and the Congress, copies of the proposed report shall, unless it was prepared jointly by the Secretary of the Interior and the Secretary of Agriculture, be submitted by the Secretary of the Interior to the Secretary of Agriculture or by the Secretary of Agriculture to the Secretary of the Interior, as the case may be, and to the Secretary of the Army, the Chairman of the Federal Power Commission, the head of any other affected Federal department or agency and, unless the lands proposed to be included in the area are already owned by the United States or have already been authorized for acquisition by Act of Congress, the Governor of the State or States in which they are located or an officer designated by the Governor to receive the same. Any recommendations or comments on the proposal which the said officials furnish the Secretary or Secretaries who prepared the report within ninety days of the date on which the report is submitted to them, together with the Secretary's or Secretaries' comments thereon, shall be included with the transmittal to the President and the Congress.

(c) Before approving or disapproving for inclusion in the national wild and scenic rivers system any river designated as a wild, scenic or recreational river by or pursuant to an act of a State legislature, the Secretary of the Interior shall submit the proposal to the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Federal Power Commission, and the head of any other affected Federal department or agency and shall evaluate and give due weight to any recommendations or comments which the said officials furnish him within ninety days of the date on which it is submitted to them. If he approves the proposed inclusion, he shall publish notice thereof in the Federal Register.

(d) The boundaries of any river proposed in section 5(a) of this Act for potential addition to the National Wild and Scenic Rivers System shall generally comprise that area measured within one-quarter mile from the ordinary high water mark on each side of the river. In the case of any designated river, prior to publication of boundaries pursuant to section 3(b) of this Act, the boundaries also shall comprise the same area. This subsection shall not be construed to limit the possible scope of the study report to address areas which may lie more than one-quarter mile from the ordinary high water mark on each side of the river.

[4(d) added by PL 99-590]

Sec. 5. (a) The following rivers are hereby designated for potential addition to the national wild and scenic rivers system:

(1) Allegheny, Pennsylvania: The segment from its mouth to the town of East Brady, Pennsylvania.

(2) Bruneau, Idaho: The entire main stem.

(3) Buffalo, Tennessee: The entire river.

(4) Chattooga, North Carolina, South Carolina, and Georgia: The entire river.

(5) Clarion, Pennsylvania: The segment between Ridgway and its confluence with the Allegheny River.

(6) Delaware, Pennsylvania and New York: The segment from Hancock, New York, to Matamoras, Pennsylvania.

(7) Flathead, Montana: The North Fork from the Canadian border downstream to its confluence with the Middle Fork; the Middle Fork from its headwaters to its confluence with the South Fork; and the South Fork from its origin to Hungry Horse Reservoir.

(8) Gasconade, Missouri: The entire river.

(9) Illinois, Oregon: The entire river.

(10) Little Beaver, Ohio: The segment of the North and Middle Forks of the Little Beaver River in Columbiana County from a point in the vicinity of Negly and Elkton, Ohio, downstream to a point in the vicinity of East Liverpool, Ohio.

(11) Little Miami, Ohio: That segment of the main stem of the river, exclusive of its tributaries, from a point at the Warren-Clermont County line at Loveland, Ohio, upstream to the sources of Little Miami including North Fork.

(12) Maumee, Ohio and Indiana: The main stem from Perrysburg, Ohio, to Fort Wayne, Indiana, exclusive of its tributaries in Ohio and inclusive of its tributaries in Indiana.

(13) Missouri, Montana: The segment between Fort Benton and Ryan Island.

(14) Moyle, Idaho: The segment from the Canadian border to its confluence with the Kootenai River.

(15) Obed, Tennessee: The entire river and its tributaries, Clear Creek and Daddys Creek.

(16) Penobscot, Maine: Its east and west branches.

(17) Pere Marquette, Michigan: The entire river.

(18) Pine Creek, Pennsylvania: The segment from Ansonia to Waterville.

(19) Priest, Idaho: The entire main stem.

(20) Rio Grande, Texas: The portion of the river between the west boundary of Hudspeth County and the east boundary of Terrell County on the United States side of the river: *Provided*, That before undertaking any study of this potential scenic river, the Secretary of the Interior shall determine, through the channels of appropriate executive agencies, that Mexico has no objection to its being included among the studies authorized by this act.

(21) Saint Croix, Minnesota and Wisconsin: The segment between the dam near Taylors Falls and its confluence with the Mississippi River.

(22) Saint Joe, Idaho: The entire main stem.

(23) Salmon, Idaho: The segment from the town of North Fork to its confluence with the Snake River.

(24) Skagit, Washington: The segment from the town of Mount Vernon to and including the mouth of Bacon Creek; the Cascade River between its mouth and the junction of its North and South Forks; the South Fork to the boundary of the Glacier Peak Wilderness Area; the Suiattle River from its mouth to the Glacier Peak Wilderness Area boundary at Milk Creek; the Sauk River from its mouth to its junction with Elliott Creek; the North Fork of the Sauk River from its junction with the South Fork of the Sauk to the Glacier Peak Wilderness Area boundary.

(25) Suwannee, Georgia and Florida: The entire river from its source in the Okefenokee Swamp in Georgia to the gulf and the outlying Ichetucknee Springs, Florida.

(26) Upper Iowa, Iowa: The entire river.

(27) Youghiogheny, Maryland and Pennsylvania: The segment from Oakland, Maryland, to the Youghiogheny Reservoir, and from the Youghiogheny Dam downstream to the town of Connellsville, Pennsylvania.

(28) American, California: The North Fork from the Cedars to the Auburn Reservoir.

(29) Au Sable, Michigan: The segment downstream from Foot Dam to Oscoda and upstream from Loud Reservoir to its source, including its principal tributaries and excluding Mio and Bamfield Reservoirs.

(30) Big Thompson, Colorado: The segment from its source to the boundary of Rocky Mountain National Park.

(31) Cache la Poudre, Colorado: Both forks from their sources to their confluence, thence the Cache la Poudre to the eastern boundary of Roosevelt National Forest.

(32) Cahaba, Alabama: The segment from its junction with United States Highway 31 south of Birmingham downstream to its junction with United States Highway 80 west of Selma.

(33) Clarks Fork, Wyoming: The segment from the Clark's Fork Canyon to the Crandall Creek Bridge.

(34) Colorado, Colorado and Utah: The segment from its confluence with the Dolores River, Utah, upstream to a point 19.5 miles from the Utah-Colorado border in Colorado.

(35) Conejos, Colorado: The three forks from their sources to their confluence, thence the Conejos to its first junction with State Highway 17, excluding Platoro Reservoir.

(36) Elk, Colorado: The segment from its source to Clark.

(37) Encampment, Colorado: The Main Fork and West Fork to their confluence, thence the Encampment to the Colorado-Wyoming border, including the tributaries and headwaters.

(38) Green, Colorado: The entire segment within the State of Colorado.

(39) Gunnison, Colorado: The segment from the upstream (southern) boundary of the Black Canyon of the Gunnison National Monument to its confluence with the North Fork.

(40) Illinois, Oklahoma: The segment from Tenkiller Ferry Reservoir upstream to the Arkansas-Oklahoma border, including the Flint and Barren Fork Creeks.

(41) John Day, Oregon: The main stem from Service Creek Bridge (at river mile 157) downstream to Tumwater Falls (at river mile 10).

(42) Kettle, Minnesota: The entire segment within the State of Minnesota.

(43) Los Pinos, Colorado: The segment from its source, including the tributaries and headwaters within the San Juan Primitive Area, to the northern boundary of the Granite Peak Ranch.

(44) Manistee, Michigan: The entire river from its source to Manistee Lake, including its principal tributaries and excluding Tippy and Hodenpyl Reservoirs.

(45) Nolichuckey, Tennessee and North Carolina: The entire main stem.

(46) Owyhee, South Fork, Oregon: The main stem from the Oregon-Idaho border downstream to the Owyhee Reservoir.

(47) Piedra, Colorado: The Middle Fork and East Fork from their sources to their confluence, thence the Piedra to its junction with Colorado Highway 160.

(48) Shepaug, Connecticut: The entire river.

(49) Sipsey Fork, West Fork, Alabama: The segment, including its tributaries, from the impoundment formed by the Lewis M. Smith Dam upstream to its source in the William B. Bankhead National Forest.

(50) Snake, Wyoming: The segment from the southern boundaries of Teton National Park to the entrance to Palisades Reservoir.

(51) Sweetwater, Wyoming: The segment from Wilson Bar downstream to Spring Creek.

(52) Tuolumne, California: The main river from its source on Mount Dana and Mount Lyell in Yosemite National Park to Don Pedro Reservoir.

(53) Upper Mississippi, Minnesota: The segment from its source at the outlet of Itasca Lake to its junction with the northwestern boundary of the city of Anoka.

(54) Wisconsin, Wisconsin: The segment from Prairie du Sac to its confluence with the Mississippi River at Prairie du Chien.

(55) Yampa, Colorado: The segment within the boundaries of the Dinosaur National Monument.

(56) Dolores, Colorado: The segment of the main stem from Rico upstream to its source, including its headwaters; the West Dolores from its source, including its headwaters, downstream to its confluence with the main stem; and the segment from the west boundary, section 2, township 38 north, range 16 west, NMPM, below the proposed McPhee Dam, downstream to the Colorado-Utah border, excluding the segment from one mile above Highway 90 to the confluence of the San Miguel River.

(57) Snake, Washington, Oregon, and Idaho: the segment from an eastward extension of the north boundary of section 1, township 5 north, range 47 east, Willamette meridian, downstream to the town of Asotin, Washington.

(58) Housatonic, Connecticut: The segment from the Massachusetts-Connecticut boundary downstream to its confluence with the Shepaug River.

(59) Kern, California. — The main stem of the North Fork from its source to Isabella Reservoir excluding its tributaries.

(60) Loxahatchee, Florida. — The entire river including its tributary, North Fork.

(61) Ogeechee, Georgia. — The entire river.

(62) Salt, Arizona. — The main stem from a point on the north side of the river intersected by the Fort Apache Indian Reservation boundary (north of Buck Mountain) downstream to Arizona State Highway 288.

(63) Verde, Arizona. — The main stem from the Prescott National Forest boundary near Paulden to the vicinity of Table Mountain, approximately 14 miles above Horseshoe Reservoir, except for the segment not included in the national forest between Clarkdale and Verde, North segment.

(64) San Francisco, Arizona. — The main stem from confluence with the Gila upstream to the Arizona-New Mexico border, except for the segment between Clifton and the Apache National Forest.

(65) Fish Creek, New York. — The entire East Branch.

(66) Black Creek, Mississippi. — The segment from Big Creek Landing in Forrest County downstream to Old Alexander Bridge Landing in Stone County.

(67) Allegheny, Pennsylvania. — The main stem from Kinzua Dam downstream to East Brady.

(68) Cacapon, West Virginia. — The entire river.

(69) Escatawpa, Alabama and Mississippi. — The segment upstream from a point approximately one mile downstream from the confluence of the Escatawpa River and Jackson Creek to a point where the Escatawpa River is joined by the Yellowhouse Branch in Washington County, Alabama, near the town of Deer Park, Alabama; and the segment of Brushy Creek upstream from its confluence with the Escatawpa to its confluence with Scarsborough Creek.

(70) Myakka, Florida. — The segment south of the southern boundary of the Myakka River State Park.

(71) Soldier Creek, Alabama. — The segment beginning at the point where Soldier Creek intersects the south line of section 31, township 7 south, range 6 east, downstream to a point on the south line of section 6, township 8 south, range 6 east, which point is 1,322 feet west of the south line of section 5, township 8 south, range 6 east in the county of Baldwin, State of Alabama.

(72) Red, Kentucky. — The segment from Highway numbered 746 (also known as Spradlin Bridge) in Wolf County, Kentucky, downstream to the point where the river descends below seven hundred feet above sea level (in its normal flow) which point is at the Menifee and Powell County line just downstream of the iron bridge where Kentucky Highway numbered 77 passes over the river.

(73) Bluestone, West Virginia. — From its headwaters to its confluence with the New.

(74) Gauley, West Virginia. — Including the tributaries of the Meadow and the Cranberry, from the headwaters to its confluence with the New.

(75) Greenbrier, West Virginia. — From its headwaters to its confluence with the New.

(76) Birch, West Virginia: The main stem from the Cora Brown Bridge in Nicholas County to the confluence of the river with the Elk River in Braxton County.

[5(a)(76) added by PL 96-199]

(77) Colville, Alaska.

(78) Etivluk-Nigu, Alaska.

(79) Utukok, Alaska.

(80) Kanektok, Alaska.

(81) Kisaralik, Alaska.

(82) Melozitna, Alaska.

(83) Sheenjek (lower segment), Alaska.

(84) Situk, Alaska.

(85) Porcupine, Alaska.

(86) Yukon (Ramparts section), Alaska.

(87) Squirrel, Alaska.

(88) Koyuk, Alaska.

[5(a)(77) — (88) added by PL 96-487]

(89) Wildcat Brook, New Hampshire: The segment from its headwaters including the principal tributaries to its confluence with the Ellis River. The study authorized in this paragraph shall be completed no later than six years from the date of enactment of this paragraph and an interim report shall be prepared and submitted to the Congress no later than three years from the date of enactment of this paragraph.

[5(a)(89) added by PL 98-323]

(90) Horsepasture, North Carolina: The segment from Bohaynee Road (N.C. 281) downstream to Lake Jocassee.

[5(a)(90) added by PL 98-484]

(91) The North Umpqua, Oregon: The segment from the Soda Springs Powerhouse to the confluence of Rock Creek. The provisions of section 7(a) shall apply to tributary Steamboat Creek in the same manner as such provisions apply to the rivers referred to in such section 7(a). The Secretary of Agriculture shall, in the Umpqua National Forest plan, provide that management practices for Steam-boat Creek and its immediate environment conserve, protect, and enhance the anadromous fish habitat and population.

[Second 5(a)(90) added by PL 98-494; redesignated as (91) by PL 99-590]

(92) Farmington, West Branch, Connecticut and Massachusetts. — The segment from the intersection of the New Hartford-Canton, Connecticut, town line upstream to the base of the West Branch Reservoir in Hartland, Connecticut; and the segment from the confluence with Thorp Brook in Sandisfield, Massachusetts, to Hayden Pond in Otis, Massachusetts.

[(5)(a)(92) and (93) added by PL 99-590]

(93) Great Egg Harbor River, New Jersey: The entire river.

[*Editor's note:* The following uncodified subsections were added by PL 99-663]

( ) Klickitat, Washington: The segment from the southern boundary of the Yakima Indian Reservation, Washington, as described in the Treaty with the Yakimas of 1855 (12 Stat. 951), and as acknowledged by the Indian Claims Commission in Yakima Tribe of Indians v. U.S., 16 Ind. Cl. Comm. 536 (1966), to its confluence with the Little Klickitat River, Washington: *Provided,* That said study shall be carried on in consultation with the Yakima Indian Nation and shall inlcude a determination of the degree to which the Yakima Indian Nation

should participate in the preservation and administration of the river segment should it be proposed for inclusion in the Wild and Scenic Rivers system.

( ) White Salmon, Washington: The segment from its confluence with Trout Lake Creek, Washington, to its confluence with Gilmer Creek, Washington, near the town of B Z Corner, Washington.

[5(a)(96) — (98) added by PL 100-33]

(96) MAURICE, NEW JERSEY. — The segment from Shell Pile to the point three miles north of Laurel Lake.

(97) MANUMUSKIN, NEW JERSEY. — The segment from its confluence with the Maurice River to the crossing of State Route 49.

(98) MENANTICO CREEK, NEW JERSEY. — The segment from its confluence with the Maurice River to its source."

[*Editor's note:* See also miscellaneous provisions of PL 99-590, affecting the Farmington and other rivers published at the end of this Act.]

(b)(1) The studies of rivers named in subparagraphs (28) through (55) of subsection(a) of this section shall be completed and reports thereon submitted by not later than October 2, 1979: *Provided,* That with respect to the rivers named in subparagraphs (33), (50), and (51), the Secretaries shall not commence any studies until (i) the State legislature has acted with respect to such rivers or (ii) one year from the date of enactment of this Act, whichever is earlier. Studies of the river named in paragraphs (38), (55), (83), and (87) shall be completed and the reports transmitted to the Congress not later than January 1, 1987.

[5(b)(1) amended by PL 99-590]

(2) The study of the river named in subparagraph (56) of subsection (a) of this section shall be completed and the report thereon submitted by not later than January 3, 1976.

(3) The studies of the rivers named in paragraphs (59) through (76) of subsection (a) shall be completed and reports submitted thereon not later than five full fiscal years after the date of the enactment of this paragraph. The study of rivers named in paragraphs (62) through (64) of subsection (a) shall be completed and the report thereon submitted by not later than April 1981. The study of the river named in paragraph (90) of subsection (a) shall be completed not later than three years after the date of the enactment of this sentence. [October 17, 1984]. The study of the river named in paragraph (93) of subsection (a) shall be completed not later than three years after the date of the enactment of this sentence [October 30, 1986].

[5(b)(3) amended by PL 96-199; PL 98-484; PL 99-590]

[*Editor's note.* Section 301(c) of PL 99-590 amended 5(b)(4) to read as follows:]

(4) There are authorized to be appropriated for the purpose of conducting the studies of the rivers named in subparagraphs (28) through (56) such sums as may be necessary, but not more than $4,060,000. There are authorized to be appropriated for the purpose of conducting the studies of the rivers named in subparagraphs (59) through (76) such sums as may be necessary. There are authorized to be appropriated for the purpose of conducting the study of the river named in paragraph (90) such sums as may be necessary. Effective October 1, 1986, there are authorized to be appropriated for the purpose of conducting the study of the river named in paragraph (93) not to exceed $150,000.

[Added by PL 95-625; amended by PL 96-199; PL 98-484; PL 99-590]

[*Editor's note:* Section 503(c) of PL 99-590 revised 5(b)(4) to read as follows:]

(4) For the purposes of conducting the studies of rivers named in subsection (a), there are authorized to be appropriated such sums as necessary.

[5(b)(4) revised by PL 99-590]

(5) The studies of the rivers in paragraphs (77) through (88) shall be completed and reports transmitted thereon not later than three full fiscal years from date of

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Preface

The National Wild and Scenic Rivers System

The Wild and Scenic Rivers Act, (Pub. L. 90–542 as amended; 16 U.S.C. 1271–1287) established a method for providing Federal protection for certain of our country's remaining free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations. Rivers are included in the system so that they may benefit from the protective management and control of development for which the Act provides.

The preamble of the Act states:

> 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 that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States 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 vital national conservation purposes.

Addition of Rivers to the System

The Wild and Scenic Rivers Act provides two methods for adding a river to the National Wild and Scenic Rivers System. The first method is by an act of Congress. Congress can designate a river directly or it can authorize a river for study as a potential wild, scenic or recreational river. Upon completion of a study conducted by the Department of the Interior or the Department of Agriculture, a study report is prepared and transmitted to the President who, in turn, forwards it with his recommendations to Congress for action.

The second method for inclusion of a river in the national system is through the authority granted to the Secretary of the Interior in section 2(a)(ii) of the Act. Upon application by the Governor or Governors of the State or States involved, the Secretary can designate a river as a component of the national system provided that the river has been designated as a wild, scenic or recreational river by or pursuant to an act of the legislature of the State or States through which if flows to be permanently administered as a wild, scenic, or recreational river by an agency or political subdivision of the State or States concerned.

To be eligible for inclusion in the system through either method, rivers must meet certain criteria set forth in section 2(b) of the Act. Procedures for proposing State-administered rivers for designation have been issued by the Department of the Interior.

The Guidelines

Subsequent to enactment of the Wild and Scenic Rivers Act in October 1968, the Departments of Agriculture and the Interior initiated studies of twenty-seven rivers which the Act authorized for study as potential additions to the National Wild and Scenic Rivers System. As these studies progressed, it became evident that specific requirements of the Act concerning the evaluation, classification and management of these rivers were subject to differing interpretations within and between the two departments.

It was therefore agreed that a uniform evaluation and management approach should be formulated for use by the two departments, and through a cooperative effort, *Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed for Inclusion in the National Wild and Scenic Rivers System Under Section 2, Public Law 90–542* was prepared and promulgated in February 1970.

The guidelines not only provide guidance for the congressionally mandated studies under section 5(a) of the Act, but are also useful for evaluations conducted by water resource development agencies under section 5(d) and for States applying for inclusion of State-designated rivers in the national system.

Revision of the Guidelines

While these guidelines were effective throughout a decade, it became clear that revision was necessary to incorporate changes identified through use and to reflect requirements of new laws and regulations. Therefore, on August 2, 1979, the President directed in his Environmental Message that "the Secretary of Agriculture and the Secretary of the Interior shall jointly revise their guidelines for evaluating wild, scenic and recreational rivers to ensure consideration of river ecosystems and to shorten the time currently used to study rivers for designation."

This revision of the guidelines has been prepared in response to the President's 1979 directive and includes:

- Clarification of the fact that free-flowing rivers which contain outstandingly remarkable ecological values are eligible for addition to the national system.
- Clarification of the fact that free-flowing river segments in or near urban areas that possess outstandingly remarkable values are eligible for addition to the national system.
- Elimination of the 25-mile minimum length guideline.
- Revision of the definition of sufficient river flow or volume of water in the river. Sufficient flow was not defined in the Act and the definition in the existing guidelines was unnecessarily limiting.
- Revised water quality guidelines to allow inclusion in the system of rivers where restoration to high water quality is planned.
- A revised section on management of designated river areas.
- A study schedule to accelerate completion of the river studies authorized by Congress.

Section I—Definitions

The following definitions are provided for the purpose of these guidelines only.

Act: The Wild and Scenic Rivers Act.

Carrying capacity: The quantity of recreation use which an area can sustain without adverse impact on the outstandingly remarkable values and free-flowing character of the river area, the quality of recreation experience, and public health and safety.

Classification criteria: Criteria specified in Section 2(b) of the Act for determining the classification (wild, scenic or recreational) of eligible river segments.

Classification: The process of determining which of the classes outlined in section 2(b) of the Act (wild, scenic, or recreational) best fit the river or its various segments.

Component: A river area designated as a unit of the National Wild and Scenic Rivers System.

Designation: Inclusion of a river area in the national system either by act of Congress or by authority of the Secretary of the Interior.

Development: Any manmade structure or modification of the natural or existing river environment.

Eligibility: Qualification of a river for inclusion in the national system through determination that it is free-flowing and with its adjacent land area possesses at least one outstandingly remarkable value.

Flow: The volume of water in a river passing a given point in a given period of time, usually expressed in terms of cubic feet per second or cubic meters per second.

Impoundment: A body of water formed by any manmade structure.

Management plan: The detailed development plan required under section 3(b) of the Act which states the boundaries and classification of the river area and presents a plan for its public use, development and administration.

Primary contact recreation: Activities in which there is prolonged and intimate contact with the water, (e.g., swimming, water skiing, surfing, kayaking, "tubing," and wading or dabbling by children.

River area: For a river study, that portion of a river authorized by Congress for study and its immediate environment comprising an area extending at least one-quarter mile from each bank. For designated rivers, the river and adjacent land within the authorized boundaries.

Secondary contact recreation: Activities in which contact with the water is either incidental or accidental, e.g., boating, fishing and limiting contact with water incident to shoreline activities.

Study agency: The agency within the Department of Agriculture or the Department of the Interior delegated the responsibility for a wild and scenic river study.

Study report: The report on the suitability or nonsuitability of a study river for inclusion in the national system, which section 4(a) requires the Secretary of Agriculture, or the Secretary of the Interior, or both jointly to prepare and submit to the President. The President transmits the report with his recommendation to the Congress.

Study team: A team of professionals from interested local, State and Federal agencies invited by the study agency and participating in the study.

Section II—The River Study

The Study Process

Section 4(a) mandates that all rivers designated as potential additions to the system in section 5(a) be studied as to their suitability for inclusion in the system:

> The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or nonsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system. The President shall report to the Congress his recommendations and proposals with respect to the designation of each such river or section thereof under this Act.

The purpose of a wild and scenic river study is to provide information upon which the President can base his recommendation and Congress can make a decision. Procedures for developing the necessary information and preparing the study report may vary depending on the agency which conducts the study, but generally will include the steps shown on Table 1, Accelerated Study Schedule.

Wild and scenic river studies will comply with all applicable statutes and executive orders, which may include the following: the National Environmental Policy Act (Pub. L. 91–190), the National Historic Preservation Act (Pub. L. 89–665), the Endangered Species Act (Pub. L. 93–205), the Fish and Wildlife Coordination Act (Pub. L. 85–264), the Water Resources Planning Act (Pub. L. 89–80), the Floodplain and Wetlands Executive Orders (E.O. 11988 and E.O. 11990), the National Forest Management Act of 1976 (Pub. L. 94–588), the Federal Land Policy and Management Act of 1976 (Pub. L. 94–579), the Wild and Scenic Rivers Act, (Pub. L. 90–542, as amended), and any rules and regulations issued pursuant thereto.

The Study Report

Each river study report will be a concise presentation of the information required in sections 4(a) and 5(c) of the Act as augmented by the Council on Environmental Quality regulations implementing the procedural provisions of the National Environmental Policy Act (40 CFR Parts 1500–1508).

Section 4(a):

> Each report, including maps and illustrations, shall show among other things the area included within the report; the characteristics which do or do not make the area a worthy addition to the system; the current status of land ownership and use in the area; the reasonably foreseeable potential uses of the land an water which woud be enhanced, foreclosed or curtailed if the area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system.

In addition, section 5(c) requires that

> The study of any of said rivers * * * shall include a determination of the degree to which the State or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the national wild and scenic rivers system.

Study reports may be combined with draft and final environmental impact statements (EIS) as permitted by § 1506.4 of the Council on Environmental Quality regulations. Study reports will be reviewed by other Federal agencies, states and the public as requried by section 4(b) of the Wild and Scenic Rivers Act. Each of the following subsections describes the way in which the information is generated, analyzed and presented in the report.

Description of the River Area

Each report will contain a description of the area included in the study. The study area will cover, as a minimum, an area extending the length of the river segment authorized for study and extending in width one-quarter mile from each bank of the river.

Adjacent river areas beyond one quarter mile form each river bank may be studied if their inclusion could facilitate management of the resources of the river area. For example, there may be important historic, archeological or ecological resource areas which may extend beyond the boundaries of the mandated study area, but could be better managed by inclusion in the river area. Also, management of the river area may be facilitated by extension to include established or available access points not included in the study.

For the purposes of study and determining eligibility and classification, the river area may be divided into segments.

The description of the river area will identify the outstandingly remarkable values and the extent of man's activity in the river environment to provide a clear basis for findings of eligibility and classification. While only one

outstandingly remarkable value is necessary for eligibility, the study report should carefully document all values of the river area.

In addition to the information required by Sections 4(a) and 5(c) of the Act, this section of the report will describe any existing zoning ordinances or other provisions of law governing land use in the study area.

If the study report and the environmental impact statement are combined, the same chapter may describe both the river area and the affected environment. For EIS purposes and for general information, a brief description of the regional setting will also be included.

Determination of Eligibility

Each report will contain a determination as to the eligibility of all portions of the authorized study area.

Section 2(b) of the Act states that "a * * * river area eligible to be included in the system is a free-flowing stream and the related adjacent land area that posseses one or more of the values referred to in section 1, subsection (b) of this Act." The terms "river" and "free-flowing" are defined in section 16 of the act.

In reading and applying the criteria for eligibility, the following points are relevant:

- The fact that a river segment may flow between large impoundments will not necessarily preclude its designation. Such segments may qualify if conditions within the segment meet the criteria.
- Rivers or river segments in or near urban areas that possess outstandingly remarkable values may qualify. Only one outstandingly remarkable value is needed for eligibility.
- In addition to the specific values listed in Section 1(b) of the Act, other similar values, such as ecological, if outstandingly remarkable, can justify inclusion of a river in the national system.
- The determination of whether a river ara contains "outstandingly remarkable" values is a professional judgment on the part of the study team. The basis for the judgment will be documented in the study report.
- There are no specific requirements concerning the length or the flow of an eligible river segment. A river segment is of sufficient length if, when managed as a wild, scenic or recreational river area, the outstandingly remarkable values are protected. Flows are sufficient if they sustain or complement the outstandingly remarkable values for which the river would be designated.

Classification

Study reports will indicate the potential classification which best fits each eligible river segment as viewed in its existing condition. Section 2(b) of the Act states that rivers which are found eligible and included in the National Wild and Scenic Rivers Systems shall be classified as one of the following:

(1) Wild river areas—Those rivers or sections of rivers that are free of impoundments and generally inaccesible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

These criteria are interpreted as follows:

a. "Free of impoundments." Wild river areas shall be free of impoundments.

b. "Generally inaccessible except by trail." Wild river areas will not contain roads, railroads, or other provisions for vehicular travel within the river area. The existence of a few inconspicuous roads leading to the boundary of the river area at the time of study will not necessarily bar wild river classification.

c. "Watersheds or shorelines essentially primitive." Wild river areas will show little or no evidence of human activity. Shorelines and watersheds within the river area should be essentially free of structures including such things as buildings, pipelines, powerlines, dams, pumps, generators, diversion works, rip-rap and other modifications of the waterway or adjacent land within the river corridor. The existence of a few inconspicuous structures, particularly those of historic or cultural value, at the time of study need not bar wild classification.

A limited amount of domestic livestock grazing or hay production may be considered "essentially primitive." There should be no row crops or ongoing timber harvest and the river area should show little or no evidence of past logging activities.

d. "Waters unpolluted." 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.

(2) Scenic river areas—Those rivers or sections or rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

These criteria are interpreted as follows:

a. "Free of impoundments." Scenic river areas will be free of impoundments.

b. "Shorelines or watersheds still largely primitive." To qualify for scenic classification, the rivers segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. "Largely primitive" means that the shorelines and the immediate river environment still present an overall natural character, but that in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of "largely primitive," as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.

c. "Shorelines largely undeveloped" means that any structures or concentration of structures must be limited to relatively short reaches of the total area under consideration for designation as a scenic river area.

d. "Accessible in places by road" means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of conspicuous or longer stretches of inconspicuous and well-screened roads or railroads will not necessarily preclude scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use which would occur within the proposed scenic river area.

(3) 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.

These criteria are interpreted as follows:

a. "Readily accessible by road or railroad." River areas classified as recreational may contain existing parallel roads or railroads in close proximity to one or both banks of the river as well as bridge crossings and roads fording or ending at the river.

b. "Some development along their shorelines." Lands may have been developed for the full range of agricultural and forestry uses, may show evidence of past and ongoing timber

harvest, and may include some residential, commercial or similar development.

c. "Some impoundment or diversion in the past." There may be some existing impoundments, diversions and other modifications of the waterway having an impact on the river area. Existing low dams, diversion works, rip-rap and other minor structures will not bar recreational classification, provided the waterway remains generally natural and riverine in appearance.

The classification criteria are summarized in Table 2, appended to these guidelines.

There are several points which all participants and observers of the study process should bear in mind when reading and applying the classification criteria:

- It is important to understand each criterion, but it is more important to understand their collective intent. Each river segment and its immediate environment should be considered as a unit. The basis for classification is the degree of naturalness, or stated negatively, the degree of evidence of man's activity in the river area. The most natural rivers will be classified wild; those somewhat less natural, scenic, and those least natural, recreational.
- Generally, only conditions within the river area determine classification; however, occasionally conditions outside the river area, such as developments which could impact air and water quality, noise levels or scenic views within the river area, may influence classification.
- For the purpose of classification, a river area may be divided into segments. Each segment, considered as a whole, will conform to one of the classifications. In segmenting the river the study team should take into account the management strategies necessary to administer the entire river area and should avoid excessive segmentation.
- The Wild and Scenic Rivers Act provides no specific guidance on water quality for scenic and recreational rivers. However, the Clean Water Act has made it a national goal that all waters of the United States be made fishable and swimmable, and provides the legal means for upgrading water quality in any river which would otherwise be suitable for inclusion in the system. Therefore, rivers will not necessarily be excluded from the system because of poor water quality at the time study, provided a water quality improvement plan exists or is being developed in compliance with applicable State and Federal laws.
- Although each classification permits certain existing development, the criteria do not imply that additional inconsistent development is permitted in the future.
- The classification criteria provide uniform guidance for professional judgment, but they are not absolutes. It is not possible to formulate criteria so as to mechanically or automatically classify river areas. Therefore, there may occasionally be exceptions to some of the criteria. For example, if the study team finds that strict application of the statutory classification criteria would not provide the most appropriate classification for a specific river segment, the study report may recommend for congressional consideration an exception to the classification criteria.

Analysis of the Alternatives

To provide for decisionmaking and to satisfy the requirements of the National Environmental Policy Act, study reports will include an analysis of alternatives. The study team will develop an array of alternative plans encompassing all reasonable proposals for use of the river area including uses which may be incompatible with designation of the river area as a component of the national system. Where appropriate, alternative plans for the river area may be based on, but not limited to:

- Alternative managing agencies for the river area;
- Alternative protective measures other than national designation;
- Alternative uses of the area incompatible with designation as a component of the national system; and
- Alternative classifications for the river area. Occasionally there may be authorized but not yet constructed projects, which if constructed would alter the classification of the river area. In such cases, alternatives may be presented to permit consideration of the river area as it would be classified both with and without the authorized project. Authorized projects may include approved land management plans prepared by a Federal land management agency under its statutory authorities.

The study report will present at least one alternative plan calling for national designation through either Congressional or Secretarial designation of all eligible segments of the congressionally authorized study area.

If the study team finds a segment ineligible for designation as a component of the National Wild and Scenic Rivers System, but still worthy of protection, alternatives for State, local or private preservation may be presented, as well as protection under other Federal programs.

If areas adjacent to the study area have been studied and found eligible, the report may present alternatives which incorporate such areas into the river area proposed for designation. Such expansion of the original study area either in length or in width may be desirable to preserve and facilitate management of river ecosystems, historic or archeological areas or other special areas.

Section III—Management

Wild and scenic rivers shall be managed with plans prepared in accordance with the requirements of the Act, other applicable laws, and the following general management principles. Management plans will state: General principles for any land acquisition which may be necessary; the kinds and amounts of public use which the river area can sustain without impact to the values for which it was designated; and specific management measures which will be used to implement the management objectives for each of the various river segments and protect esthetic, scenic, historic, archeologic and scientific features.

If the classification or classifications determined in the management plan differ from those stated in the study report, the management plan will describe the changes in the existing condition of the river area or other considerations which required the change in classification.

General Management Principles

Section 10(a) states,

> Each component of the national wild and scenic rivers system shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development on the special attributes of the area.

This section is interpreted as stating a nondegradation and enhancement policy for all designated river areas, regardless of classification. Each component will be managed to protect and enhance the values for which the river was designated, while providing for public

enactment of this paragraph. For the rivers listed in paragraphs (77), (78), and (79) the studies prepared and transmitted to the Congress pursuant to section 105(c) of the Naval Petroleum Reserves Production Act of 1976 (Public Law 94-258) shall satisfy the requirements of this section.

[Added by PL 96-487; redesignated as (5) by PL 98-484]

(6) Studies of rivers listed in paragraphs (80) and (81) shall be completed, and reports submitted within and not later than the time when the Bristol Bay Cooperative Region Plan is submitted to Congress in accordance with section 1204 of the Alaska National Interest Lands Conservation Act.

[5(b)(5) added by PL 96-487; redesignated as (6) by PL 98-484]

(7) The study of the West Branch of the Farmington River identified in paragraph (92) of subsection (a) shall be completed and the report submitted thereon not later than the end of the third fiscal year beginning after the enactment of this paragraph. Such report shall include a discussion of management alternatives for the river if it were to be included in the national wild and scenic river system.

[5(b)(7) added by PL 99-590]

(c) The study of any of said rivers shall be pursued in as close cooperation with appropriate agencies of the affected State and its political subdivisions as possible shall be carried on jointly with such agencies if request for such joint study is made by the State, and shall include a determination of the degree to which the State or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the national wild and scenic rivers system.

(d) In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potentials. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved.

Sec. 6. (a)(1) The Secretary of the Interior and the Secretary of Agriculture are each authorized to acquire lands and interests in land within the authorized boundaries of any component of the national wild and scenic rivers system designated in section 3 of this Act, or hereafter designated for inclusion in the system by Act of Congress, which is administered by him, but he shall not acquire fee title to an average of more than 100 acres per mile on both sides of the river. Lands owned by a State may be acquired only by donation or by exchange in accordance with the subsection (d) of this section. Lands owned by an Indian tribe or a political subdivision of a State may not be acquired without the consent of the appropriate governing body thereof as long as the Indian tribe or political subdivision is following a plan for management and protection of the lands which the Secretary finds protects the land and assures its use for purposes consistent with this Act. Money appropriated for Federal purposes from the land and water conservation fund shall, without prejudice to the use of appropriations from other sources, be available to Federal departments and agencies for the acquisition of property for the purposes of this Act.

[6(a)(1) designated and amended by PL 99-590]

(2) When a tract of land lies partially within and partially outside the boundaries of a component of the National Wild and Scenic Rivers System, the appropriate Secretary may, with the consent of the landowners for the portion outside the boundaries, acquire the entire tract. The land or interest therein so acquired outside the boundaries shall not be counted against the average one-hundred-acre-per-mile fee title limitation of subsection (a)(1). The lands or interests therein outside such boundaries, shall be disposed of, consistent with existing authorities of law, by sale, lease, or exchange.

[6(a)(2) added by PL 99-590]

(b) If 50 per centum or more of the entire acreage outside the ordinary high water mark on both sides of the river within a federally administered wild, scenic or recreational river area is owned in fee title by the United States, by the State or States within which it lies, or by political subdivisions of those States, neither Secretary shall acquire fee title to any lands by condemnation under authority of this Act. Nothing contained in this section, however, shall preclude the use of condemnation when necessary to clear title or to acquire scenic easements or such other easements as are reasonably necessary to give the public access to the river and to permit its members to traverse the length of the area or of selected segments thereof.

[6(b) amended by PL 99-590]

(c) Neither the Secretary of the Interior nor the Secretary of Agriculture may acquire lands by condemnation, for the purposes of including such lands in any national wild, scenic or recreational river area, if such lands are located within any incorporated city, village, or borough which has in force and applicable to such lands a duly adopted, valid zoning ordinance that conforms with the purposes of this Act. In order to carry out the provisions of this subsection the appropriate

Secretary shall issue guidelines, specifying standards for local zoning ordinances, which are consistent with the purposes of this Act. The standards specified in such guidelines shall have the object of (A) prohibiting new commercial or industrial uses other than commercial or industrial uses which are consistent with the purposes of this Act, and (B) the protection of the bank lands by means of acreage, frontage, and setback requirements on development.

(d) The appropriate Secretary is authorized to accept title to non-Federal property within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress and, in exchange therefor, convey to the grantor any federally owned property which is under his jurisdiction within the State in which the component lies and which he classifies as suitable for exchange or other disposal. The values of the properties so exchanged either shall be approximately equal or, if they are not approximately equal, shall be equalized by the payment of cash to the grantor or to the Secretary as the circumstances require.

(e) The head of any Federal department or agency having administrative jurisdiction over any lands or interests in land within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress is authorized to transfer to the appropriate secretary jurisdiction over such lands for administration in accordance with the provisions of this Act. Lands acquired by or transferred to the Secretary of Agriculture for the purposes of this Act within or adjacent to a national forest shall upon such acquisition or transfer become national forest lands.

[6(e) amended by PL 99-590]

(f) The appropriate Secretary is authorized to accept donations of lands and interests in land, funds, and other property for use in connection with his administration of the national wild and scenic rivers system.

(g) (1) Any owner or owners (hereinafter in this subsection referred to as "owner") of improved property on the date of its acquisition, may retain for themselves and their successors or assigns a right to use and occupancy of the improved property for noncommercial residential purposes for a definite term not to exceed twenty-five years or, in lieu thereof, for a term ending at the death of the owner, or the death of his spouse, or the death of either or both of them. The owner shall elect the term to be reserved. The appropriate Secretary shall pay to the owner the fair market value of the property on the date of such acquisition less the fair market value on such date of the right retained by the owner.

(2) A right of use and occupancy retained pursuant to this subsection shall be subject to termination whenever the appropriate Secretary is given reasonable cause to find that such use and occupancy is being exercised in a manner which conflicts with the purposes of this Act. In the event of such a finding, the Secretary shall tender to the holder of that right an amount equal to the fair market value of that portion of the right which remains unexpired on the date of termination. Such right to use or occupancy shall terminate by operation of law upon tender of the fair market price.

(3) The term "improved property," as used in this Act, means a detached, one-family dwelling (hereinafter referred to as "Dwelling"), the construction of which was begun before January 1, 1967 (except where a different date is specifically provided by law with respect to any particular river), together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the appropriate Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures accessory to the dwelling which are situated on the land so designated.

[*Editor's note:* Public Law 95-91 terminated the Federal Power Commission and its responsibilities under this Act were transferred to the Federal Energy Regulatory Commission.]

Sec. 7. (a) The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting any river which is designated in section 3 of this Act as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation of a river as a component of the National Wild and Scenic Rivers System. No department or agency of the United States shall recommend authorization of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with

its administration, or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior or the Secretary of Agriculture, as the case may be, in writing of its intention so to do at least sixty days in advance, and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act. Any license heretofore or hereafter issued by the Federal Power Commission affecting the New River of North Carolina shall continue to be effective only for that portion of the river which is not included in the National Wild and Scenic Rivers System pursuant to section 2 of this Act and no project or undertaking so licensed shall be permitted to invade, inundate or otherwise adversely affect such river segment.

[7(a) amended by PL 94-407; PL 99-590]

(b) The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended, on or directly affecting any river which is listed is section 5, subsection (a), of this Act, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river might be designated, as determined by the Secretary responsible for its study or approval—

(i) during the ten-year period following enactment of this Act or for a three complete fiscal year period following any Act of Congress designating any river for potential addition to the national wild and scenic rivers system, whichever is later, unless, prior to the expiration of the relevant period, the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, on the basis of study, determine that such river should not be included in the national wild and scenic rivers system and notify the Committees on Interior and Insular Affairs of the United States Congress, in writing, including a copy of the study upon which the determination was made, at least one hundred and eighty days while Congress is in session prior to publishing notice to that effect in the Federal Register: *Provided*, That if any Act designating any river or rivers for potential addition to the national wild and scenic rivers system provides a period for the study or studies which exceeds such three complete fiscal year period the period provided for in such Act shall be substituted for the three complete fiscal year period in the provisions of this clause (i): *Provided*, That if any Act designating any river or rivers for potential addition to the national wild and scenic rivers system provides a period for the study or studies which exceeds such three complete fiscal year period the period provided for in such Act shall be substituted for the three complete fiscal year period in the provisions of this clause (i): and

(ii) during such interim period from the date a report is due and the time a report is actually submitted to the Congress; and

(iii) during such additional period thereafter as, in the case of any river the report for which is submitted to the President and the Congress, is necessary for congressional consideration thereof or, in the case of any river recommended to the Secretary of the Interior for inclusion in the national wild and scenic rivers system under section 2(a)(ii) of this Act, is necessary for the Secretary's consideration thereof, which additional period, however, shall not exceed three years in the first case and one year in the second.

Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a potential wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or diminish the scenic, recreational, and fish and wildlife values present in the potential wild, scenic or recreational river area on the date of designation of a river for study as provided for in section 5 of this Act. No department or agency of the United States shall, during the periods hereinbefore specified, recommend authorization of any water resources project on any such river or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture in writing of its intention so to do at least sixty days in advance of doing so and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act.

[7(b) amended, New (ii) added, and former (ii) redesignated as (iii) by PL 99-590]

(c) The Federal Power Commission and all other Federal agencies shall, promptly upon enactment of this Act, inform the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, of any proceedings, studies, or other activities within their jurisdiction which are now in progress and which affect or may affect any of the rivers specified in section 5, subsection (a), of this Act. They shall

likewise inform him of any such proceedings, studies, or other activities which are hereafter commenced or resumed before they are commenced or resumed.

(d) Nothing in this section with respect to the making of a loan or grant shall apply to grants made under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 4601-5 et seq.).

Sec. 8. (a) All public lands within the authorized boundaries of any component of the national wild and scenic rivers system which is designated in section 3 of this Act or which is hereafter designated for inclusion in that system are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States. This subsection shall not be construed to limit the authorities granted in section 6(d) or section 14A of this Act.

[8(a) amended by PL 99-590]

(b) All public lands which constitute the bed or bank, or are within one-quarter mile of the bank, of any river which is listed in section 5, subsection (a), of this Act are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States for the periods specified in section 7, subsection (b), of this Act. Notwithstanding the foregoing provisions of this subsection or any other provision of this Act, subject only to valid existing rights, including valid Native selection rights under the Alaska Native Claims Settlement Act, all public lands which constitute the bed or bank, or are within an area extending two miles from the bank of the river channel on both sides of the river segments referred to in paragraphs (77) through (88) of section 5(a) are hereby withdrawn from entry, sale, State selection or other disposition under the public land laws of the United States for the periods specified in section 7(b) of this Act.

[8(b) amended by PL 96-487]

Sec. 9. (a) Nothing in this Act shall affect the applicability of the United States mining and mineral leasing laws within components of the national wild and scenic rivers system except that —

(i) all prospecting, mining operations, and other activities on mining claims which, in the case of a component of the system designated in section 3 of this Act, have not heretofore been perfected or which, in the case of a component hereafter designated pursuant to this Act or any other Act of Congress, are not perfected before its inclusion in the system and all mining operations and other activities under a mineral lease, license, or permit issued or renewed after inclusion of a component in the system shall be subject to such regulations as the Secretary of the Interior or, in the case of national forest lands, the Secretary of Agriculture may prescribe to effectuate the purposes of this Act;

(ii) subject to valid existing rights, the perfection of, or issuance of a patent to, any mining claim affecting lands within the system shall confer or convey a right or title only to the mineral deposits and such rights only to the use of the surface and the surface resources as are reasonably required to carrying on prospecting or mining operations and are consistent with such regulations as may be prescribed by the Secretary of the Interior or, in the case of national forest lands, by the Secretary of Agriculture; and

(iii) subject to valid existing rights, the minerals in Federal lands which are part of the system and constitute the bed or bank or are situated within one-quarter mile of the bank of any river designated a wild river under this Act or any subsequent Act are hereby withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws including, in both cases, amendments thereto. Regulations issued pursuant to paragraphs (i) and (ii) of this subsection shall, among other things, provide safeguards against pollution of the river involved and unnecessary impairment of the scenery within the component in question.

(b) The minerals in any Federal lands which constitute the bed or bank or are situated within one-quarter mile of the bank of any river which is listed in section 5, subsection (a) of this Act are hereby withdrawn from all forms of appropriation under the mining laws during the periods specified in section 7, subsection (b) of this Act. Nothing contained in this subsection shall be construed to forbid prospecting or the issuance of leases, licenses, and permits under the mineral leasing laws subject to such conditions as the Secretary of the Interior and, in the case of national forest lands, the Secretary of Agriculture find appropriate to safeguard the area in the event it is subsequently included in the system. Notwithstanding the foregoing provisions of this subsection or any other provision of this Act, all public lands which constitute the bed or bank, or are within an area extending two miles from the bank of the river channel on both sides of the river segments referred to in paragraphs (77) through (88) of section 5(a), are hereby withdrawn, subject to valid existing rights, from all forms of appropriation under the mining laws and from operation of the mineral leasing laws including, in both cases, amendments thereto, during the periods specified in section 7(b) of this Act.

[9(b) amended by PL 96-487; PL 99-590]

Sec. 10. (a) Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of

these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

(b) Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system, as established by or pursuant to the Act of September 3, 1964 (78 Stat. 890; 16 U.S.C., ch. 23), shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply.

(c) Any component of the national wild and scenic rivers system that is administered by the Secretary of the Interior through the National Park Service shall become a part of the national park system, and any such component that is administered by the Secretary through the Fish and Wildlife Service shall become a part of the national wildlife refuge system. The lands involved shall be subject to the provisions of this Act and the Acts under which the national park system or national wildlife system, as the case may be, is administered, and in case of conflict between the provisions of these Acts, the more restrictive provisions shall apply. The Secretary of the Interior, in his administration of any component of the national wild and scenic rivers system, may utilize such general statutory authorities relating to areas of the national park system and such general statutory authorities otherwise available to him for recreation and preservation purposes and for the conservation and management of natural resources as he deems appropriate to carry out the purposes of this Act.

(d) The Secretary of Agriculture, in his administration of any component of the national wild and scenic rivers system area, may utilize the general statutory authorities relating to the national forests in such manner as he deems appropriate to carry out the purposes of this Act.

(e) The Federal agency charged with the administration of any component of the national wild and scenic rivers system may enter into written cooperative agreements with the Governor of a State, the head of any State agency, or the appropriate official of a political subdivision of a State for State or local governmental participation in the administration of the component. The States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system which include or adjoin State- or county-owned lands.

Sec. 11. (a) The Secretary of Interior shall encourage and assist the States to consider, in formulating and carrying out their comprehensive statewide outdoor recreation plans and proposals for financing assistance for State and local projects submitted pursuant to the Land and Water Conservation Fund Act of 1965 (78 Stat. 897), needs and opportunities for establishing State and local wild, scenic and recreational river areas.

[11(a) amended by PL 99-590]

(b)(1) The Secretary of the Interior, the Secretary of Agriculture, or the head of any other Federal agency, shall assist, advise, and cooperate with States or their political subdivisions, landowners, private organizations, or individuals to plan, protect, and manage river resources. Such assistance, advice, and cooperation may be through written agreements or otherwise. This authority applies within or outside a federally administered area and applies to rivers which are components of the National Wild and Scenic Rivers System and to other rivers. Any agreement under this subsection may include provisions for limited financial or other assistance to encourage participation to the acquisition, protection, and management of river resources.

(2) Wherever appropriate in furtherance of this Act, the Secretary of Agriculture and the Secretary of the Interior are authorized and encouraged to utilize the following:

(A) For activities on federally owned land, the Volunteers in the Parks Act of 1969 (16 U.S.C. 18g-j) and the Volunteers in the Forest Act of 1972 (16 U.S.C. 558a-558d).

(B) For activities on all other lands, section 6 of the Land and Water Conservation Fund Act of 1965 (relating to the development of statewide comprehensive outdoor recreation plans).

(3) For purposes of this subsection, the appropriate Secretary or the head of any Federal agency may utilize and make available Federal facilities, equipment, tools and technical assistance to volunteers and volunteer organizations, subject to such limitations and restrictions as the appropriate Secretary or the head of any Federal agency deems necessary or desirable.

(4) No permit or other authorization provided for under provision of any other Federal law shall be conditioned on the existence of any agreement provided for in this section.

[11(b) revised by PL 99-590]

Sec. 12. (a) The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal department or agency having jurisdiction over any lands which include, border upon, or are adjacent to, any river included within the National Wild and Scenic Rivers System or under consideration for such inclusion, in accordance with section 2(a)(ii), 3(a), or 5(a), shall

take such action respecting management policies, regulations, contracts, plans, affecting such lands, following the date of enactment of this sentence, as may be necessary to protect such rivers in accordance with the purposes of this Act. Such Secretary or other department or agency head shall, where appropriate, enter into written cooperative agreements with the appropriate State or local official for the planning, administration, and management of Federal lands which are within the boundaries of any rivers for which approval has been granted under section 2(a)(ii). Particular attention shall be given to scheduled timber harvesting, road construction, and similar activities which might be contrary to the purposes of this Act.

(b) Nothing in this section shall be construed to abrogate any existing rights, privileges, or contracts affecting Federal lands held by any private party without the consent of said party.

(c) The head of any agency administering a component of the national wild and scenic rivers system shall cooperate with the Administrator, Environmental Protection Agency and with the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.

[12(c) amended by PL 99-590]

Sec. 13. (a) Nothing in this Act shall affect the jurisdiction or responsibilities of the States with respect to fish and wildlife. Hunting and fishing shall be permitted on lands and waters administered as parts of the system under applicable State and Federal laws and regulations unless, in the case of hunting, those lands or waters are within a national park or monument. The administering Secretary may, however, designate zones where, and establish periods when, no hunting is permitted for reasons of public safety, administration, or public use and enjoyment and shall issue appropriate regulations after consultation with the wildlife agency of the State or States affected.

(b) The jurisdiction of the States and the United States over waters of any stream included in a national wild, scenic or recreational river area shall be determined by established principles of law. Under the provisions of this Act, any taking by the United States of a water right which is vested under either State or Federal law at the time such river is included in the national wild and scenic rivers system shall entitle the owner thereof to just compensation. Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws.

(c) Designation of any stream or portion thereof as a national wild, scenic or recreational river area shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this Act, or in quantities greater than necessary to accomplish these purposes.

(d) The jurisdiction of the States over waters of any stream included in a national wild, scenic or recreational river area shall be unaffected by this Act to the extent that such jurisdiction may be exercised without impairing the purposes of this Act or its administration.

(e) Nothing contained in this Act shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with any interstate compact made by any States which contain any portion of the national wild and scenic rivers system.

(f) Nothing in this Act shall affect existing rights of any State, including the right of access, with respect to the beds of navigable streams, tributaries, or rivers (or segments thereof) located in a national wild, scenic or recreational river area.

(g) The Secretary of the Interior or the Secretary of Agriculture, as the case may be, may grant easements and rights-of-way upon, over, under, across, or through any component of the national wild and scenic rivers system in accordance with the laws applicable to the national park system and the national forest system, respectively: *Provided*, That any conditions precedent to granting such easements and rights-of-way shall be related to the policy and purpose of this Act.

Sec. 14. The claim and allowance of the value of an easement as a charitable contribution under section 170 of title 26, United States Code, or as a gift under section 2522 of said title shall constitute an agreement by the donor on behalf of himself, his heirs, and assigns that, if the terms of the instrument creating the easement are violated, the donee or the United States may acquire the servient estate at its fair market value as of the time the easement was donated minus the value of the easement claimed and allowed as a charitable contribution or gift.

Sec. 14A. (a) Where appropriate in the discretion of the Secretary, he may lease federally owned land (or any interest therein) which is within the boundaries of any component of the National Wild and Scenic Rivers System and which has been acquired by the Secretary under this Act. Such lease shall be subject to such restrictive covenants as may be necessary to carry out the purposes of this Act.

(b) Any land to be leased by the Secretary under this section shall be offered first for such lease to the person who owned such land immediately before its acquisition by the United States.

Sec. 15. Notwithstanding any other provision to the contrary in sections 3 and 9 of this Act, with respect to components of the National Wild and Scenic Rivers System in Alaska designated by paragraphs (38) through (50) of section 3(a) of this Act—

(1) the boundary of each such river shall include an average of not more than six hundred and forty acres per mile on both sides of the river. Such boundary shall not include any lands owned by the State or a political subdivision of the State nor shall such boundary extend around any private lands adjoining the river in such manner as to surround or effectively surround such private lands; and

(2) the withdrawal made by paragraph (iii) of section 9(a) shall apply to the minerals in Federal lands which constitute the bed or bank or are situated within one-half mile of the bank of any river designated a wild river by the Alaska National Interest Lands Conservation Act.

[15 added by PL 96-487]

Sec. 16. As used in this Act, the term —

[15 redesignated as 16 by PL 96-487]

(a) "River" means a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes

(b) "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: *Provided*, 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.

(c) "Scenic easement" means 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. For any designated wild and scenic river, the appropriate Secretary shall treat the acquisition of fee title with the reservation of regular existing uses to the owner as a scenic easement for purposes of this Act. Such an acquisition shall not constitute fee title ownership for purposes of section 6(b).

[16(c) amended by PL 99-590]

Sec. 17. There are hereby authorized to be appropriated, including such sums as have heretofore been appropriated, the following amounts for land acquisition for each of the rivers described in section 3(a) of this Act:

Clearwater, Middle Fork, Idaho, $2,909,800;
Eleven Point, Missouri, $10,407,000;
Feather, Middle Fork, California, $3,935,700;
Rio Grande, New Mexico, $253,000;
Rogue, Oregon, $15,147,000;
St. Croix, Minnesota and Wisconsin, $21,769,000;
Salmon, Middle Fork, Idaho, $1,837,000;
Wolf, Wisconsin, $142,150.

[16 redesignated as 17 by PL 96-487]

MISCELLANEOUS PROVISIONS

[*Editor's note:* The following excerpts are taken from Titles I and II of PL 99-590. Only those sections and subsections not amending this Act, but affecting its implementation are published below.]

TITLE I — CACHE LA POUDRE, COLORADO

Sec. 102. Inclusion of the designated portions of the Cache la Poudre River and the Wild and Scenic Rivers Systems under section 101 of this title shall not interfere with the exercise of existing decreed water rights to water which has heretofore been stored or diverted by means of the present capacity of storage, conveyance, or diversion structures that exist as of the date of enactment of this title, or operation and maintenance of such structures. Nor shall inclusion of the designated portions of the Cache la Poudre River in the Wild and Scenic Rivers System be utilized in any Federal proceeding, whether concerning a license, permit, right-of-way, or other Federal action, as a reason or basis to prohibit the development or operation of any water impoundments, diversion facilities, and hydroelectric power and transmission facilities below Poudre Park located entirely downstream from and potentially affecting designated portions of the Cache la Poudre River, or relocation of highway 14 to any point east of the north-south half section line of section 2, township 8 north, range 71 west of the sixth principal meridian, as necessary to provide access to Poudre Park around such facilities: *Provided*, That due consideration shall be given to reasonable measures for minimizing the impact of such facilities and road relocation on the designated segments. Congress finds that development of water impoundments, diversion facilities, and hydroelectric power and transmission facilities located entirely downstream from the designated portions of the Cache la Poudre River below Poudre Park, in accordance with the provisions of this section, is not incompatible with the designation of portions of the Cache la Poudre River in the Wild and Scenic Rivers System under section 101 of this title. The reservation of water established by the inclusion of portions of the Cache la Poudre River in the Wild and Scenic Rivers System shall be subject to the provisions of this title, shall be adjudicated in Colorado Water Court, and shall have a priority date as of the date of enactment of this title.

Sec. 103. (a) Grants and Assistance. — The Secretary of Agriculture, acting through the Chief of the Forest

Service, shall provide grants and technical assistance to the city of Fort Collins, Colorado, to carry out a study regarding the designation of the following area as a national recreation area: the 18.5-mile segment of the Cache la Poudre River Corridor from the northwest boundary of the city of Fort Collins urban growth area to the Weld-Larimer County line.

(b) Study. — The study under this section shall include each of the following:

(A) a comprehensive evaluation of the public recreation opportunities and flood plain management options which are available with respect to the river corridor involved;

(B) an evaluation of the natural, historical, and recreational values of such corridor;

(C) patterns for possible land acquisition within the corridor which are deemed necessary for the purpose of resource protection, scenic and integrity, or management and administration of the corridor area;

(D) cooperative management proposals for the administration of the corridor area;

(E) the number of visitors and types of public use within the corridor area that can be accommodated in accordance with the full protection of its resources; and

(F) the facilities deemed necessary to accommodate and provide access for such visitors and uses, including the location and estimated costs of such facilities.

(c) Report to Congress. — Within three years of the date of enactment of this title, the Secretary of Agriculture shall transmit to the Congress a comprehensive report containing the results of the study conducted pursuant to this section.

(d) Funding. — There are hereby authorized to be appropriated up to $150,000 to carry out the provisions of this section.

(e) Cost Sharing. — Not more than 75 per centum of the cost of the study carried out under this section shall be paid by the United States: *Provided*, that in no event shall the contribution of the United States exceed $150,000. The remaining portion of such costs shall be contributed by interested parties. The portion contributed by such interested parties may consist of appropriated funds or contributed services.

Sec. 104. Notwithstanding any other provision of law, the Secretaries of Agriculture and the Interior shall, within 30 days of the enactment of this title, complete the exchange as described in the Decision Notice and Finding of No Significant Impact, Trust For Public Land Proposed Land-for-Land Exchange, signed by the Rocky Mountain Regional Forester, on August 22, 1985, to acquire certain private lands in the portion of the Cache la Poudre River designated in section 3(a)(56)(B) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)(56)(B)).

TITLE II — FARMINGTON, WEST BRANCH, CONNECTICUT AND MASSACHUSETTS

Sec. 201. This title may be cited as the "Farmington Wild and Scenic River Study Act".

Sec. 202. (a) The Congress finds that—

(1) the West Branch of the Farmington River and related land areas possess resource values of national significance, such as significant white water rapids, undeveloped lands, scenic and cultural areas, important sport fisheries, and prime agricultural lands;

(2) based on the National Rivers Inventory by the National Park Service, published in January 1982, this portion of the Farmington River is eligible for study for inclusion in the wild and scenic rivers system;

(3) there is strong support among local, State, and Federal officials, area residents, and river users for a concerted cooperative effort to manage the river in a productive and meaningful way; and

(4) in view of the longstanding Federal practice of assisting States and local governments in protecting, conserving, and enhancing rivers of national significance, the United States has an interest in assisting the States of Connecticut and the Commonwealth of Massachusetts and the appropriate local governments in managing the river.

(d)(1) At the earliest practicable date following the enactment of this title, but not later than forty-five days after enactment, the Secretary of the Interior (hereinafter in this title referred to as the "Secretary") shall establish the Farmington River Study Committee (hereinafter in this title referred as to the "Committee"). The Secretary shall consult with the Committee on a regular basis during the conduct of the study. Membership on the Committee shall consist of seventeen members appointed by the Secretary as follows:

(A) One member shall be appointed by the Secretary.

(B) Two members shall be appointed by the Secretary from a list of candidates supplied to the Secretary by the Government of the State of Connecticut.

(C) Two members shall be appointed by the Secretary from a list of candidates supplied to the Secretary by the Governors of the State of Connecticut.

(D) Two members shall be appointed by the Secretary from a list of candidates supplied to the Secretary by the Farmington River Watershed Association.

(E) One member shall be appointed by the Secretary from each of the eight towns located along the West Branch of the river. The governing body of each of the eight towns shall provide a list of candidates to the Secretary from which the eight appointments under this paragraph shall be made.

(F) Two members shall be appointed by the Secretary from a list of candidates supplied to the Secretary by the

Metropolitan District Commission of Hartford, Connecticut.

(2) The members of the Committee shall elect a chairman, vice chairman, and recording secretary from the membership at the first official meeting of the Committee. Official minutes shall be kept of each regular and special meeting of the Committee and shall be open for public inspection.

(3) Any vacancy on the Committee shall be filed in the same manner in which the original appointment was made. Any member appointed to fill a vacancy occurring before the expiration of the term for which his predecessor was appointed shall be appointed only for the remainder of such term. Vacancies in the membership of the Committee shall not affect its power to function if there remain sufficient members to constitute a quorum under paragraph (4) of this subsection.

(4) A majority of the members of the Committee shall constitute a quorum for all meetings.

(5) The Committee shall advise the Secretary in conducting the study of the Farmington River segment specified in section 5(a)(92) of the Wild and Scenic Rivers Act. The Committee also shall advise the Secretary concerning management alternatives should the river be included in the wild and scenic river system.

(6) Members of the Committee shall serve without compensation but may be compensated for reasonable and necessary expenses incurred by them in the performance of their duties as members of the Committee.

(7) The Committee may accept and utilize the services of voluntary, uncompensated personnel.

(8) The Committee shall terminate on the later of the following:

(A) the completion of the river study of the Farmington River described in section 5(a)(92) of the Wild and Scenic Rivers Act; or

(B) the publication of management alternatives should the river be included in the wild and scenic river system.

(e) As used in this title (other than in subsection(b)) the term "River" means the segments of the Farmington River described in paragraph (92) of section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1275(a)).

(f) There are authorized to be appropriated up to $150,000 to carry out the purposes of this title.

Appendix C

FINAL REVISED GUIDELINES FOR ELIGIBILITY, CLASSIFICATION, AND MANAGEMENT OF RIVER AREAS

Tuesday
September 7, 1982

Part VII

Department of the Interior

Office of the Secretary
National Park Service

Department of Agriculture

Office of the Secretary
Forest Service

National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas

C—014892

C-014892

DEPARTMENT OF THE INTERIOR

Office of the Secretary

National Park Service

DEPARTMENT OF AGRICULTURE

Office of the Secretary

Forest Service

National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification and Management of River Areas

AGENCY: National Park Service and Office of the Secretary, Interior; Forest Service and Office of the Secretary, USDA.

ACTION: Publication of final revised guidelines.

FOR FURTHER INFORMATION CONTACT: Bob Brockwehl (NPS), 202/272-3566. William R. Snyder (USFS), 202/382-8014.

SUPPLEMENTARY INFORMATION: Guidelines for the study of potential national wild and scenic rivers and management of designated rivers were first issued jointly by the Department of Agriculture and the Department of the Interior in 1970. On January 28, 1981 draft revised guidelines were published in the Federal Register for public comment (Vol. 46, No. 18, pp. 9148-9158). The document which follows was prepared after consideration of 50 letters of comment received from other Federal agencies, State governments, private industry, citizens' groups and individuals. Major comments and responses are summarized below. Many of the comments received were not addressed because they related to aspects of the wild and scenic rivers program beyond the scope of these guidelines. (See Preface of the revised guidelines.)

Comments and Responses

Comment: The definition of the term outstandingly remarkable value is too vague and too liberal. Too many rivers will be eligible for designation, unreasonably constraining economic development of natural resources. *Response:* Balancing of the need for protection versus development of each river area will be considered by the Congress in deciding whether or not to designate the river area. A determination that a particular river is eligible for designation does not necessarily imply that designation is the best use of the river in terms of the national interest.

Comment: The guidelines give inadequate emphasis to public involvement in the study process. *Response:* Public involvement is sufficiently addressed in the context of environmental statements or assessments prepared in the study process.

Comment: The guidelines do not make sufficiently clear which of the management principles apply to private lands. *Response:* The guidelines may be unclear to the general reader in this respect. The managment principles are to be implemented throughout each river area to the fullest extent possible under the managing agency's general statutory authorities and other existing Federal, State and local laws, including zoning ordinances where available. Some management principles obviously apply only to Federal lands within the river area. For instance, the Wild and Scenic Rivers Act does not open private lands to public recreation. Management principles may apply to private lands only to the extent required by other laws such as local zoning and air and water pollution regulations.

Comment: Restriction of timber harvest to selective harvest techniques is unnecessarily limiting from both the timber production and the natural resource preservation standpoints. *Response:* The guidelines have been amended in accordance with this comment.

Comment: Specific guidance contained in the 1970 guideline with respect to the granting of rights-of-way for transmission lines is omitted from the revised draft guidelines. *Response:* The subsection on rights-of-way has been amended in accordance with this comment.

Comment: A protected study area extending one half mile from each bank of the river is excessive when the final boundaries of a river area must average no more than one quarter mile from each bank (320 acres per mile). *Response:* The half-mile figure was intended to ensure that all areas likely to be included within the boundaries of a designated river area would be considered in the study process. Setting a study boundary based on the "visual corridor" concept was considered but rejected. The one-quarter-mile figure was finally selected to avoid unnecessary limitations on resource developments. Some developments which may be initiated beyond the one-quarter-mile boundary during the study period might be affected in the future if the area under development is included in the boundaries of the river area designated by Congress.

Comment: Evaluation of the study area in its existing condition for classification purposes does not allow for the fact that a forest area growing in relatively natural condition at the time of the study may be scheduled for clearcutting at some future date. The classification process should allow for authorized and scheduled future uses which could change the condition and, thus, the classification of the river area. *Response:* The guidelines have been amended to permit consideration of alternative classifications for the river area where authorized future uses could alter classification.

The following additional changes were made in response to suggestions from the reviewing public or from reviewers within the responsible agencies.

- Unnecessary definitions were deleted.
- Quotations and paraphrases of the Wild and Scenic River Act (including the whole of Section II—Policy) were eliminated as much as possible. Instead, the guidelines will reference the appropriate sections of the Act where necessary.
- The entire subsection titled "Findings and Recommendations" and portions of the subsection titled "General Management Principles" were deleted and their content was placed in other appropriate sections.

Additional copies of the guidelines, the Wild and Scenic Rivers Act, as amended, and further information on the National Wild and Scenic Rivers System may be obtained from: National Park Service, Rivers and Trails Division (780), 440 G Street, N.W., Washington, D.C. 20243.

Dated: July 12, 1982.

G. Ray Arnett,

Assistant Secretary for Fish and Wildlife and Parks (Interior).

Dated: August 26, 1982.

Douglas W. MacCleery,

Deputy Assistant Secretary for Natural Resources and Environment (Agriculture).

Department of Agriculture

Department of the Interior

National Wild and Scenic Rivers System

Guidelines for Eligibility, Classification and Management of River Areas.

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Preface

The National Wild and Scenic Rivers System
Addition of Rivers to the System
The Guidelines
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The River Study

recreation and resource uses which do not adversely impact or degrade those values. Specific management strategies will vary according to classification but will always be designed to protect and enhance the values of the river area. Land uses and developments on private lands within the river area which were in existence when the river was designated may be permitted to continue. New land uses must be evaluated for their compatibility with the purposes of the Act.

The management principles which follow stem from section 10(a). Managing agencies will implement these principles to the fullest extent possible under their general statutory authorities and existing Federal, State and local laws. Because of these limitations, however, implementation of the principles may differ among and within components of the system depending on whether the land areas involved are federally, State, locally or privately owned.

Carrying Capacity. Studies will be made during preparation of the management plan and periodically thereafter to determine the quantity and mixture of recreation and other public use which can be permitted without adverse impact on the resource values of the river area. Management of the river area can then be planned accordingly.

Public Use and Access. Public use will be regulated and distributed where necessary 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 to the managing agency through its general statutory authorities.

Basic Facilities. The managing agency may provide basic facilities to absorb user impacts on the resource. Wild river areas will contain only the basic minimum facilities in keeping with the "essentially primitive" nature of the area. If facilities such as toilets and refuse containers are necessary, they will generally be located at access points or at a sufficient distance from the river bank to minimize their intrusive impact. In scenic and recreational river areas, simple comfort and convenience facilities such as toilets, shelters, fireplaces, picnic tables and refuse containers are appropriate. These, when placed within the river area, will be judiciously located to protect the values of popular areas from the impacts of public use.

Major Facilities. Major public use facilities such as developed campgrounds, major visitor centers and administrative headquarters will, where feasible, be located outside the river area. If such facilities are necessary to provide for public use and/or to protect the river resource, and location outside the river area is infeasible, such facilities may be located within the river area provided they do not have an adverse effect on the values for which the river area was designated.

Motorized Travel. Motorized travel on land or water is generally permitted in wild, scenic and recreational river areas, but will be restricted or prohibited where necessary to protect the values for which the river area was designated.

Agricultural and Forestry Practices. Agricultural and forestry practices should be similar in nature and intensity to those present in the area at the time of designation. Generally, uses more intensive than grazing and hay production are incompatible with wild river classification. Rowcrop production and timber harvest may be practice in recreational and scenic river areas. Recreational river areas may contain an even larger range of agricultural and forestry uses. Timber harvest in any river area will be conducted so as to avoid adverse impacts on the river area values.

Other Resource Management Practices. Resource management practices will be limited to those which are necessary for protection, conservation, rehabilitation or enhancement of the river area resources. Such features as trail bridges, fences, water bars and drainage ditches, flow measurement devices and other minor structures or management practices are permitted when compatible with the classification of the river area and provided that the area remains natural in appearance and the practices or structures harmonize with the surrounding environment.

Water Quality. Consistent with the Clean Water Act, water quality in wild, scenic and recreational river areas will be maintained or, where necessary, improved to levels which meet Federal criteria or federally approved State standards for aesthetics and fish and wildlife propagation. River managers will work with local authorities to abate activities within the river area which are degrading or would degrade existing water quality.

Additional management principles stem from other sections of the Act as follows:

Land Acquisition: Section 6
Water Resource Development: Section 7
Mining: Section 9
Management of Adjacent Federal Lands: Section 12(a)
Hunting and Fishing: Section 13(a)
Water Rights: Section 13(b)–(f)
Rights-of-Way: Section 13(g)

The following policies are consistent with and supplement the management principles stated in the Act:

Land Use Controls. Existing patterns of land use and ownership should be maintained, provided they remain consistent with the purposes of the Act. Where land use controls are necessary to protect river area values, the managing agency will utilize a full range of land-use control measures including zoning, easements and fee acquisition.

Rights-of-Way. In the absence of reasonable alternative routes, new public utility rights-of-way on Federal lands affecting a Wild and Scenic River area or study area will be permitted. Where new rights-of-way are unavoidable, locations and construction techniques will be selected to minimize adverse effects on scenic, recreational, fish and wildlife and other values of the river area.

Other legislation applicable to the various managing agencies may also apply to wild and scenic river areas. Where conflicts exist between the provisions of the Wild and Scenic Rivers Act and other acts applicable to lands within the system, the more restrictive provisions providing for protection of the river values shall apply.

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TABLE 1.

ACCELERATED STUDY SCHEDULE

MONTHS

River Study Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1. Organize study team Prepare study plan Public information meetings Scope critical issues																														
2. Resource Inventories (a) Study Bndry. Locations (b) River eligibility and classification evalu. (c) Literature search (d) Other agency contacts (e) Resource maps																														
3. Develop alternative (a) Prepare alternatives display (b) Public meetings on findings and alternat. (c) Analyze Public Input (d) Evaluate alternatives																														
4. Complete Preliminay Report/ DEIS																														
5. Review of Draft (a) Internal Review (b) Revise preliminary as needed (c) Prepare camera ready copy (d) Print Draft Report/EIS (e) Distribute for 90-day review (a) Public meetings or formal hearings during review																														
6. Analyze Review Input Revise draft as needed. Internal Review																														
7. Print Final Report																														
8. Secretary's decision and transmittal of report w/ recommendations to OMB																														
9. Executive review and transmittal to the Congress																														

This schedule does not take into account the possibility of delays due to Congressional concern, interagency or intradepartmental concerns or other possible outside influences that cannot be planned for.

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TABLE 2.

CLASSIFICATION CRITERIA FOR WILD, SCENIC AND RECREATIONAL RIVER AREAS *

ATTRIBUTE	WILD	SCENIC	RECREATIONAL
Water Resources Development	Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.
Accessibility	Generally inaccessibile except by trail. No roads, railroads or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality	Meets or exceeds Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria prescribed by the Wild and Scenic Rivers Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable Federal and State laws.	

* Table to be used only in conjunction with text.

[FR Doc. 82-24458 Filed 9-3-82; 8:45 am]
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Appendix D

TYPICAL PHOTOGRAPHS OF VISUAL SETTING UNITS

UPPER McCLOUD RIVER SETTING UNIT

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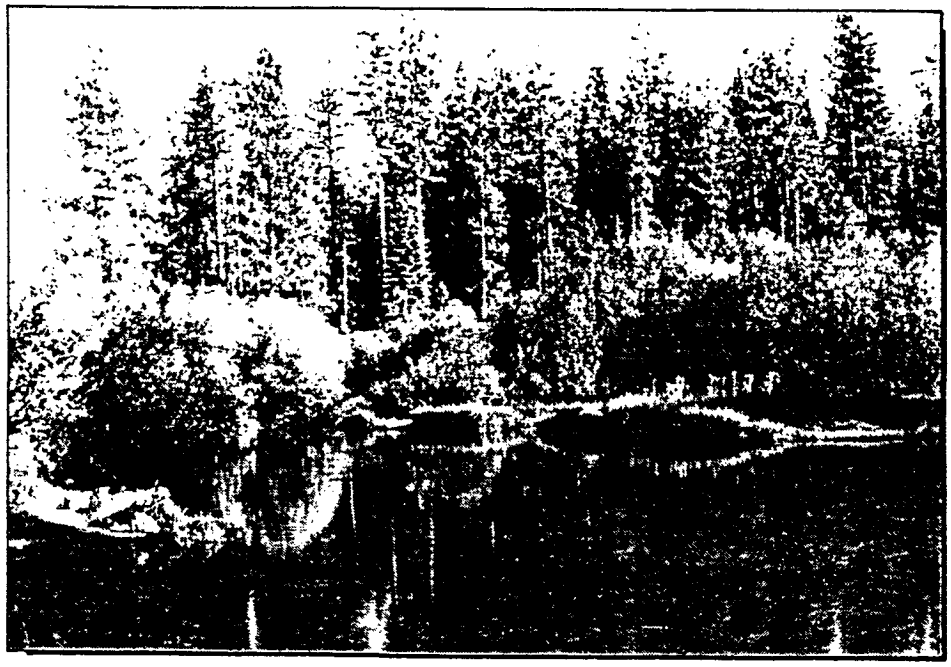
C-014898

UPPER McCLOUD RIVER
SETTING UNIT (cont'd.)



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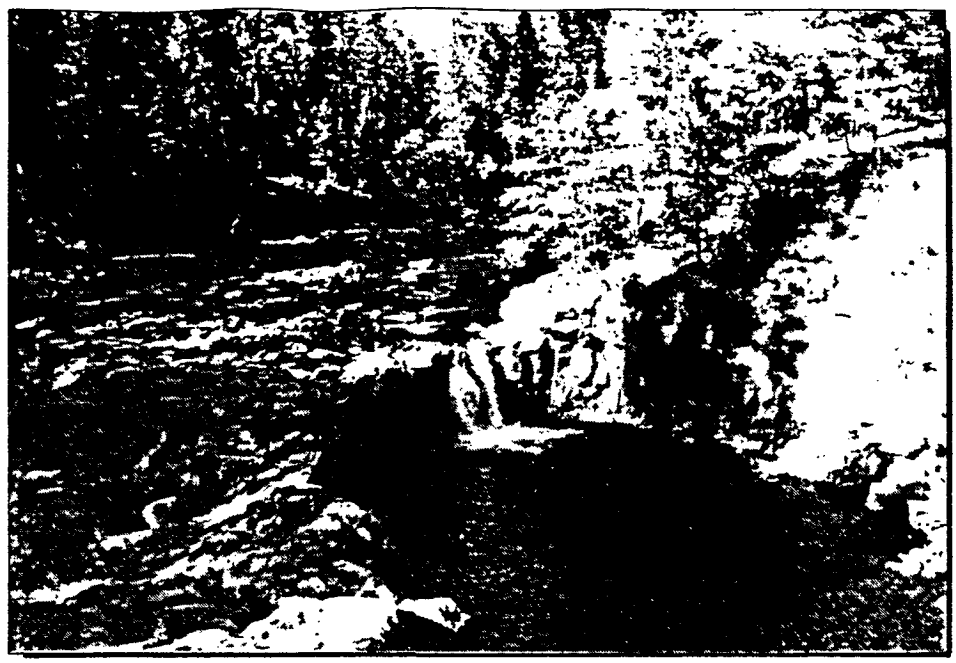
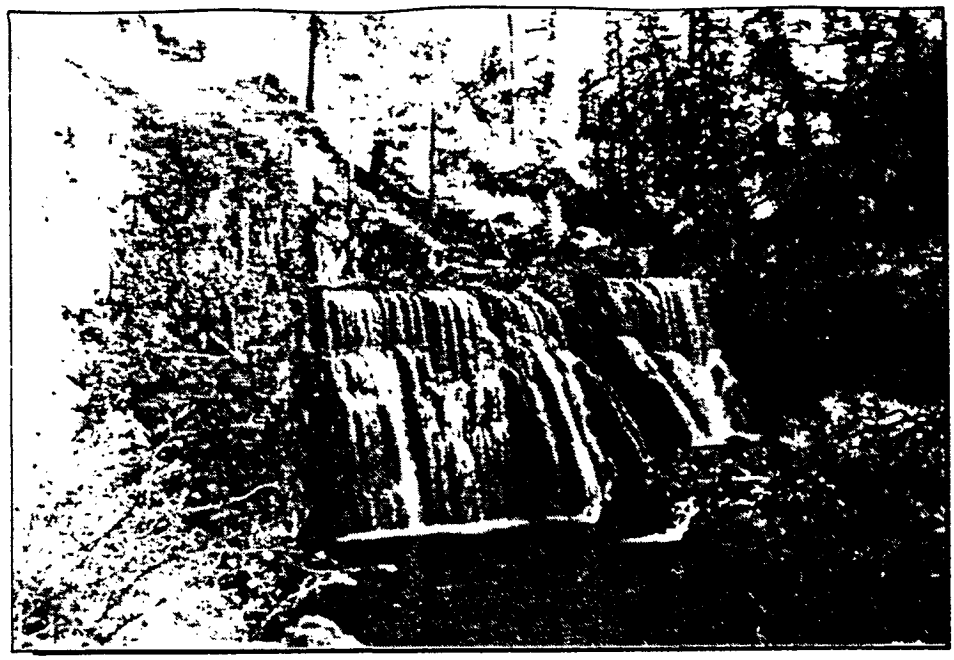


(Lower Falls)

(Above Lower Falls)

FALLS SETTING UNIT

C-014900



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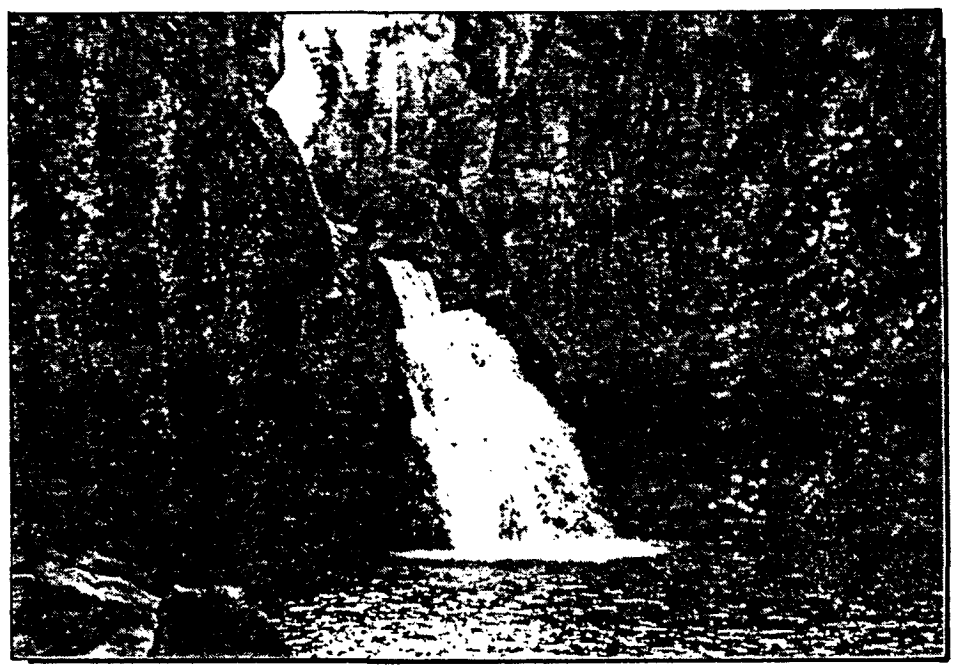

(Upper Falls)

FALLS SETTING UNIT
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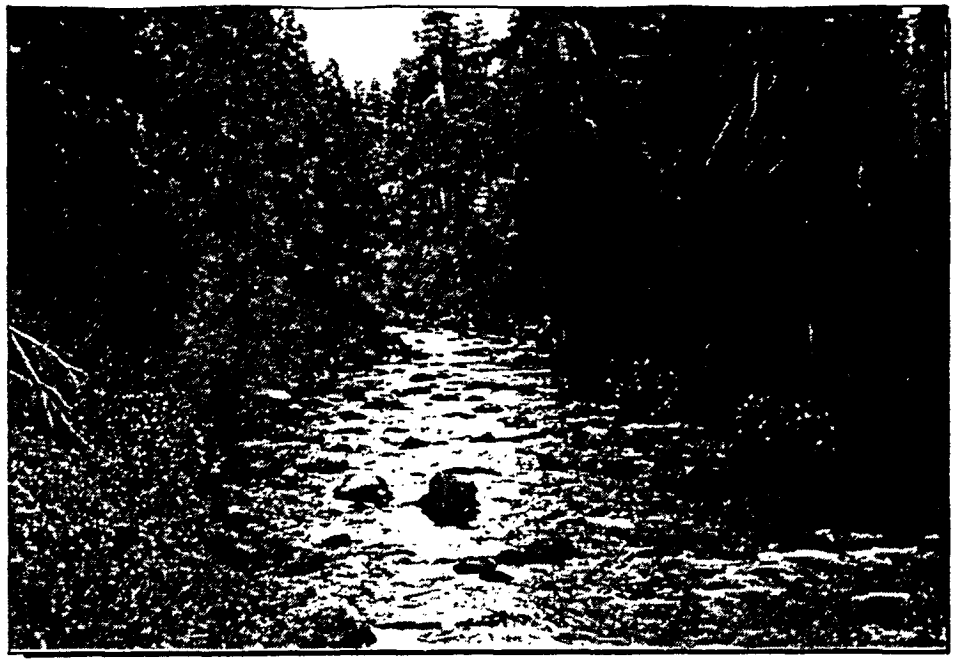
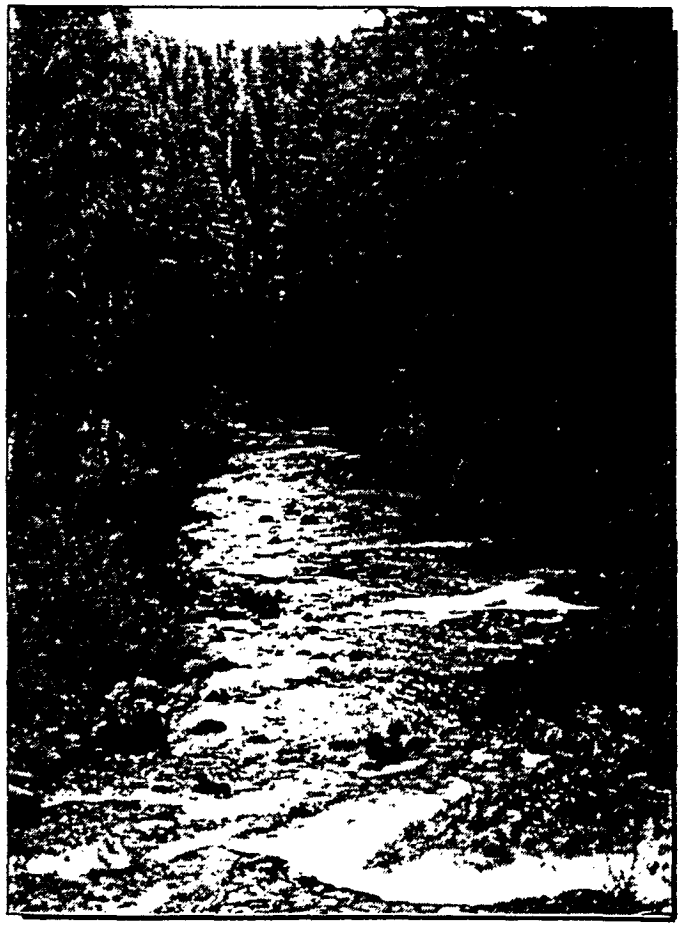


(Upstream of Big Springs)

BIG SPRINGS
SETTING UNIT



(Upstream of Big Springs)

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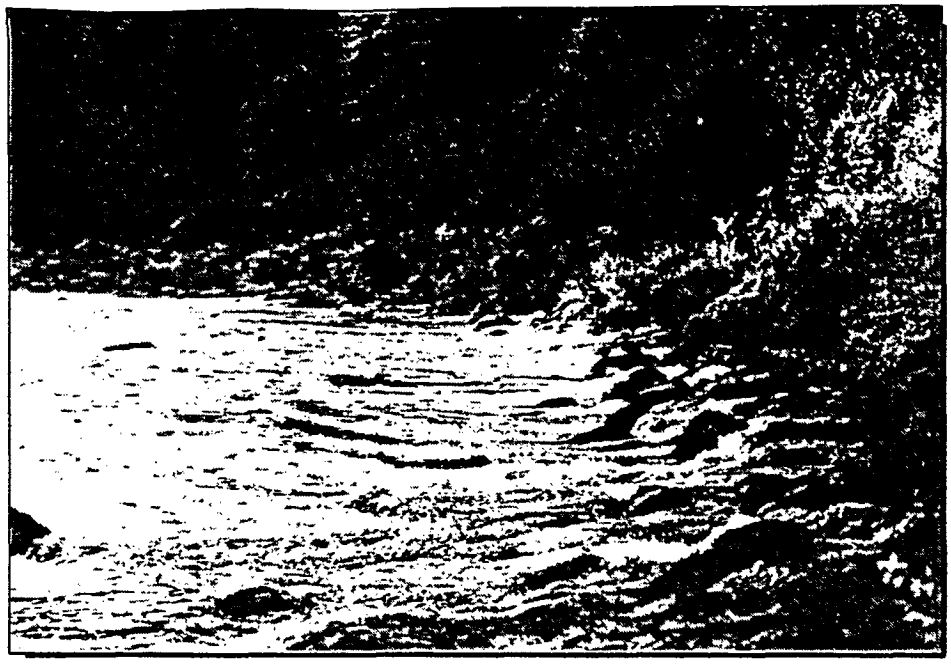

(At Big Springs)

(At Big Springs)

BIG SPRINGS SETTING UNIT
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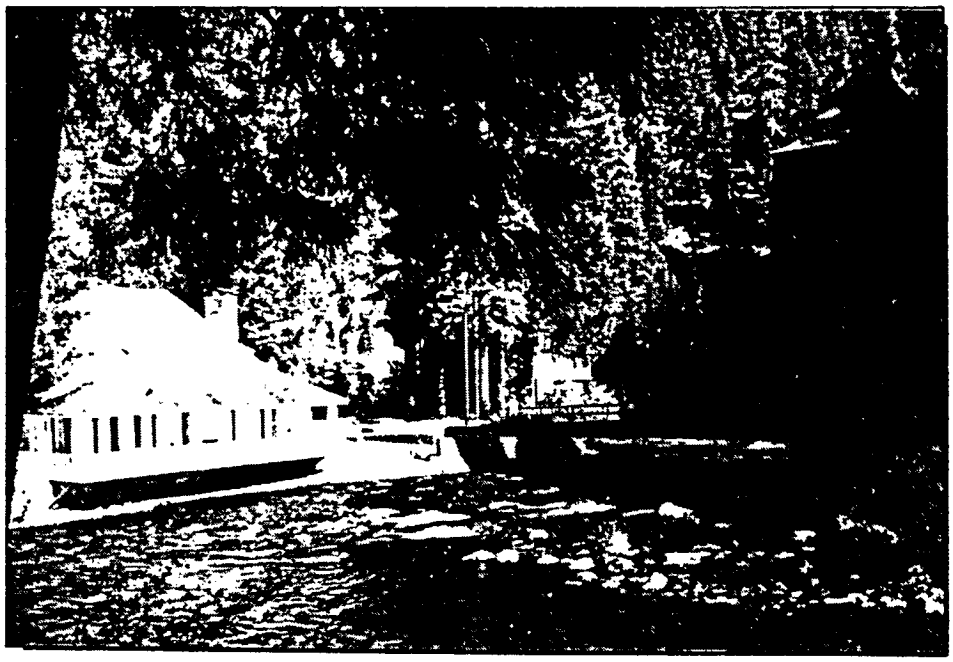

WYNTOON SETTING UNIT

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WYNTOON SETTING UNIT
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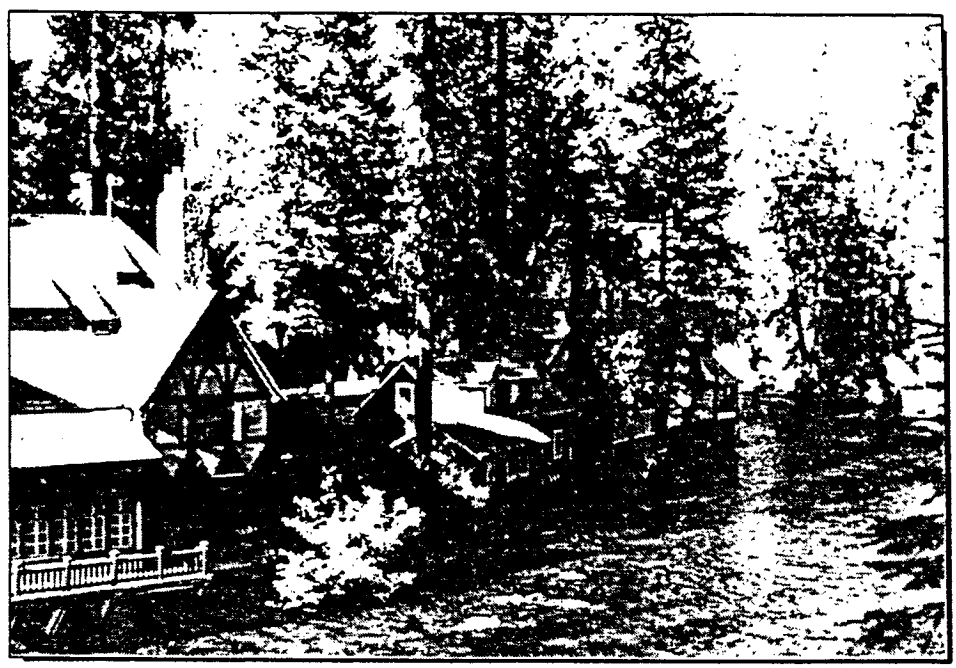

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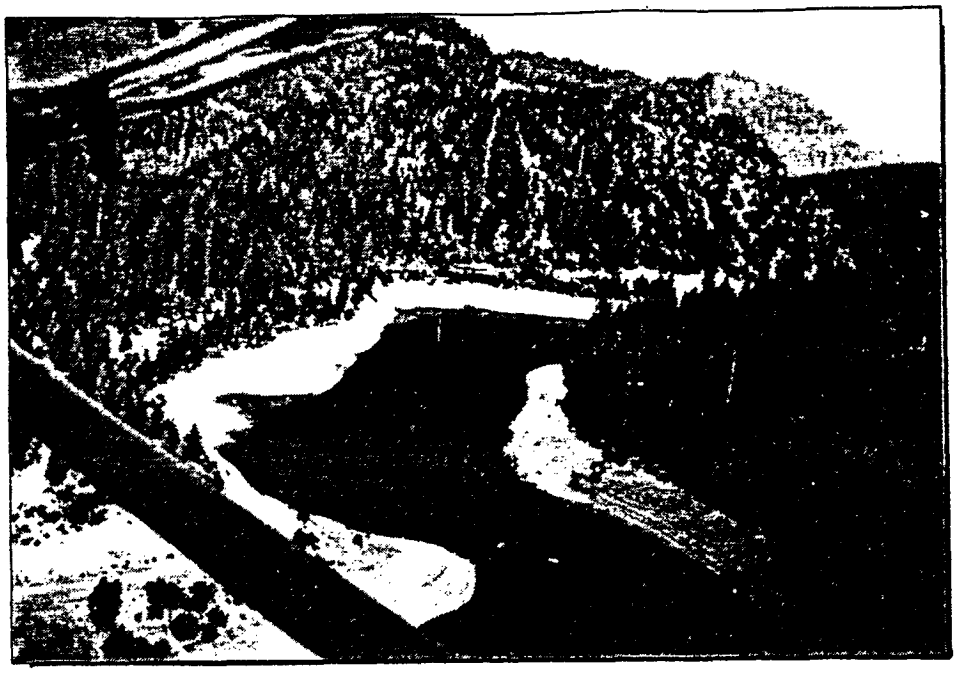
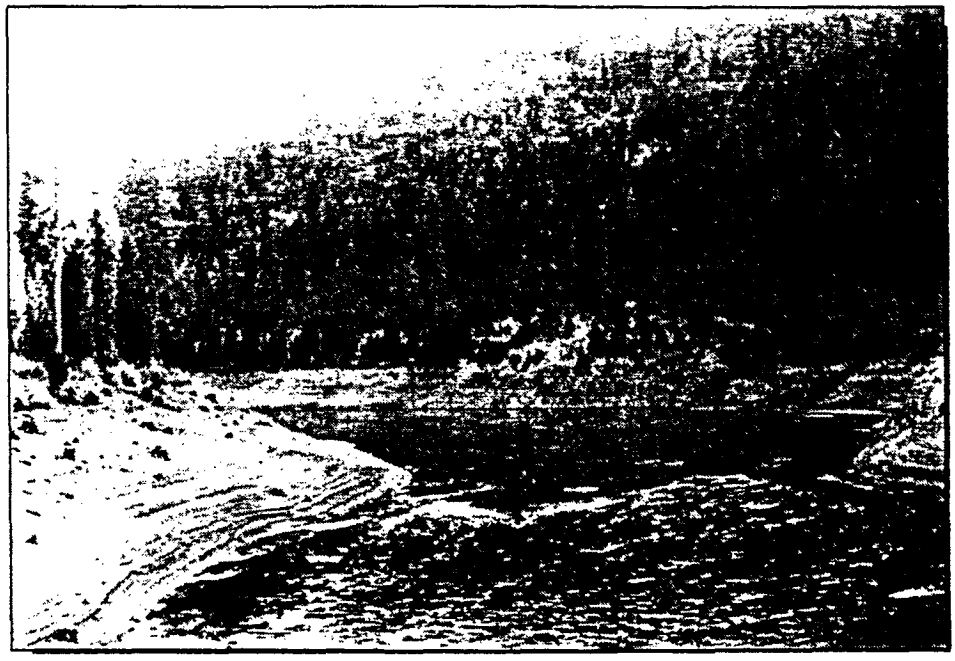
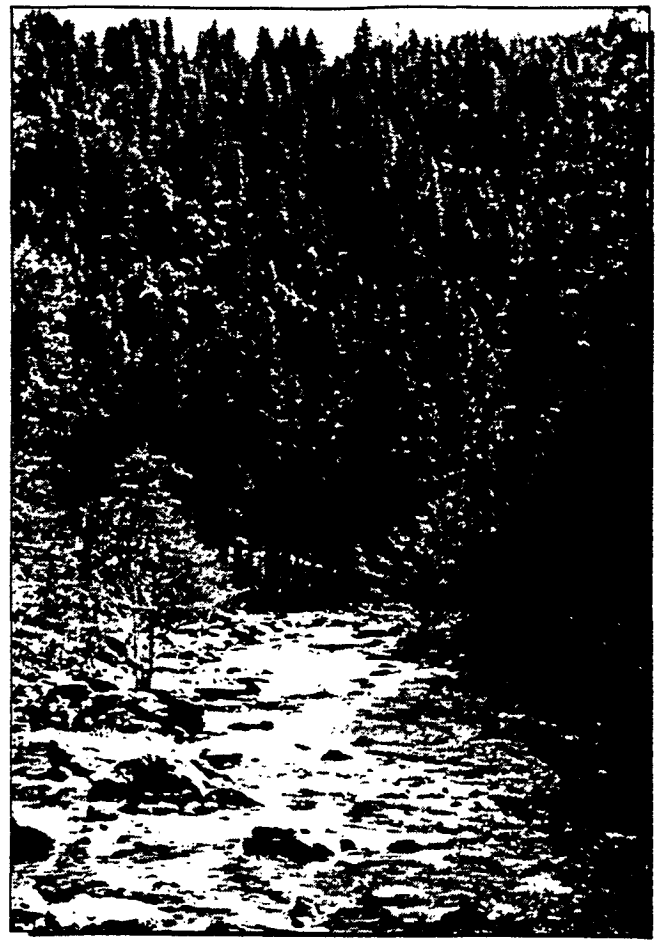
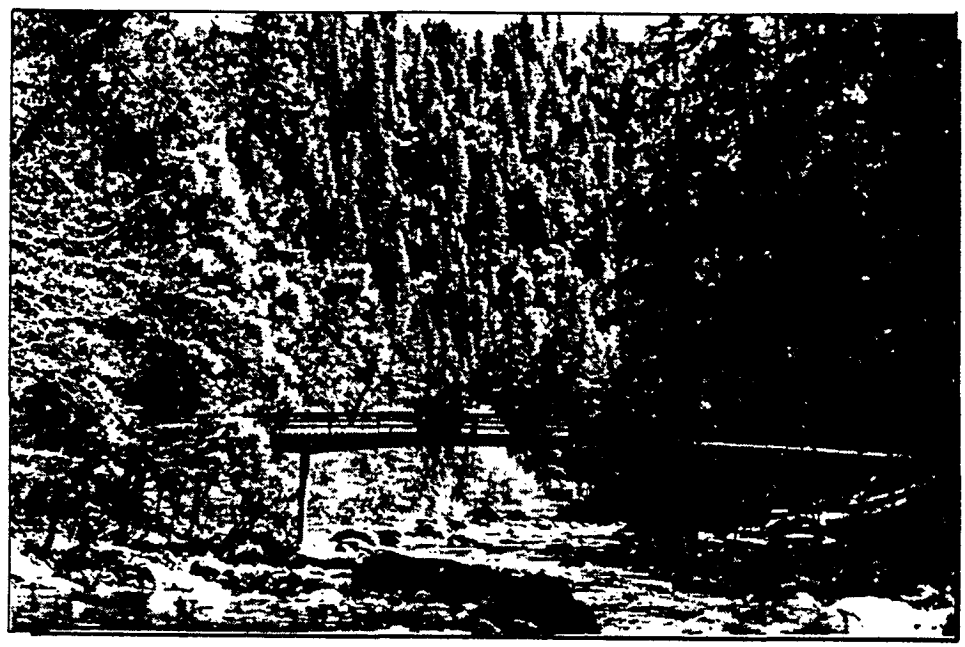




McCLOUD RESERVOIR SETTING UNIT

ASH CAMP
SETTING UNIT





C-014907

LOWER McCLOUD RIVER SETTING UNIT

C-014908

C-014908

LOWER McCLOUD RIVER SETTING UNIT
(cont'd.)

C-014909

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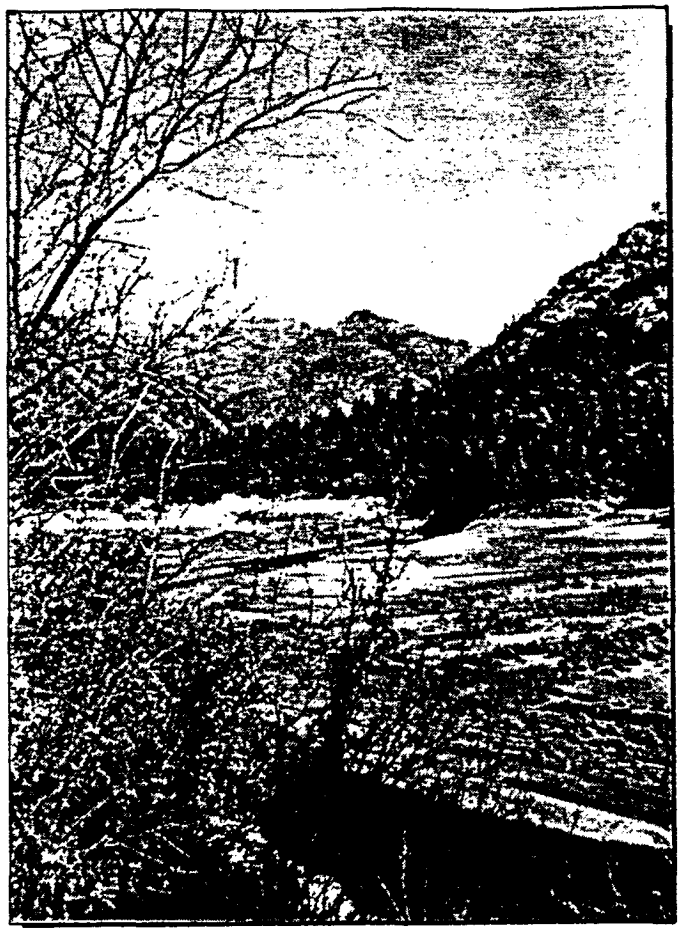
SHASTA LAKE
SETTING UNIT



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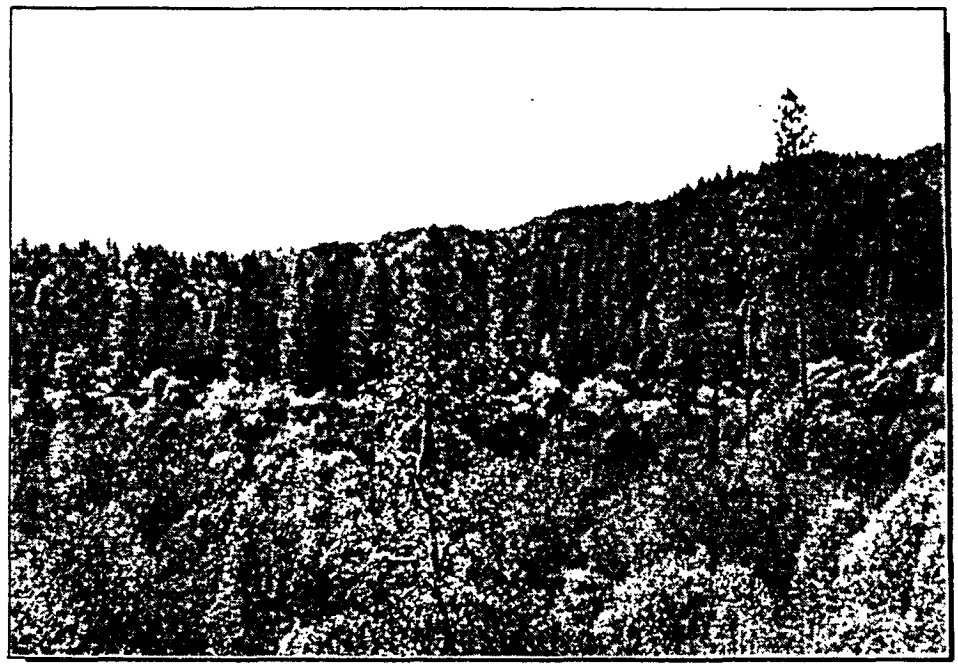

SQUAW VALLEY CREEK MEADOWS SETTING UNIT

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SQUAW VALLEY CREEK
SETTING UNIT

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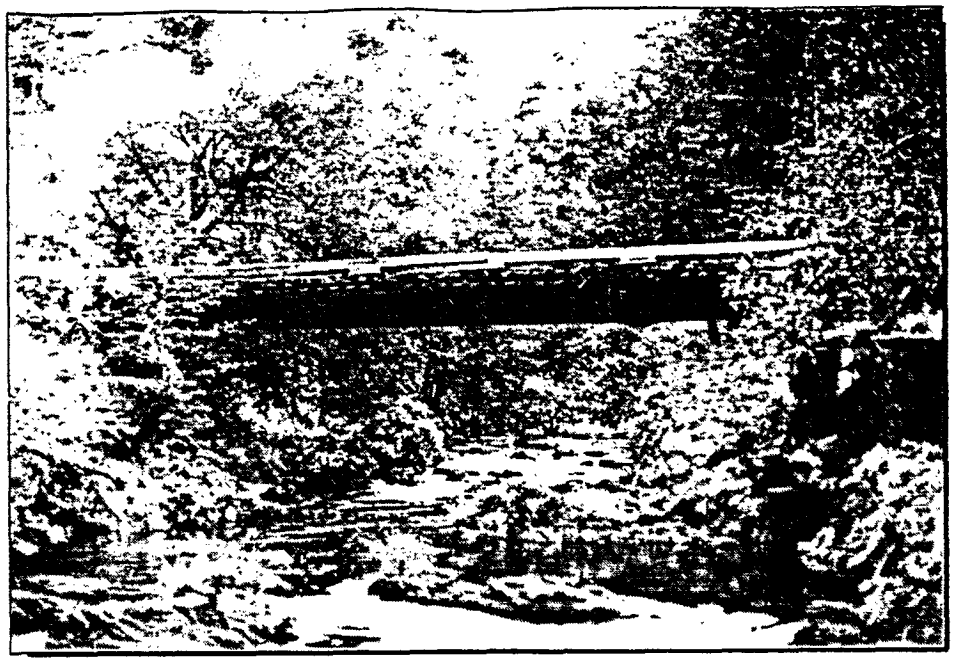


SQUAW VALLEY CREEK SETTING UNIT
(cont'd.)

C-014913

Appendix E

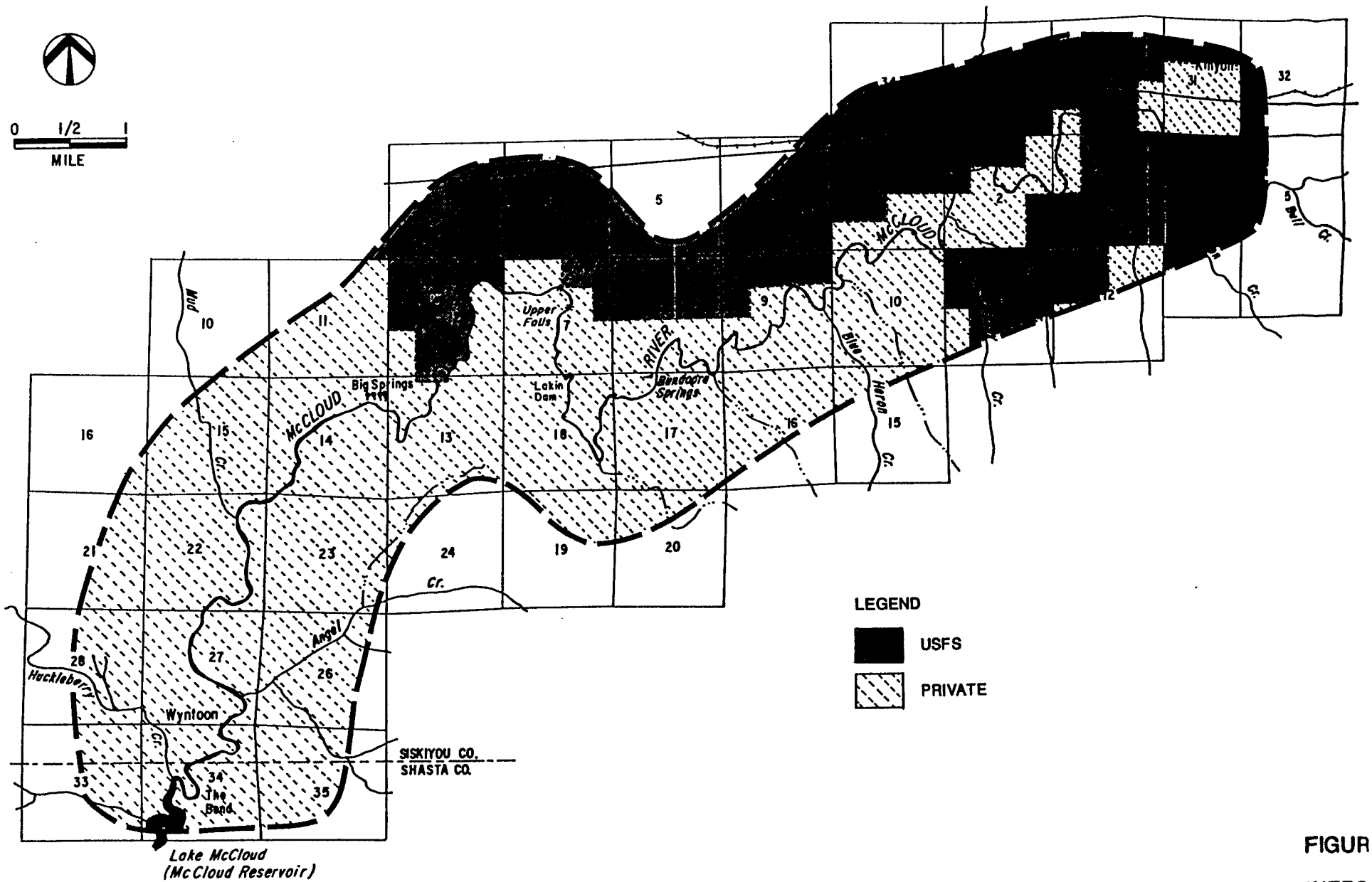
LIST OF ACRONYMS

Appendix E

LIST OF ACRONYMS

Acronym	Meaning
Act	California Wild and Scenic Rivers Act
BEA	United States Bureau of Economic Analysis
BLM	United States Bureau of Land Management
California Act	California Wild and Scenic Rivers Act
California System	California Wild and Scenic Rivers System
CDFFP	California Department of Forestry and Fire Protection
CEQA	California Environmental Quality Act
cfs	cubic feet per second
Champion	Champion International, Inc.
DFG	California Department of Fish and Game
FERC	Federal Energy Regulatory Commission
Guidelines	Final Revised Guidelines for Eligibility, Classification, and Management of River Areas
MYBP	Million years before the present
National Act	National Wild and Scenic Rivers Act
National System	National Wild and Scenic Rivers System
PCT	Pacific Crest Trail
PGandE	Pacific Gas and Electric Company
Preserve	McCloud River Preserve
RVD	recreation visitor-days
Secretary	Secretary of The Resources Agency

Acronym	Meaning
State	State of California
SWRCB	California State Water Resources Control Board
System	California Wild and Scenic Rivers System
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFS	United States Forest Service
USGS	United States Geological Survey



FIGUR

LAND OWNERS

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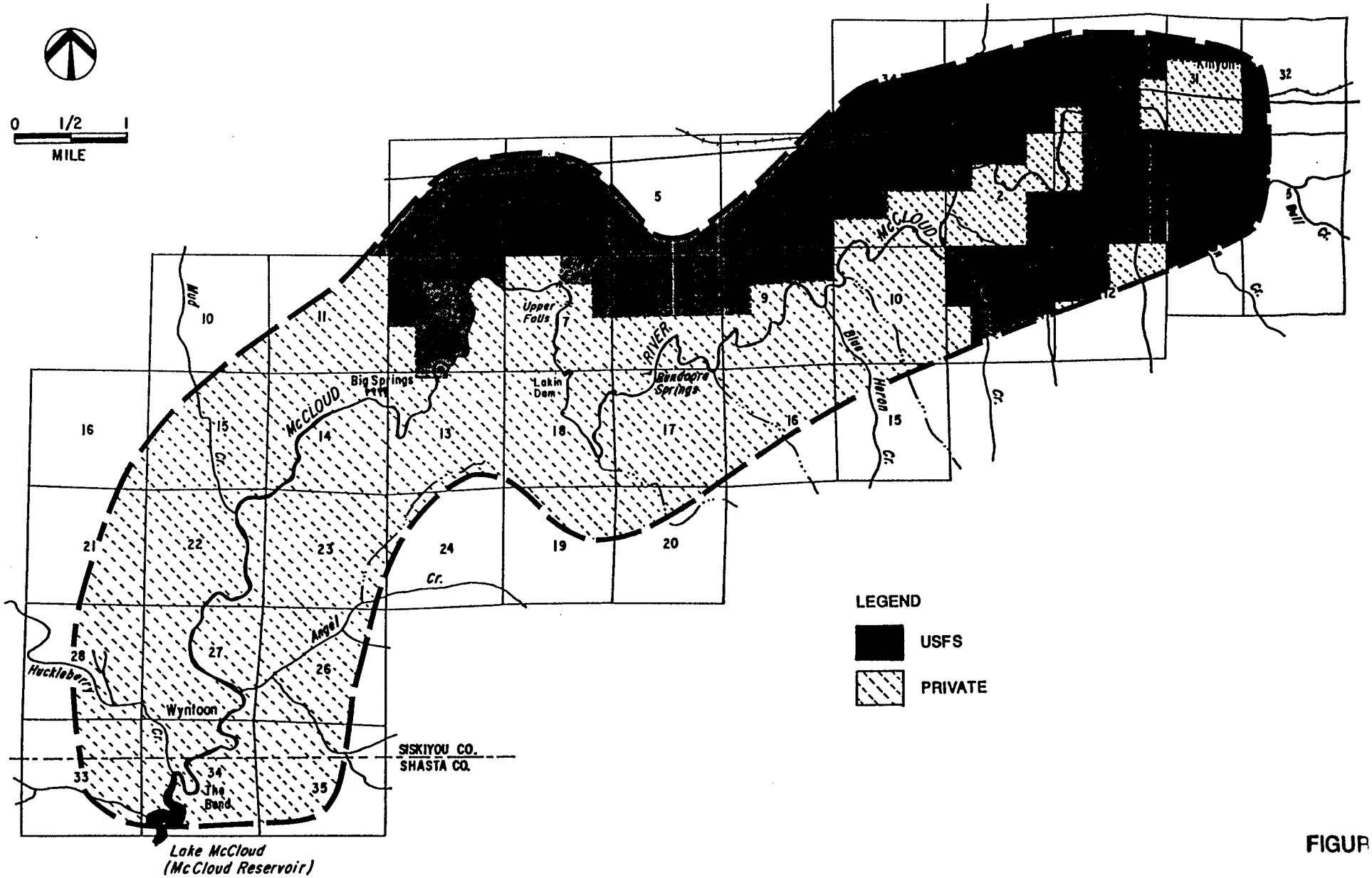

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LAND OWNERS

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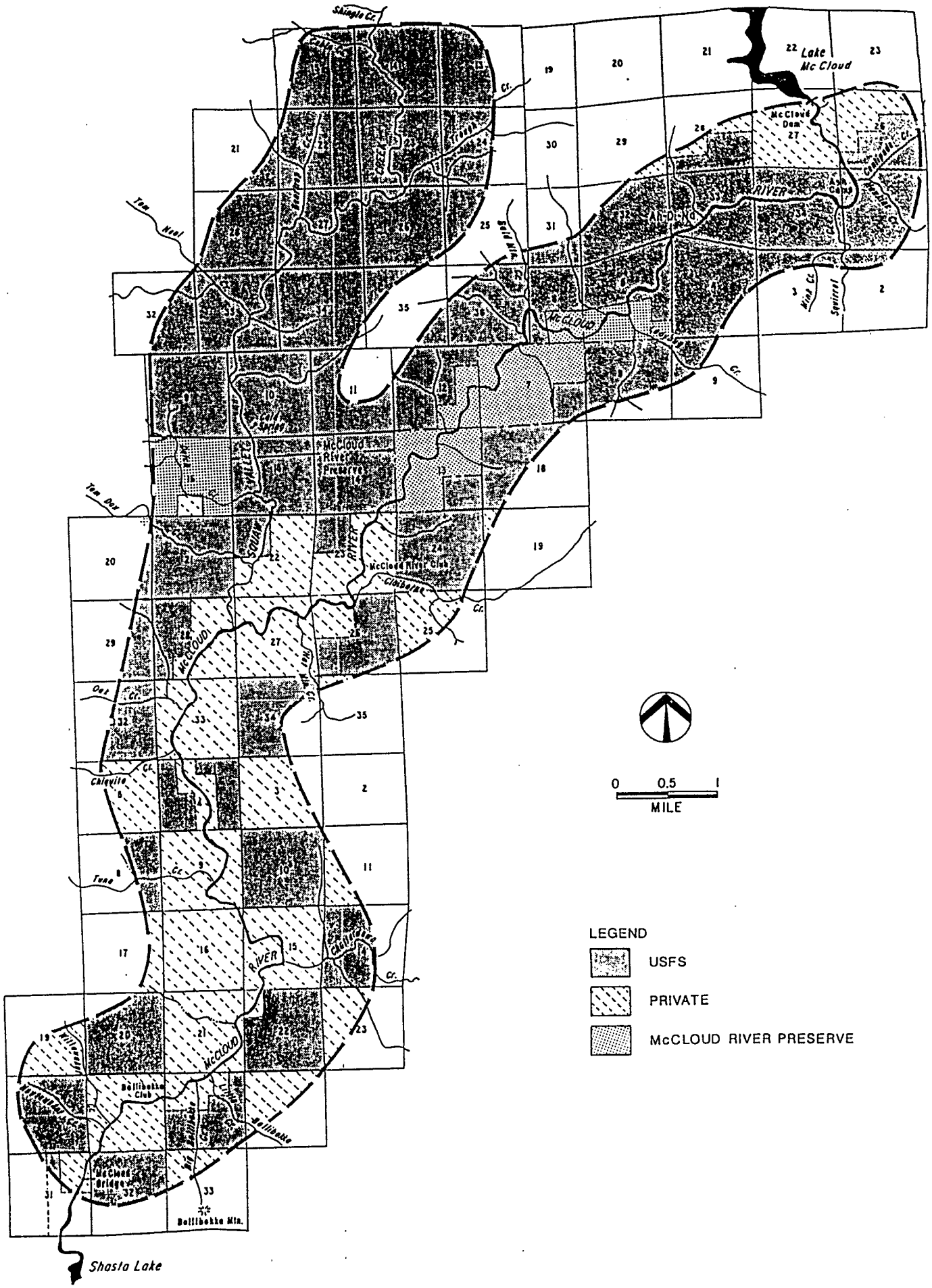
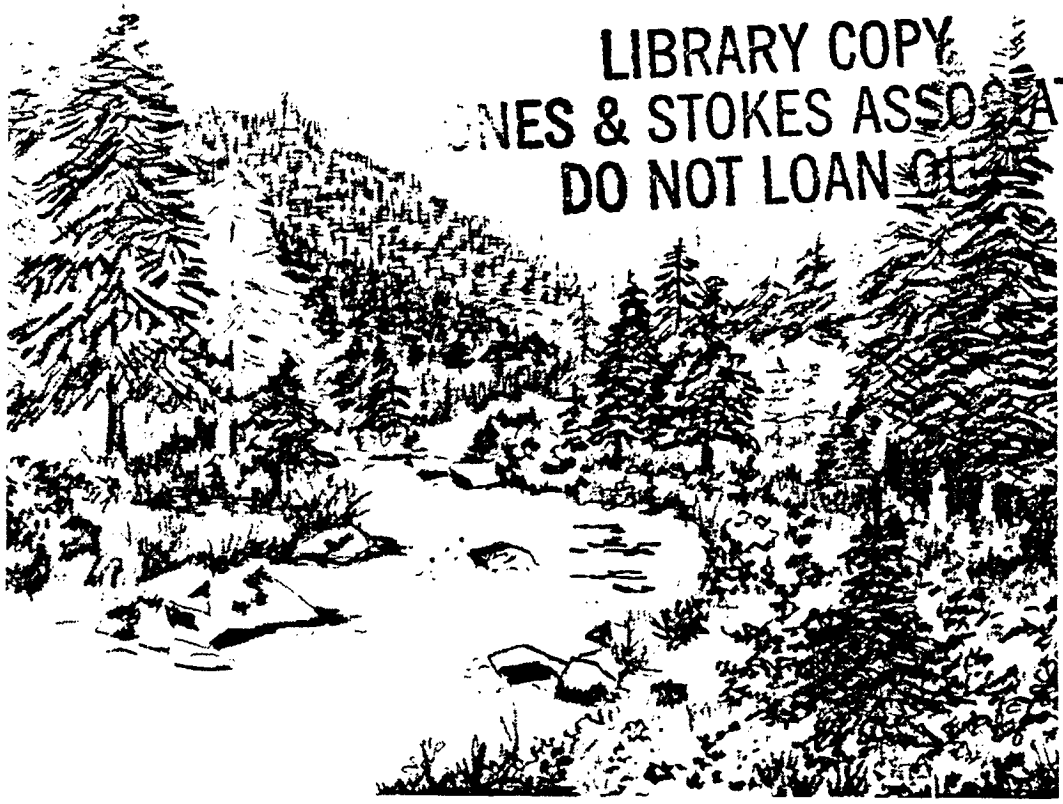

Lake Mc Cloud
McCloud Dam
McCloud River Preserve
McCloud River Club
Bellibekke Club
McCloud Bridge
Bellibekke Mtn.
Shasta Lake
0 0.5 1
MILE
LEGEND
USFS
PRIVATE
McCLOUD RIVER PRESERVE

C-014919

McCLOUD RIVER
WILD AND SCENIC RIVER STUDY REPORT

VOLUME II
RESOURCE EVALUATIONS



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Prepared for:

THE RESOURCES AGENCY OF CALIFORNIA

Prepared by:

JONES & STOKES ASSOCIATES, INC.

JUNE 1988

C—014920

C-014920

McCLOUD RIVER
WILD AND SCENIC RIVER STUDY REPORT

VOLUME II
RESOURCE EVALUATIONS

Submitted to:

The Resources Agency of California
1416 Ninth Street, Room 1311
Sacramento, CA 95814

Submitted by:

Jones & Stokes Associates, Inc.
1725 - 23rd Street, Suite 100
Sacramento, CA 95816

June 1988

C-014921

C-014921

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INTRODUCTION

Chapter 1

INTRODUCTION

REPORT ORGANIZATION

Volume II presents technical resource evaluations in support of the Volume I McCloud River Wild and Scenic River Final Study Report. The primary objective of these evaluations was to determine whether each resource under study was of extraordinary value. By definition, resource values are extraordinary if they are, individually or collectively, unusual or unique in California and provide benefit and enjoyment to the people of the State.

Evaluations for the following resources are contained within this volume:

- Geology, soil, and mineral
- Water quality and water
- Botanical
- Wildlife
- Fishery
- Recreational
- Scenic
- Cultural and historic

The evaluation of these resources required extensive data gathering, review, and analysis, dictating their compilation in this separate volume. Evaluations for each of these resources are summarized in Volume I along with brief evaluations of climate, air quality, scientific, ecological, and educational resources.

Each chapter of this report, in conjunction with this introductory chapter, can stand alone as a separate report. It is expected that individuals may want to focus specifically on one or a few evaluations. These "free-standing" chapters facilitate the use of this document as an information source or as background material in support of resource value ratings. For this reason, however, there is some duplication of material between chapters.

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STUDY AREA DEFINITIONS

Under the California Wild and Scenic Rivers Act (Act), designated river boundaries extend "up to the first line of permanently established riparian vegetation." This means that only the area of the river channel between the upstream and downstream segment boundaries is covered under the Act. To evaluate the resources that might prove a river worthy of designation under the Act, a broader area of investigation is needed.

Resource evaluations typically were conducted using a nested set of three study areas: regional, secondary, and primary. The regional study area generally coincides with the watershed boundaries of the nominated rivers with some flexibility in boundaries to accommodate each different resource. A general description of the resources of the regional study area provided a broad perspective upon which specific resources were evaluated.

The secondary study area was approximately 2 miles wide (boundaries located 1 mile from each riverbank) between the upper and lower boundaries of the nominated river segments. The 2-mile-wide study area facilitates a thorough resource inventory within the general environment of the rivers under study. The primary study area coincides with the boundaries established in the Act and extends up to the first line of permanently established riparian vegetation within the upper and lower boundaries of the nominated river segments.

Primary and secondary study areas were not differentiated for recreation, scenic, and cultural and historic resources. In these cases, the division between primary and secondary study areas would have been artificial and arbitrary, and a better representation of the area was achieved by disregarding the boundary between primary and secondary boundaries.

The river segments nominated for inclusion in the California Wild and Scenic Rivers System were divided into shorter segments as necessary to facilitate greater accuracy in data collection, analyses, and recommendations. Segmentation was resource-specific. This approach promoted more accurate representation of resource values along the river corridor than could have been achieved without the site-specific segmentation. Differences among site-specific segments for different resources were resolved in the final evaluation of nominated segments.

STUDY AREA

The McCloud River flows from an upland basin of gentle topography through chaparral and scrub habitats, rocky canyons,

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and mixed coniferous forests near McCloud, California (Figure 1-1). The study segment of the McCloud River extends approximately 43 miles from Algoma to Shasta Lake, excluding 5 miles of Lake McCloud (Figure 1-2). The Squaw Valley Creek study segment extends 10 miles from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River. Elevations along the McCloud River study segment range from approximately 1,065 to 3,820 feet.

DATA SOURCES AND METHODOLOGY

Resource information was obtained by reviewing published and unpublished literature and maps, interviewing individuals familiar with each resource, and conducting general reconnaissance-level field surveys in fall, 1987. Field surveys included an aerial reconnaissance of the river corridor in a fixed-wing airplane. Each river was hiked and photographed extensively.

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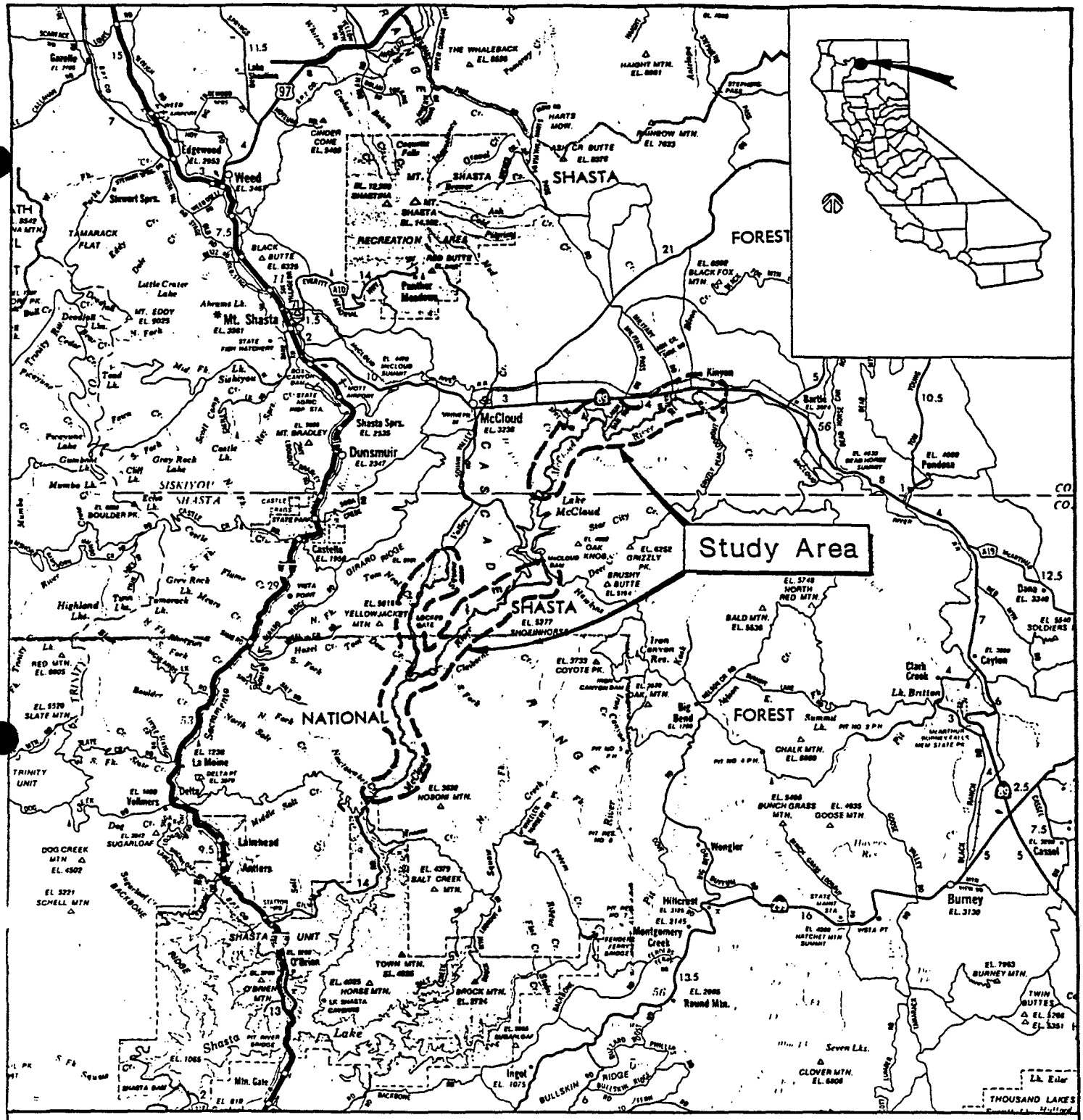

Map copyrighted 1979 by the California State Automobile Association.
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FIGURE 1-1. McCLOUD RIVER LOCATION MAP

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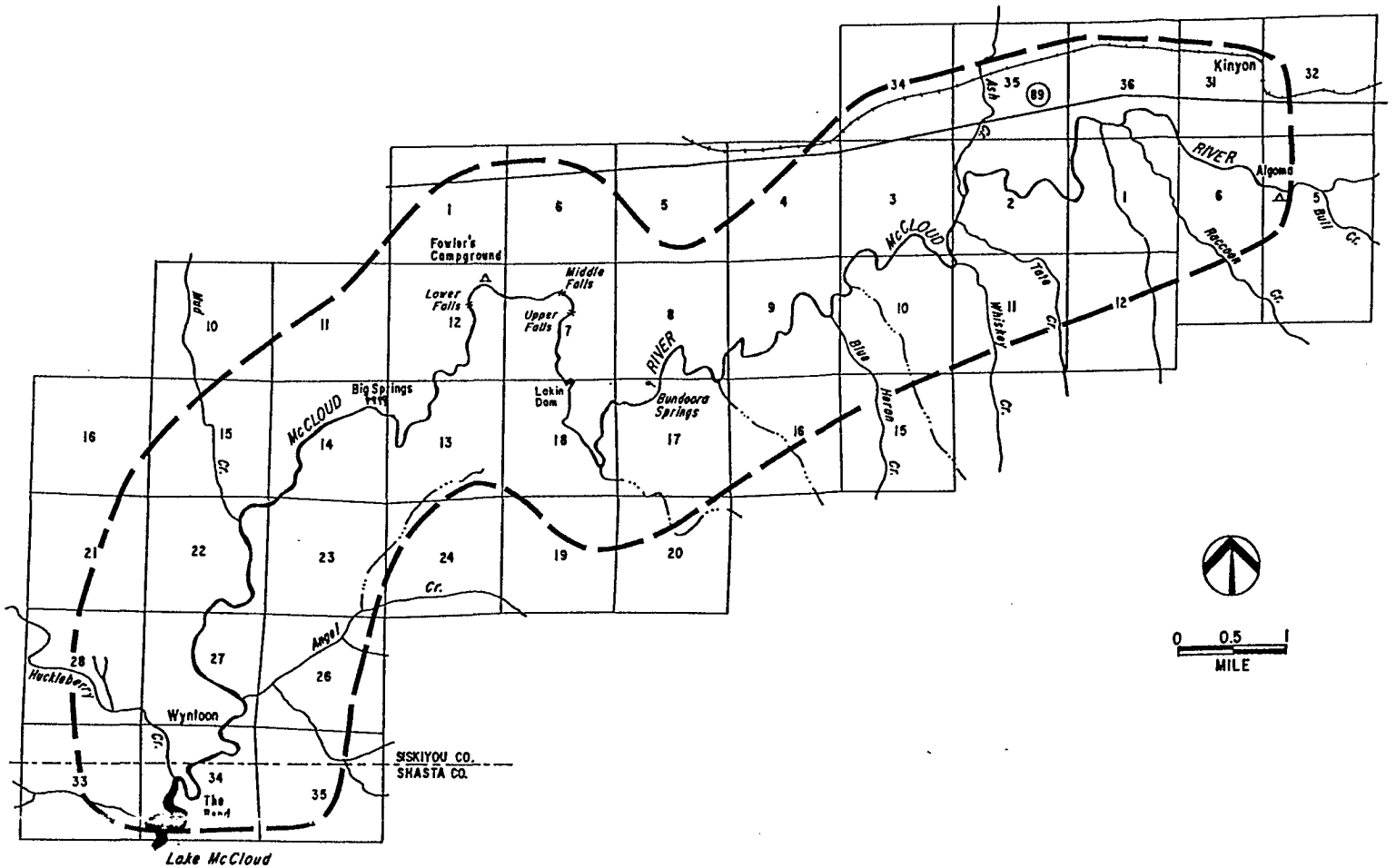

FIGURE 1-2A.
McCLOUD RIVER SECONDARY STUDY AREA

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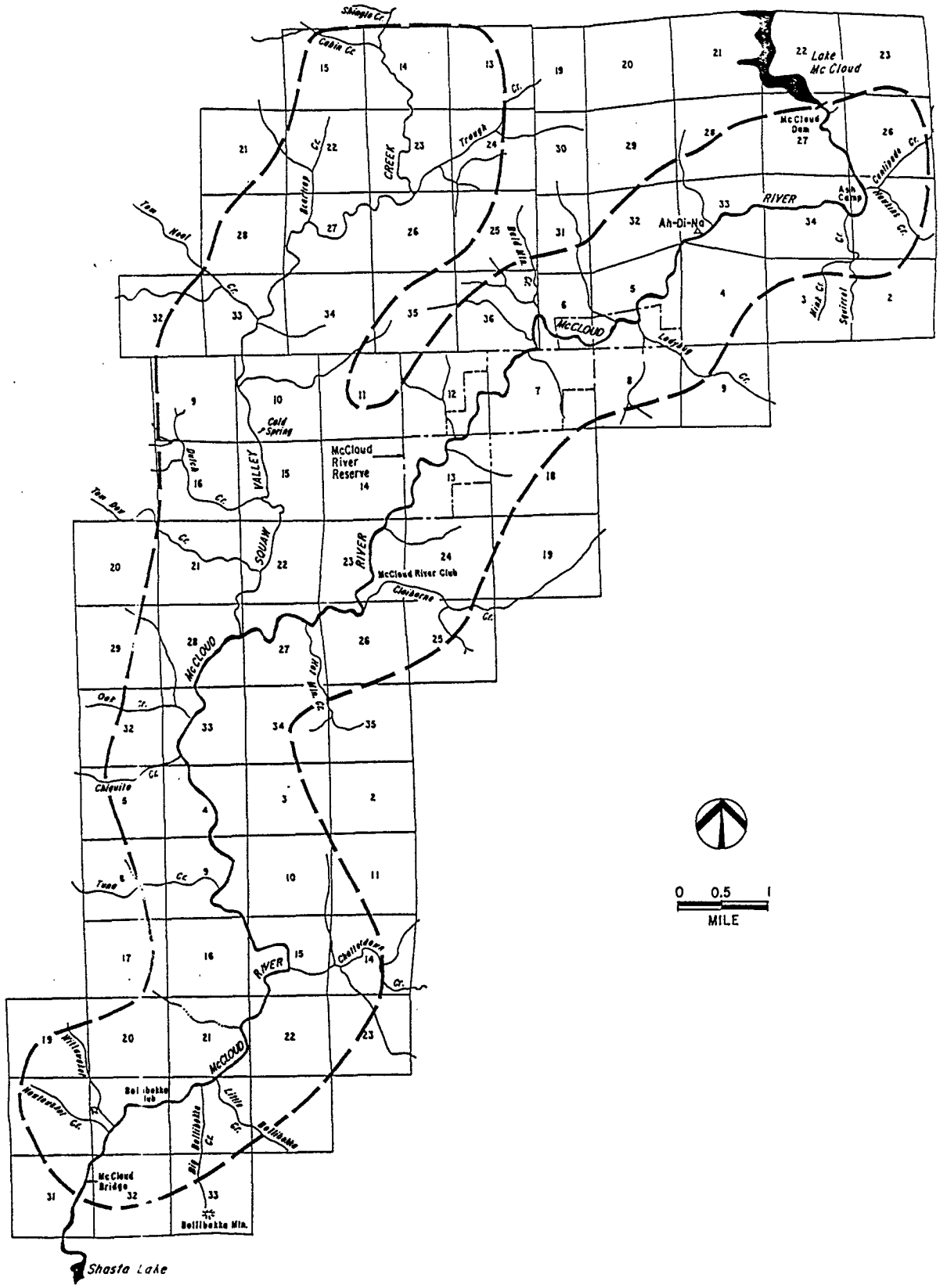

FIGURE 1-2B. McCLOUD RIVER SECONDARY STUDY AREA

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GEOLOGY, SOIL, AND MINERAL RESOURCES EVALUATION

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Chapter 2

GEOLOGY, SOIL, AND MINERAL RESOURCES EVALUATION

Geology and soils are major factors determining the landforms, flora, and fauna of a river corridor. Together with mineral resources, these factors are also responsible for most historic, recent, and potential future patterns of land use and economic development in an area. Geologic features contribute significantly to the "wildness" of rivers, particularly in mountainous regions. Soils and mineral resources may provide opportunities for economic development that would interfere with a river's wild and scenic qualities and associated uses.

This chapter evaluates geology, soil, and mineral resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud River extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

Information on the geology, soil, and mineral resources of the McCloud River region was obtained by reviewing published literature and maps, interviewing individuals familiar with regional geology, and conducting field surveys on October 13-15, 1987.

The study area was divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately 2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act.

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RESOURCE CHARACTERIZATION

Regional

The McCloud River watershed encompasses portions of three geologic provinces. Most of the McCloud River, including all portions south of McCloud Reservoir (Lake McCloud), flows through the eastern belt of the Klamath Mountains Province. This is a region of metamorphosed sedimentary and volcanic rocks laid down in shallow seas from about 140 to 60 million years before the present (MYBP). These seas were created when a small crustal plate containing the northern end of the ancestral Sierra Nevada moved about 60 miles westward to become the Klamath Mountains (Alt and Hyndman 1975). Deposits formed in these seas have since been uplifted, folded, and eroded to form the mountains between the Sacramento Valley and Mt. Shasta.

The northern portion of the McCloud watershed is located in the Cascade Mountains Province. The river flows along the southern edge of this province from east of Algoma nearly to McCloud Reservoir. The Cascades are a series of volcanoes extending from Lassen Peak northward into British Columbia. In the McCloud watershed, the Cascade Mountains Province is dominated by Mt. Shasta. This massive, 14,162-foot peak originated over 100,000 years ago and appears to have been built through four distinct periods of eruptive activity. Many flows are recent, only 300-500 years old. The last eruption may have been as recent as 1857. Mudflows resulting from local warming beneath glaciers occurred as recently as 1924 (Hill 1977, Harris 1980).

The eastern portions of the McCloud watershed are located in the southwest corner of the Modoc Plateau Province. The Modoc Plateau is a region of high volcanic table lands and numerous volcanic cones and craters. Once part of the same seaway that produced the rocks of the eastern Klamath Mountains, this region became buried under extensive lava flows several hundred feet deep from about 50 to 30 MYBP. Geologically, the area is best known today for the rugged landforms in Lava Beds National Monument and the Medicine Lake Highlands (Alt and Hyndman 1975).

Secondary Study Area

Surface Geology

The oldest rocks in the secondary study area are Paleozoic marine sediments. These include the metasedimentary rocks of Carboniferous and Permian age along Squaw Valley Creek above the Dutch Creek confluence and along the upper McCloud River between The Bend and Big Springs. Paleozoic formations are also

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exposed extensively along the McCloud arm of Shasta Lake and enter the study area below the Bollibokka Club (Figure 2-1).

The most noteworthy of these Paleozoic marine deposits is the McCloud limestone of the Permian period. Bands of McCloud limestone cross Squaw Valley Creek at Cold Spring and the McCloud River below the Bollibokka Club. Fossils of marine corals and molluscs in these rocks have been the subject of much recent research interest (Wilson 1970, 1982, 1983). Caves and crevices in the McCloud limestone also provide habitat for several unique animal and plant species. (See "Wildlife Resources" and "Botanical Resources" evaluations.)

Most of the McCloud River Canyon from McCloud Dam to the Bollibokka Club is occupied by Permian meta-volcanic rocks. Intrusions of gabbro and diorite have been mapped in the upper portion of the canyon, between the dam and the McCloud River Preserve. Permian metavolcanic rocks are in contact with Triassic marine deposits along the east side of the canyon. Small amounts of Mesozoic granitic rocks are in contact with McCloud limestone near the Bollibokka Club.

Cenozoic rocks of volcanic origin dominate the upper reaches of the McCloud River. Within the study area, Tertiary and Pliocene basalts generally occur south of the river. Pleistocene basalts originating from Mt. Shasta predominate north of the river. Recent alluvial deposits occur along much of the lower McCloud River, especially at the McCloud River Club, the McCloud Preserve, and Ah-Di-Na. Significant alluvial deposits occur along Squaw Valley Creek between Tom Neal Creek and Dutch Creek.

Big Springs is a unique and outstanding geologic feature on the north bank of the McCloud River about 2 miles downstream of Lower Falls (Figure 2-1). Cold, clear water flows out of talus below a cliff of Pleistocene basalt into the McCloud River at a rate of about 800 cubic feet per second. This water probably originates on the south flank of Mt. Shasta and travels through lava tubes and faults to the McCloud River (Strand 1962, 1963; Hesseldenz pers. comm.). No geological Special Interest Areas are recognized on Shasta National Forest lands within the secondary study area (U. S. Forest Service 1986).

Geologic Hazards

Very few earthquakes have been centered in the McCloud River watershed since 1900 (Real et al. 1978). The nearest to the river was a 4.3 magnitude quake on June 21, 1982, centered about 7 miles east of Wyntoon. Two faults crossing the secondary study area appear to have been active during Quaternary times, between 2 MYBP and the present. Both run north to south, one through the Upper Falls-Middle Falls area,

the other through Big Springs. Several other faults of pre-Quaternary age cross or occur near the river. One of these coincides with the lower, north-south trending segment of Squaw Valley Creek (Jennings 1975).

Volcanic and thermal activity centered at Mt. Shasta has long been an influence north of McCloud Reservoir and may continue to affect the area. In 1924, a mudflow caused by melting ice in the Konwakiton Glacier swept down Mud Creek into the McCloud River, damaging property near the community of McCloud, and muddying the McCloud and Sacramento Rivers with sediment (Harris 1980). Pyroclastic flows and ash falls are also possible in this area. Ash falls are less likely, because prevailing winds would most often blow most ash from Mt. Shasta to the northeast (U. S. Forest Service 1986).

Active and dormant landslides and steep slopes with potential for failure occur along the McCloud River between Shasta Lake and McCloud Dam and along Squaw Valley Creek (U. S. Forest Service 1986).

Soils

Along the upper McCloud River, most soils on Pleistocene volcanic parent materials are moderately acidic gravelly and sandy loams 20-40 inches in depth. Most soils on Tertiary volcanic materials are strongly acidic sandy loams and loamy sands of greater than 40 inches in depth (Mallory et al. 1978).

None of the secondary study area soils support agricultural production. Soils of predominantly gentle to moderate slopes above McCloud Reservoir support sufficient forage for some grazing.

Minerals

No active or historical mines or quarries occur within the study area. Mineral activities in the region surrounding the study area including pumice quarries and geothermal leases near Mt. Shasta, an oil and gas lease at Colby Meadow near the headwaters of the McCloud River, and a quarry in the McCloud limestone near Shasta Lake. It is unlikely that economically developable mineral resources will be found within the secondary study area (Evans 1977, Van Susteren pers. comm.).

Primary Study Area

The channels of the McCloud River and Squaw Valley Creek flow across most of the rock types and geological formations described above. The river bed is composed of alluvium or

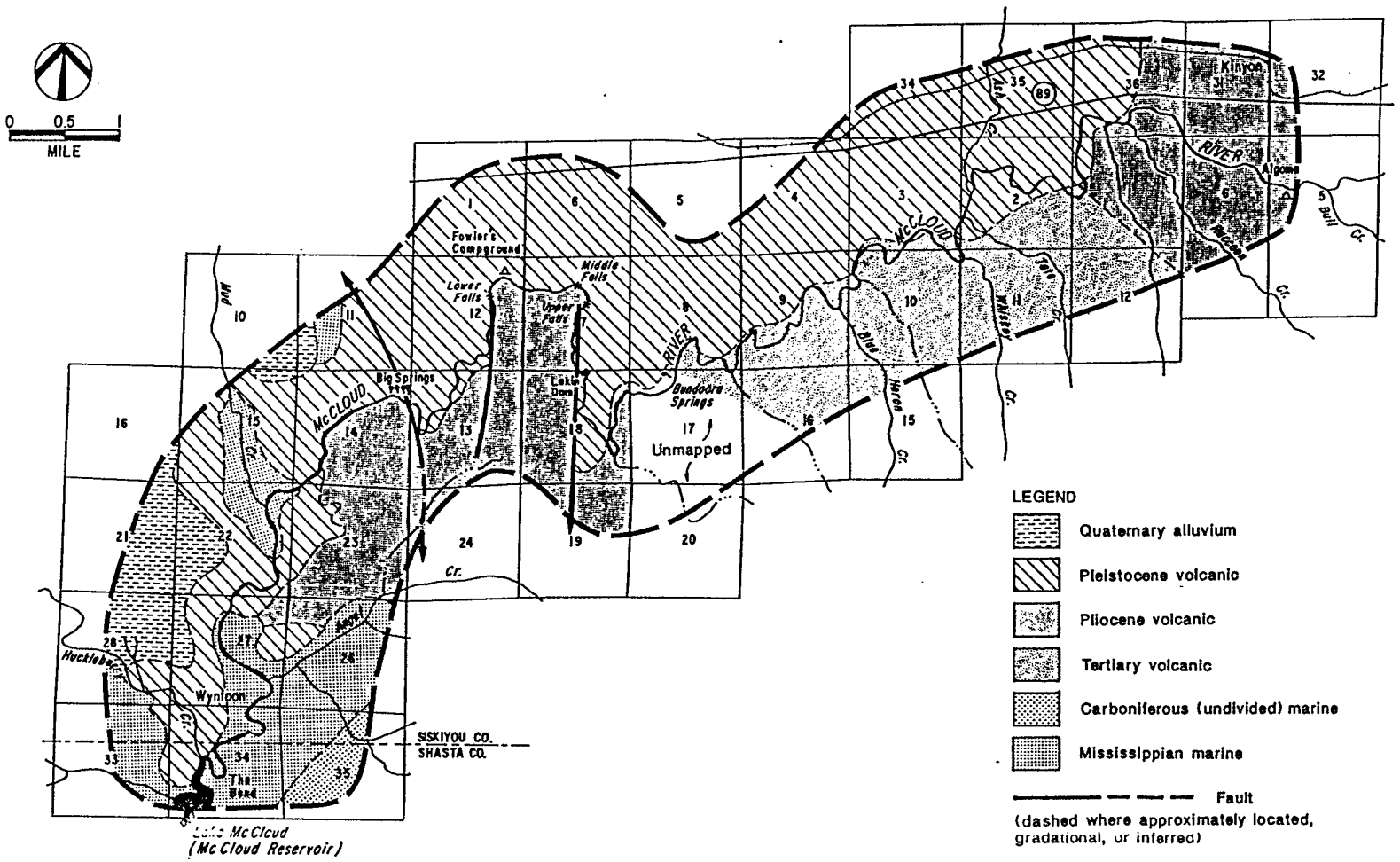

FIGURE 2-1A.
SURFACE GEOLOGY OF THE McCLOUD RIVER

Source: Gay and Aune 1958, Strand 1963

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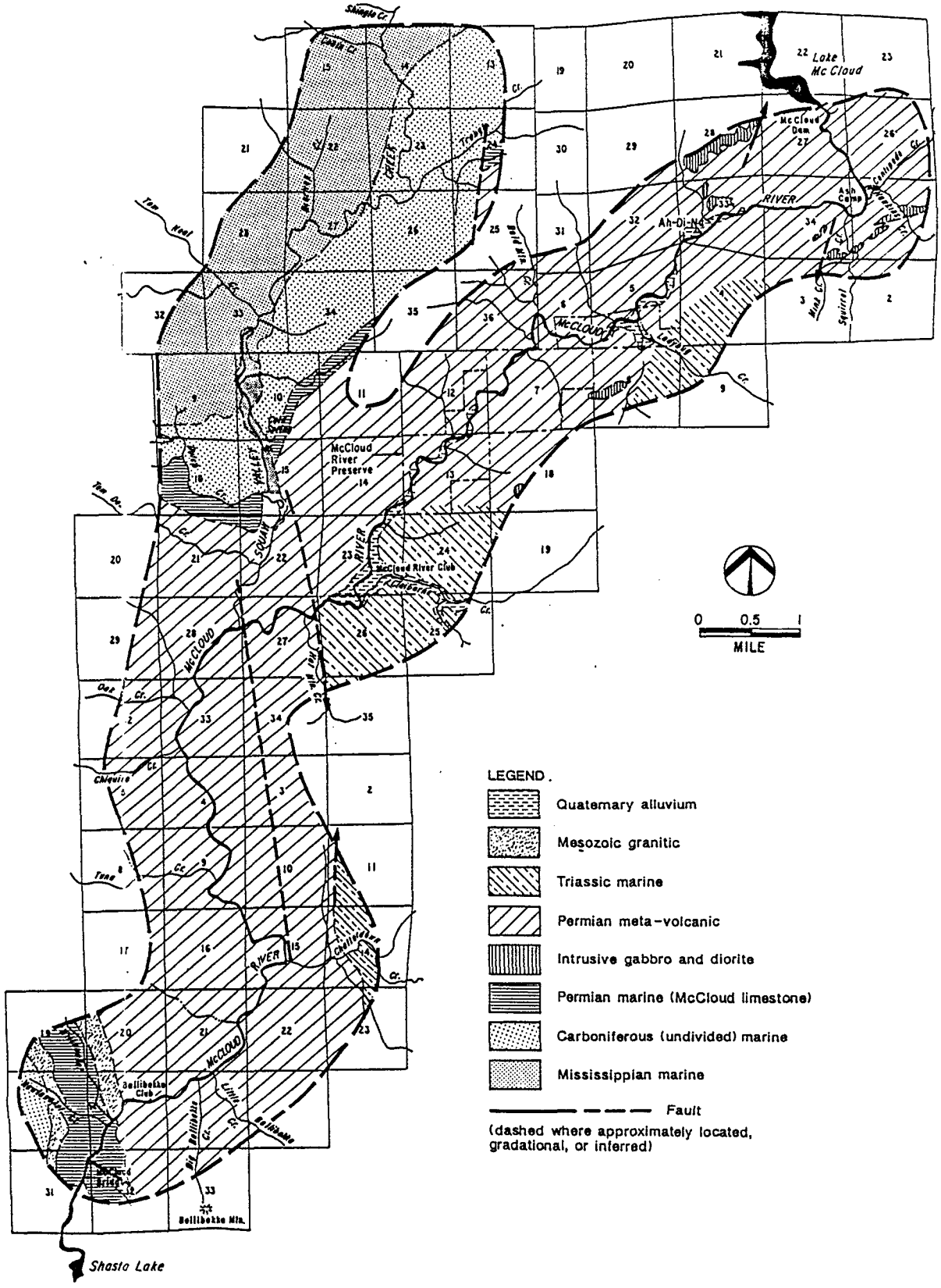

FIGURE 2-1B. SURFACE GEOLOGY OF THE McCLOUD RIVER

Source: Strand 1962, 1963; Miller 1986

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bedrock. Rugged outcrops and cliffs occur intermittently along the river for much of its length.

Big Springs is the most impressive and geologically interesting feature in the primary study area. Three waterfalls are located along the McCloud River east and west of Fowler's Campground where faults cross the stream. Middle Falls is the highest of the three.

CONCLUSIONS

Geological resources throughout the study area are rated as good to excellent from the standpoint of structural significance and value for education and research. Factors supporting this rating are: 1) a high diversity of rock types and geologic formations, 2) three waterfalls on the upper river, and 3) Big Springs, a major headwater source and a unique and remarkable feature. Only Big Springs constitutes an extraordinary resource value.

Soil and mineral resources in the study area are rated as poor to fair from the standpoint of potential economic value. Factors preventing a higher rating are: 1) the absence of important historical or existing mineral resources, and 2) the steepness or rockiness of many sites that might otherwise favor grazing or timber harvesting.

BIBLIOGRAPHY

References Cited

Alt, D. D. and D. W. Hyndman. 1975. Roadside geology of northern California. Mountain Press Publishing. Missoula, MT. 244 pp.

Evans, J. R. 1977. Economic geology of the McCloud limestone. California Geology 30(6):123-132.

Gay, T. E. and Q. A. Aune. 1958. Geologic map of California: Alturas sheet. California Department of Mines and Geology. San Francisco, CA. Map.

Harris, S. 1980. Fire and ice: the Cascade volcanoes. The Mountaineers and Pacific Search Press. Seattle, WA. 316 pp.

Hill, M. 1977. Glaciers of Mt. Shasta. California Geology 30(4):75-80.

Jennings, C. W. 1975. Fault map of California with locations of volcanoes, thermal springs, and thermal wells. (California Geologic Data Map Series, Map No. 1.) California Division of Mines and Geology. San Francisco, CA. Map.

Mallory, J. I., R. G. Dixon, and W. R. Powell. 1978. Tables for the soil-vegetation map northwest quarter of the Big Bend quadrangle (15c-2), Siskiyou County, California. U. S. Forest Service, Pacific Southwest Forest and Range Experiment Station. Berkeley, CA. 7 pp.

Miller, M. M. 1986. Tectonic evolution of late Paleozoic inland arc sequences in the western U. S. cordillera; with detailed studies from the eastern Klamath Mountains, northern California. (Ph.D. dissertation.) Stanford University. Stanford, CA. Unknown pages.

Real, C. R., T. R. Toppozada, and D. L. Parke. 1978. Earthquake epicenter map of California, 1900 through 1974. (Map Sheet 39.) California Division of Mines and Geology. Sacramento, CA. Map.

Strand, R. G. 1962. Geologic map of California: Redding sheet. California Department of Mines and Geology. San Francisco, CA. Map.

_____. 1963. Geologic map of California: Weed sheet. California Department of Mines and Geology. San Francisco, CA. Map.

U. S. Forest Service. 1986. Draft environmental impact statement: Shasta-Trinity National Forests land and resource management plan. USDA, Shasta-Trinity National Forest. Redding, CA. Ca. 1,000 pp.

Wilson, E. C. 1970. Conocardium langerheimi sp. n. (Mollusca: Bivalva) in the lower Permian series of the McCloud limestone, northern California. (Contributions in Science No. 184.) Natural History Museum of Los Angeles County. Los Angeles, CA. 14 pp.

_____. 1982. Wolfcampian rugose and tabulate corals (Coelenterata: Anthozoa) from the lower Permian McCloud limestone of northern California. (Contribution in Science No. 337.) Natural History Museum of Los Angeles County. Los Angeles, CA. 90 pp.

_____. 1983. Stratigraphic range extensions and coral province affiliations of stony corals in the lower Permian McCloud limestone of California. P. 41 in Fourth International Symposium on Fossil Cnidaria, August 7-12, 1983. Abstracts. Washington, DC.

Personal Communications

Hesseldenz, T. October 13, 14, 15, 1987. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Meeting.

Van Susteren, P. December 3, 1987. Forest Lands and Minerals Staff Officer. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation.

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WATER QUALITY AND WATER RESOURCES EVALUATION

Chapter 3

WATER QUALITY AND WATER RESOURCES EVALUATION

Suitable water quality and water resources provide the foundation for any evaluation of rivers nominated for inclusion in the California Wild and Scenic Rivers System. These resources significantly influence all of the primary values--scenic, recreational, fishery, and wildlife--that dictate wild and scenic river status. Water use in California greatly limits the number of free-flowing rivers with high-quality water. In turn, river values are frequently degraded as a result of using the water.

This chapter evaluates water quality and water resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud River extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

These water quality and water resources descriptions were prepared using available State and federal information sources. Streamflow measurement and water quality records were obtained from the California Department of Water Resources' (DWR) Water Data Information System (WDIS), U. S. Geological Survey's (USGS) National Water Data Storage and Retrieval System (WATSTORE), and other special data from various private and federal entities. USGS topographic maps and aerial photographs were used to identify major water resource features and other regional hydrologic characteristics. Historical data collected by researchers at The Nature Conservancy's McCloud River Preserve (Preserve), in addition to information gained through a field reconnaissance on October 13-15, 1987, also were used in this analysis. Previous studies of other California wild and scenic rivers were reviewed for additional information.

The McCloud River was divided into three segments--upper, middle, and lower--for data presentation. The upper segment includes 20 river miles from the U. S. Forest Service (USFS) campground at Algoma to McCloud Reservoir (Figure 1-2). The middle segment encompasses 14 river miles from McCloud Dam to

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the Squaw Valley Creek confluence. The lower segment extends 9 miles from Squaw Valley Creek to Shasta Lake. The 10-mile study reach on Squaw Valley Creek was unsegmented. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and middle segments. Surface water elevation fluctuations at both Shasta Lake and McCloud Reservoir each generally affect approximately 2 river miles on a temporary basis.

RESOURCE CHARACTERIZATION

Basin Description

Draining approximately 670 square miles of land in Siskiyou and Shasta Counties, the McCloud River flows southwesterly through young volcanic and older metamorphic formations that form the southern flank of Mt. Shasta. The McCloud River drainage basin is situated in the "land of fire and ice," a transitional zone between the Cascade Volcanic Mountain Range to the north and the heavily glaciated granitic Sierra Nevada Range to the south. Active volcanism and recent glaciations in this zone create a very complex hydrologic system.

The McCloud River originates on a midelevation plateau at Colby Meadow, an upland basin of gentle topography situated 4,250 feet above sea level. The river flows for many miles as a small stream, both above and within the upper study area. The general region is marked with a variety of geologically young volcanic formations such as mudflows and basaltic lava flows, which are partly responsible for the staircase of waterfalls found on the upper McCloud River. These fluid basaltic lava flows traveled for many miles, blocking the ancestral course of the McCloud River, which previously flowed northward to the Klamath River (Hesseldenz 1984). All three waterfalls--Upper, Middle, and Lower Falls--are within a 1.5-mile section of the river (Figure 1-2). Only 2 miles below Lower Falls, Big Springs contributes approximately 800 cubic feet per second (cfs) of water to the river, cascading over basalt talus slopes covered with thick mats of moss and algae. From here the river flows unimpaired for 5.5 miles before entering McCloud Reservoir. McCloud Dam diverts a maximum of 900 cfs from the river for hydroelectric generation. The middle and lower McCloud River constitute the most remote and primitive river segments, although flows are impaired by McCloud Dam located upstream. Dense stands of virgin forest surround the river and its tributaries in these segments.

Most McCloud River tributaries form on the southern and eastern slopes of Mt. Shasta. The porous and highly permeable volcanic formations, soils, and creeks that traverse this volcanic topography absorb water rapidly, recharging local groundwater basins. This stored water is a significant factor contributing to sustained summer flows observed in the region's

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creeks and springs. Groundwater springs of various sizes and flow rates, such as Big Springs, issue cold, clear water and are found throughout the McCloud River basin. One of the largest springs (1,250 million gallons/day) in the United States is Fall River Springs, situated at the headwaters of the Pit River, which is located 20 miles east of the McCloud River headwaters.

Regional runoff characteristics are related to winter precipitation and the gradual warming and melting of high water content snowpack on the slopes of Mt. Shasta in spring and summer. Winter precipitation, in conjunction with groundwater, provides variable flows in winter. As spring approaches and air temperatures increase, annual snowpacks at lower elevations begin to melt, providing the first source of continuous water to ephemeral creeks and supplementing flow in perennial streams. Continued warming and establishment of the summer heating period gradually melts snowfields at higher elevations, sustaining earlier runoff. Glacial meltwater from Mt. Shasta's relic, Pleistocene-age glaciers also provides water. This combination of available snowbound water at various elevations provides water runoff throughout the summer period characteristic of most high mountainous regions.

Streamflow characteristics and major water diversions in the watershed are currently measured at five locations on the McCloud River. Pacific Gas and Electric Company (PGandE) maintains these gaging stations as part of Federal Energy Regulatory Commission (FERC) license requirements for the construction and operation of McCloud and Iron Canyon Reservoirs. USFS streamflow records for the 1984 water year were selected to characterize flow regimes. Although the 1984 runoff was slightly above normal, the average flows recorded are not substantially different when compared to other water years, and seasonal trends in streamflow can be illustrated.

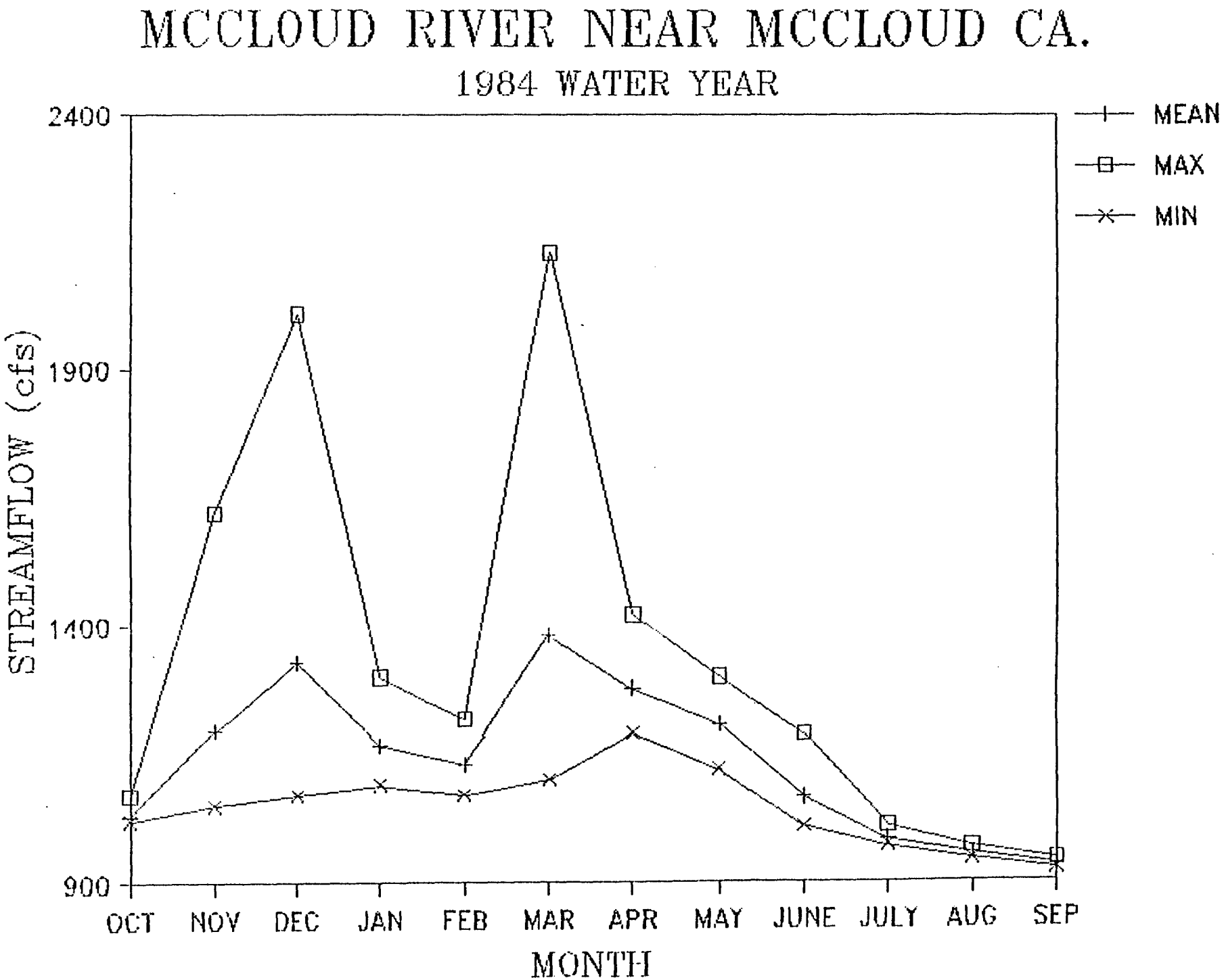
Basin Hydrology

Upper McCloud River

Streamflow data collected at the PGandE gaging station, McCloud River near McCloud, located upstream of McCloud Reservoir, measure drainage from a 358-square-mile area of the McCloud River basin (U. S. Geological Survey 1984). Monthly mean, maximum, and minimum flows for 1984 are illustrated in Figure 3-1. Flows in this stretch of river are fairly uniform, due in large part to relatively stable inflow from Big Springs. Peak streamflows occur during periods of large precipitation events (typically November and December) and snowmelt runoff (typically March or April).

Major water resources in this river segment include Mud, Ash, and Huckleberry Creeks and Big and Bundoora Springs.

FIGURE 3-1. MONTHLY FLOWS FOR THE McCLOUD RIVER



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Mud, Ash, and Huckleberry Creeks. Mud Creek is a significant water and sediment source to the upper McCloud River during summer months. Mud Creek originally entered the McCloud River several miles upstream of Wyntoon. It has been diverted from its natural course into Huckleberry Creek, located just south of Mud Creek. The Mud Creek diversion was constructed by the Hearst Corporation to reroute the mouth of Mud Creek below the Hearst Mansion at Wyntoon. This diversion dam and canal reduce aesthetic and water quality impacts created by turbid summer flows from Mud Creek. Huckleberry Creek flows directly into McCloud Reservoir when reservoir levels are high during the spring.

The Wintu and Konwakiton Glaciers, located on Mt. Shasta's southern face, are exposed to the hot summer sun for several hours a day. These remnants of ancient glaciers have been slowly melting each summer for several centuries, providing the principal source of water to several creeks, most notably Mud and Ash Creeks. These creeks transport the glacial water downstream, cutting through beds of volcanic ash, welded tuff, and breccia and mudflow formations, eventually depositing their heavy sediment loads into the McCloud River. This sediment source is partially responsible for the turquoise-green color of the McCloud River.

Big Springs and Bundoora Springs. Streamflow in the lower portion of the upper McCloud River is controlled primarily from groundwater inflow from Big Springs; Big Springs consists of a group of springs located upstream from the confluence of Mud Creek with the mainstem of the McCloud River (Figure 1-2). The springs vary in size and flow rate and bubble up from the ground or cascade down the face of fractured basalt cliffs that border the river's northern edge. They are believed to be the surface expression of a collapsed terminous of an ancient lava tube. The springs have a summer peak flow, in contrast to winter and spring peak flows upstream from the springs (Hesseldenz 1984). The source of water in the springs is thought to be from snowmelt and deep groundwater from Mt. Shasta. The year-round inflow from Big Springs to the McCloud River is estimated as approximately 800 cfs (Duffy pers. comm.). Depending upon seasonal and meteorological conditions, this rate can represent 50-85 percent of the total monthly river flow. This constant supply of cold (43°F) water provides a uniform baseflow and is a key component of the high-quality fishery observed in the river.

Big Springs is a unique water resource feature of the McCloud River basin. During the field trip conducted for this study, it was obvious that Big Springs is the most important functional element, in terms of flow, for the McCloud River system. While other Sierra Nevada rivers, which are primarily dependent upon precipitation for streamflow, were experiencing below normal streamflows during summer 1987, the upper McCloud River was unaffected by the abnormal meteorological conditions.

Middle McCloud River

Two gaging stations measure streamflow in this river segment. Streamflow data collected at the Ah-Di-Nah Station were used to characterize streamflow. This station measures instream flow releases from McCloud Dam and tributary flow from Hawkins, Mink, and Squirrel Creeks, which enter the river to the east. Ladybug, Bald Mountain, Claiborne, and Hat Mountain Creeks, in addition to several unnamed creeks and springs, provide additional flow to the McCloud River below the Ah-Di-Nah Station.

Streamflow in the middle McCloud River (Figure 3-2) is controlled primarily from McCloud Reservoir releases. Minimum instream flow releases immediately downstream of McCloud Dam stipulated in Article 31 of PGandE's FERC license are 40 cfs from December 1 through June 30 and 50 cfs during the remainder of the year. Minimum instream flow releases for the McCloud River below Hawkins Creek at Ah-Di-Na are 160 cfs in January and February, 170 cfs in March and April, 200 cfs from May through August, 210 cfs from September to December 15, and 170 cfs from December 16-December 31. Minimum flow requirements are reduced to between 160 and 180 cfs from May 15 through December in dry years. When necessary, releases to meet flow requirements at Ah-Di-Na are made through a pipe located below McCloud Dam. The stable summer baseflow is a prime reason for the successful fishery in this segment. Significant streamflow fluctuations are related to increases or decreases in the flow release schedule established for McCloud Reservoir, spills from the dam during heavy rainfall periods, and tributary inflow.

Prior to construction and operation of McCloud Reservoir, and diversion of water through the McCloud-Iron Canyon diversion tunnel, the maximum discharge measured at this gage was 9,660 cfs on December 22, 1964 (U. S. Geological Survey 1984). Today, maximum flows rarely even approach this magnitude.

Lower McCloud River

This river segment is the most primitive. Stream gradients average 50-75 feet per mile through dense forest canopy. The 9-mile segment of the lower McCloud River has seven major tributaries, listed from north to south: Squaw Valley Creek, Oak Creek, Chiquito Creek, Tuna Creek, Chatterdown Creek, and several unnamed springs and tributaries.

Peak and base streamflows are much higher when compared to the middle McCloud River (Figure 3-3); tributary inflow, especially from Squaw Valley Creek, is significant in this lower segment.

FIGURE 3-2. MONTHLY FLOWS FOR THE McCLOUD RIVER

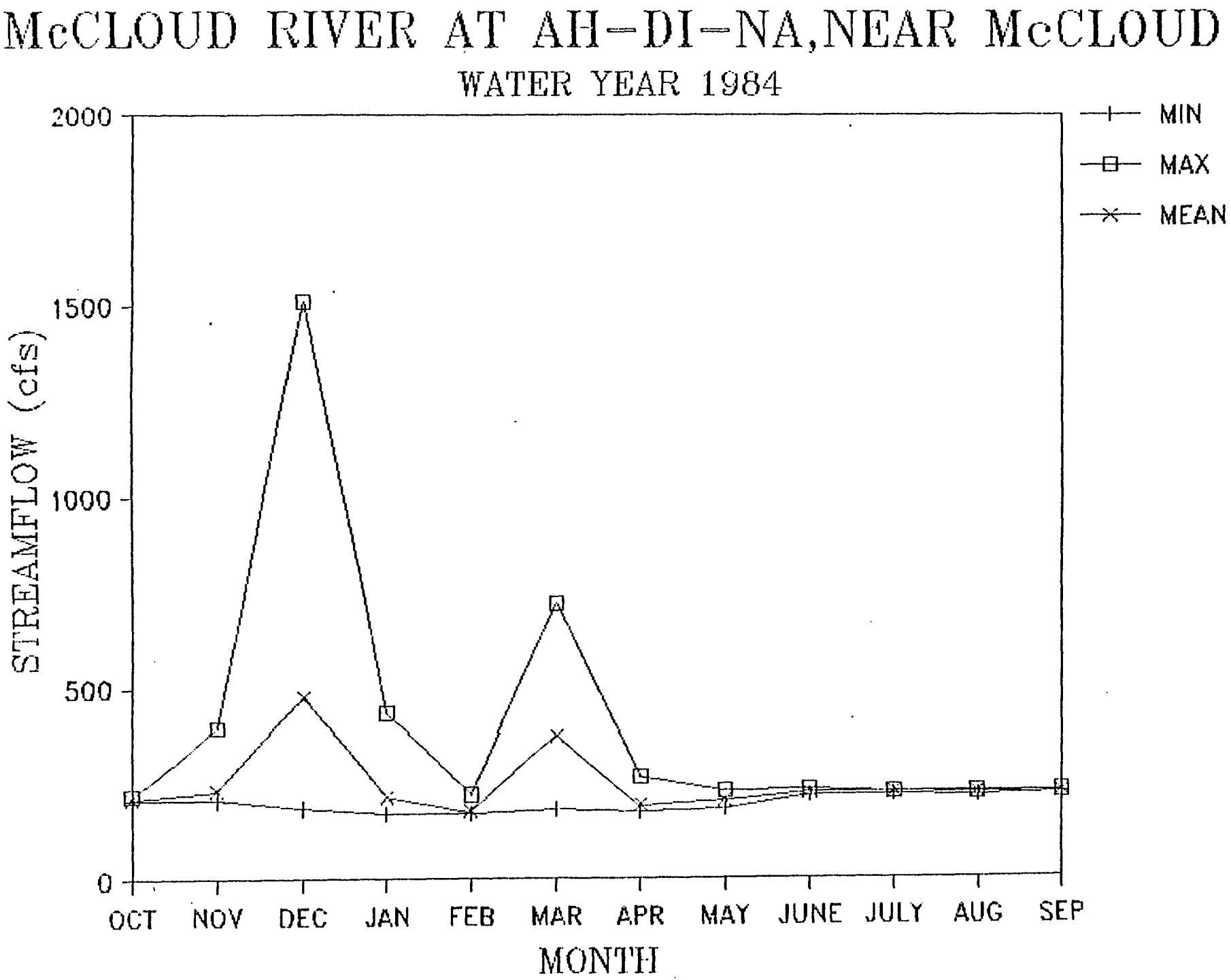

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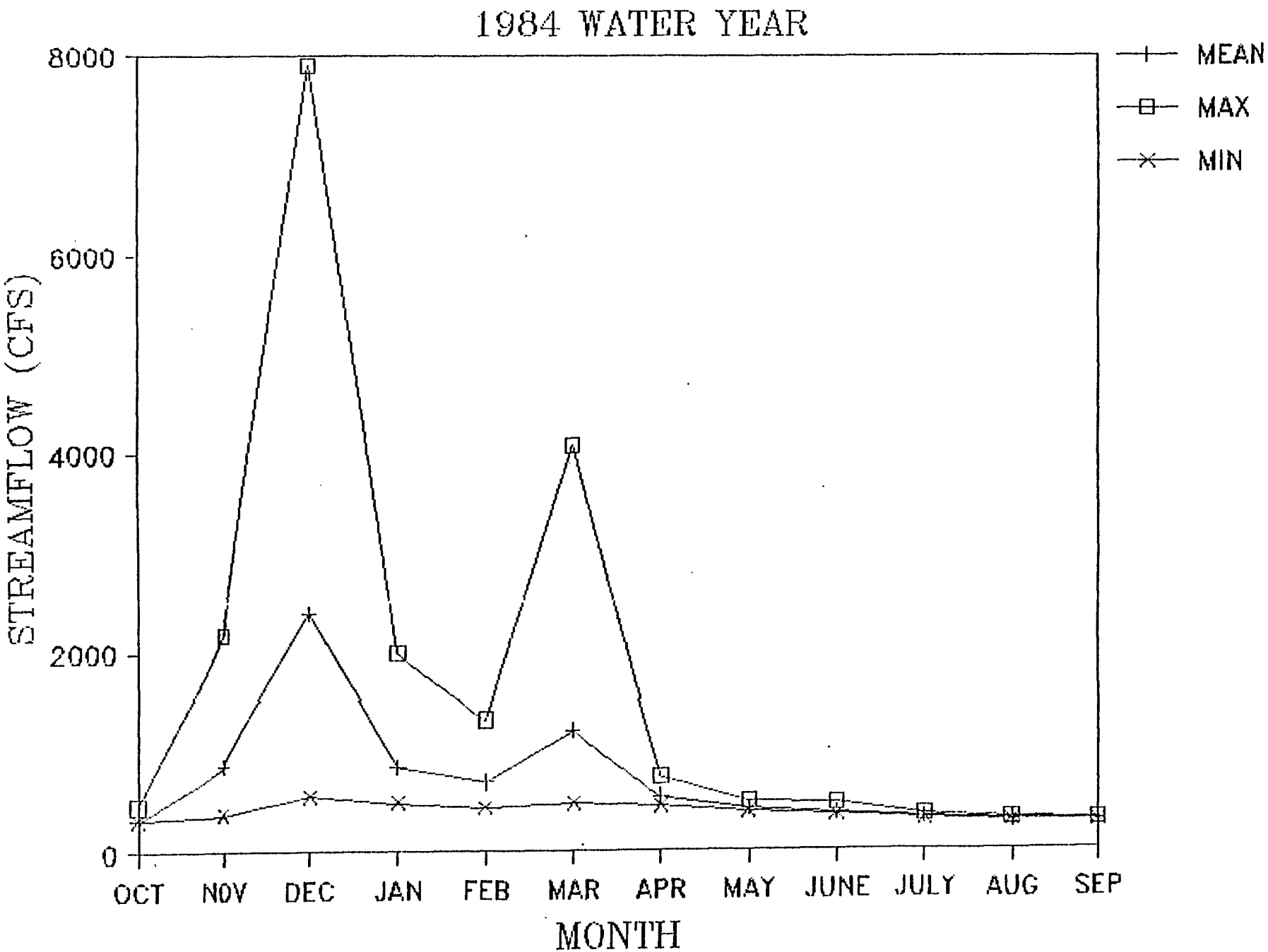
FIGURE 3-3. MONTHLY FLOWS FOR THE McCLOUD RIVER



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Squaw Valley Creek

Squaw Valley Creek is the largest tributary to the lower McCloud River. The headwaters are located near 6,000 feet elevation on the southern slope of Mt. Shasta. The creek is about 20 miles long, with 10 miles under consideration as a wild and scenic river. Currently, there are no available streamflow data for Squaw Valley Creek. The average summer flow is approximately 30 cfs (Hesseldenz pers. comm.). In addition, a small portion of the flow in the creek is actually water diverted from the upper McCloud River at Lakin Dam (Figure 1-2).

Major tributaries to lower Squaw Valley Creek include Cabin Creek, Trough Creek, Beartrap Creek, Tom Neal Creek, Dutch Creek, Tom Dow Creek, and Cold Spring. Cold Spring has a significant flow rate (an estimated 5-10 cfs) and is very cold. This spring flows out of the base of limestone formations that form Bald Mountain.

Basin Water Quality

Very limited water quality monitoring has been conducted in the upper headwaters area of the McCloud River drainage basin. The lack of comprehensive water quality information on the entire McCloud River is due in part to State and federal water agency funding limitations. McCloud River water quality is considered excellent by State water agencies, and the basin has relatively few pollution sources. Agency funds are therefore used for water quality investigations in rivers with known pollution problems that require close monitoring and study (Pedre pers. comm.).

Upper McCloud River

Water quality in the upper McCloud River is influenced by inflow from Big Springs, Bundoora Springs, and Mud Creek. Big and Bundoora Springs are exceptionally high quality water sources bringing cold, highly oxygenated water to the McCloud River. Adverse water quality in the upper McCloud River is primarily caused by Mud Creek, which seasonally transports very large sediment volumes to the McCloud River. PGandE conducted a sediment transport study on Mud Creek in 1983. This 1-year study was initiated because of concerns raised by local fishermen, Cal Trout, and The Nature Conservancy over very turbid water observed downstream of McCloud Dam. Runoff from melting glaciers on Mt. Shasta increase Mud Creek flows in the summer, carrying very fine glacial flour and volcanic ash to McCloud Reservoir. The larger and heavier sediment particles are carried to the reservoir and settle out near the creek's mouth, forming a delta. Fine ash and silt particles remain suspended in the reservoir and are eventually released below the dam. Total suspended sediment, determined from samples collected

downstream of the confluence of Mud Creek with the McCloud River, was highest in June.

The peak sediment discharge from Mud Creek flowing at 43 cfs in June 1983 was 1,648 tons per day, approximately 200 times the measured sediment loads in the upper McCloud River flowing at 1,575 cfs (Pacific Gas and Electric Company 1985). This tremendous amount of deposited sediment reduces water clarity and photosynthetic potential of aquatic plants, aids in heat accumulation and retention, decreases invertebrate production, and reduces the capacity of McCloud Reservoir.

Middle and Lower McCloud River

Water quality conditions are similar in both the middle and lower McCloud River. Conditions on the lower McCloud River have been monitored by DWR at selected stations since 1965. One water quality monitoring station, McCloud River above Shasta Lake, has been sampled consistently by DWR for over 20 years. This sampling station measures the ambient water quality of inflow to Shasta Lake. Selected water quality parameters for 10 consecutive years of the 22 years of water quality data compiled at this station have been summarized (Table 3-1).

Available data reveal that the water quality of the lower McCloud River is excellent. Dissolved oxygen is at or near saturation levels, nutrient concentrations are very low, and the water is soft with very little mineral content. Turbidity and suspended solids concentrations, which are measures of water clarity, vary with the season, storm events, and river segments.

In general, turbidity levels increase downstream due to input from Mud Creek and runoff from logging roads and other sources. The river's water quality is the result of many factors including good ambient water quality, minimal shoreline development, the undeveloped nature of the watershed, and lack of major point-source discharges.

Water temperature monitoring has been conducted at several locations in the lower and middle McCloud River by The Nature Conservancy in cooperation with PGandE. These studies were conducted to obtain baseline water temperature information under existing reservoir operations and to document diurnal temperature fluctuations. Water temperature monitoring was conducted immediately below McCloud Dam, near the Preserve, and at the mouth of the McCloud River near Shasta Lake.

The California Department of Fish and Game (DFG) sampled the McCloud River as part of the Toxic Substances Monitoring Program (TSMP), which was initiated in 1976 (California Department of Fish and Game 1978). The TSMP monitors primary surface waters for synthetic organic chemicals and heavy metals.

Table 3-1. Ranges of Historical Water Quality Data for DWR Sampling Station McCloud River Above Shasta Lake

Year	Number Sampling Periods	pH (units)	Electrical Conductivity (µmhos/cm)	Temperature (F)	Dissolved Oxygen (mg/l)	Dissolved NO_3^- (mg/l)	Total Organic N (mg/l)	Total NH_3 (mg/l)	Dissolved O-PO_4 (mg/l)	Total PO_4 (mg/l)
1977	6	7.8-8.1	111-141	37.4-46.4	9.9-13.8	0.00-0.02	0.00-0.01	0.00-0.03	0.01-0.02	0.01-0.05
1978	9	7.5-7.6	100-128	39.2-59.0	9.4-12.9	0.00-0.04	0.00-0.04	0.00-0.05	0.00-0.02	0.01-0.03
1979	5	7.6-8.4	117-131	37.4-61.7	9.3-13.9	--	--	--	0.00	--
1980	5	7.3-7.9	100-127	42.8-60.8	10.0-11.7	--	--	--	0.00	--
1981	5	7.3-8.1	109-136	42.8-64.4	9.2-12.1	--	--	--	0.01	--
1982	8	7.3-7.9	111-122	41.0-61.7	10.0-13.0	--	--	--	0.01	--
1983	14	7.3-8.1	85-125	40.1-63.0	9.4-13.1	--	--	--	0.00-0.02	0.02-0.03
1984	9	7.3-8.0	99-200	42.0-60.8	10.0-12.5	--	--	--	0.00-0.01	0.00-0.03
1985	12	7.5-8.2	112-128	39.2-62.6	9.6-12.5	--	--	--	--	0.01
1986	12	7.3-8.1	57-130	41.0-62.6	9.6-12.9	--	--	--	0.00-0.01	0.00-0.03
1987	1	7.7	132	39.2	13.2	--	--	--	--	0.01

Source: California Department of Water Resources, Water Data Information System (WDIS).

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This monitoring program is accomplished through tissue analysis of fish and other organisms collected in representative segments of individual streams.

Liver tissue samples from McCloud River caddisfly larvae, brown trout (Salmo trutta), and Sacramento sucker (Catostomus occidentalis) were taken in 1978. Dichlorodiphenyltrichloroethane (DDT) and its breakdown products were not detected in any sample. The trace metals, copper, cadmium, mercury, nickel, lead, zinc, and silver were detected. Copper concentrations for a brown trout sample were the highest for all streams sampled in the 1978 program. Because copper is ubiquitous in nature and a nutritional requirement of both plants and animals, it is unlikely that these concentrations are a problem for either the organism or consumer (California Department of Fish and Game 1978). Monitoring results in 1985 show similar trends in trace metal concentrations in rainbow trout and forage fish.

The levels of trace metals found during these surveys represent background concentrations, do not differ greatly from other rivers, and do not exceed levels established by the U. S. Food and Drug Administration.

Squaw Valley Creek

As with most remote, pristine streams, water quality data from Squaw Valley Creek are limited. Data obtained from a sampling effort in 1965 near Dairy Creek, in the upper segment of Squaw Valley Creek, offer an indication of historic water quality conditions. In general, water quality is considered good. Water temperatures are cool and dissolved oxygen concentrations are satisfactory for fishery production.

CONCLUSIONS

Information obtained during this investigation of the water resources and water quality of the McCloud River demonstrate unequivocally that the water resource is unique and extraordinary. The substantial groundwater input to the upper McCloud River is an instrumental factor in maintaining high summer flows. The extraordinary fisheries, scenic, recreational, and cultural resources of the river (see respective evaluations in Volume II) are largely determined by these flows. This reliable source of high-quality water in the McCloud River is extremely important to the State of California. Water from the McCloud River system is stored at Shasta Lake and is distributed throughout the Sacramento-San Joaquin Valleys and southern California for a wide variety of uses.

Contrary to much of the McCloud River, water resources from Algoma to the Upper Falls are not considered to be extra-

ordinary. This reach does not maintain significant flows, nor does it contain the waterfalls and springs present downstream. The three waterfalls, Big Springs, and large summer flows comprise extraordinary resources from Upper Falls to Huckleberry Creek. Siltation from Mud Creek (via Huckleberry Creek) and reservoir inundation make the reach from Huckleberry Creek to McCloud Reservoir (distance depending upon reservoir water levels) less than extraordinary.

A large percentage of water is diverted from the McCloud River at McCloud Dam. The diversion precludes designation of the middle and lower McCloud River as "free-flowing." Other State-designated rivers such as the lower American, Trinity, and Klamath Rivers, however, also are controlled by large impoundments. Likewise, Federal Guidelines state that "the fact that a river segment may flow between large impoundments will not necessarily preclude its designation" (47 FR 39457). The middle and lower McCloud River maintains high summer flows responsible for many of the extraordinary values of the McCloud River. Consequently, the segment from 0.25 mile below McCloud Dam to the McCloud Bridge located near Shasta Lake is considered to have extraordinary water resources. The 0.25-mile segment below McCloud Dam and the segment below the McCloud Bridge (distance depending upon reservoir water levels) are not extraordinary because of major river channel modifications caused by a dam and impoundment, respectively.

Squaw Valley Creek is a free-flowing stream within the study area. Flows are augmented to a small degree by McCloud River water. The extraordinary scenic, fisheries, and recreational resources of the lower McCloud River are largely determined by these flows and to ignore them would preclude protection needed to assure the presence of extraordinary values downstream. In its own right, Squaw Valley Creek maintains extraordinary scenic resources which are due, in part, to the water resources.

BIBLIOGRAPHY

References Cited

California. Department of Fish and Game. 1978. Toxic Substances Monitoring Program. (Water Quality Monitoring Report No. 79-25.) Fish and Wildlife Water Pollution Control Laboratory. Rancho Cordova, CA. Prepared for: State Water Resources Control Board, Sacramento. CA. 110 pp.

Hesseldenz, T. F. 1984. Developing a long-term protection plan for the McCloud River, California. Pp. 784-794 in R. E. Warner and K. M. Hendrix (eds.), California Riparian Systems, Ecology, Conservation and Production Management. University of California Press. Berkeley, CA. 1,035 pp.

Pacific Gas and Electric Company. 1985. McCloud turbidity study status report. (No. 43-85.2.) Department of Engineering Research, Ecological Services Division, Water Quality Unit. San Ramon, CA. 37 pp.

U. S. Geological Survey, Water Resources Division. 1984. Water resources data for California, northern Central Valley basins and the Great Basin from Honey Lake to Oregon state line. (Volume 4, CA-84-4.). Sacramento, CA. 292 pp.

Personal Communications

Duffy, S. October 30, 1987. Hydrographer. Pacific Gas and Electric Company, Burney, CA. Telephone conversation.

Hesseldenz, T. October 30, 1987. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Telephone conversation.

Pedre, J. September 6, 1987. Water Resource Control Engineer. Central Valley Regional Water Quality Control Board, Redding, CA. Telephone conversation.

BOTANICAL RESOURCES EVALUATION

C—014960

Chapter 4

BOTANICAL RESOURCES EVALUATION

Vegetation influences the quality of many natural resources. It dominates the character of terrestrial ecosystems and wildlife habitats, strongly influences the scenic quality of river corridors and watersheds, and provides critical protection for water quality and fish habitat. Vegetation is among the most sensitive of natural resources. It can be severely degraded by inappropriate development, intensive timber harvest, or overuse by recreationists or livestock. Its character changes significantly in response to seasonal changes of climate, successional phenomena, and events such as wildfire and erosion.

Because of its importance and responsiveness to manipulation, vegetation is frequently the subject of resource management programs such as habitat enhancement, erosion control, and fire management. Certain plant communities and plant species are particularly sensitive to alterations in their natural environment and are not easily restored to a higher quality once they have been disturbed. Such resources include water-dependent vegetation, habitats or communities that have developed over very long periods of time, and highly specialized or rare species of plants.

This chapter evaluates botanical resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud River extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

Information on the vegetation and flora of the McCloud River and its tributaries was obtained from published and unpublished literature on The Nature Conservancy's McCloud River Preserve (Preserve) and vicinity, contacts with knowledgeable individuals, aerial photographs, and field surveys on October 13-15, 1987. General information on special-status plant species of the area was obtained from the California Natural Diversity Data Base (NDDB), scientific literature, and botanists familiar with the region.

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The McCloud River was divided into two segments--upper and lower--for data presentation on botanical resources. The upper segment includes 20 river miles from the U. S. Forest Service (USFS) campground at Algoma to McCloud Reservoir (Figure 1-2). The lower segment extends 23 miles from McCloud Dam to Shasta Lake. The 10-mile study reach on Squaw Valley Creek was unsegmented. McCloud Reservoir inundates 5 miles of the McCloud between the upper and lower segments.

The study area also was divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately 2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act.

Scientific names of plants mentioned in this chapter are listed in Chapter 4 Appendix.

RESOURCE CHARACTERIZATION

Regional

The McCloud River lies in a biological transition zone that combines elements of the northern Sierra Nevada, southern Cascade Ranges, eastern North Coast Ranges, and western Great Basin (Figure 1-1). Species and communities typical of each region occur within the McCloud River watershed, sometimes near the limits of their ranges. Vegetation in shaded canyons is more reminiscent of rivers in the Pacific Northwest than of rivers in California. The watershed also contains at least one and possibly three unique species, all of which occur on rock outcrops.

Secondary Study Area

Many plant communities and other plant habitats occur within a mile of the McCloud River and Squaw Valley Creek. These have been described for the Preserve and vicinity by Kunkel (1975), Patterson (1975), and Podolak and Dudgeon (1986). Douglas-fir forest and mixed conifer forest are the most widespread plant communities in the region. Other important communities include oak forests, scrub and chaparral, riparian and spring communities, and sparsely vegetated limestone outcrops (Table 4-1).

Table 4-1. Plant Communities and Habitats in the McCloud River Secondary Study Area

Upland Forest Communities and Habitats	
Communities:	Douglas-fir Forest Knobcone Pine Forest Mixed Conifer Forest Canyon Live Oak Forest California Black Oak Forest
Habitats:	Streamside Flat Moderate South Slope Intermediate Slope Steep Rocky Slope Exposed Ridge
Chaparral and Scrub Communities	
Communities:	Sierra Whitethorn - Bitterbrush Scrub Dwarf Oregon White Oak Scrub Manzanita Chaparral Mixed Scrub - Chaparral
Riparian, Spring, and Wet Site Communities and Habitats	
Communities:	Riparian Forest Riparian Willow Scrub Riparian Mixed Scrub
Habitats:	River Bed Sand Bar Rocky Channel Side Mesic Cove Spring (several types) Limestone Cave and Crevice
Rock Outcrop and Sparsely Vegetated Habitats	
Habitats:	Volcanic Rock Outcrops Metasedimentary Rock Outcrops (noncarbonate) McCloud Limestone Rock Outcrops
Disturbed Habitats	
Habitats:	Logged Conifer Forest Road Cuts and Trails

Adapted from Patterson (1975) and Podolak and Dudgeon (1986).

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Many of these communities have numerous species in common and are differentiated on the basis of species dominance, understory composition, structural characteristics, or physical habitat factors. Vegetation in the area is rarely uniform over areas larger than a few acres because of highly variable topography, geology, and successional history. The resulting vegetation is a complex matrix of intergrading communities and habitats. Generalized vegetation of the secondary study area is mapped in Figure 4-1.

More than 240 species of vascular plants have been recorded at the Preserve (Patterson 1975, Podolak and Dudgeon 1986). Also included in the Preserve's flora are more than 45 species of mosses and liverworts and an estimated 80 species of lichens (Kunkel 1975). The flora of the entire secondary study area is substantially larger and offers numerous opportunities for floristic and vegetation research. Three rare flowering plants are known to occur along the McCloud River; field surveys and taxonomic studies may reveal others.

The following sections briefly describe the vegetation and rare plants of the secondary study area.

Upland Forest Communities and Habitats

The most widespread vegetation type in the watershed of the lower McCloud River is Douglas-fir forest. The canopy is dominated by Douglas-fir and may also include scattered pine, oak, or big leaf maple. The understory in this forest may include a variety of shrubs, such as dogwood, vine maple, filbert, poison-oak, wild rose, as well as saplings of overstory trees. Characteristic herbaceous plants include coral root, wintergreen, wild ginger, woodland star, and violet. Douglas-fir forest is best developed on relatively cool, moist, east and north slopes and represents the climax forest community in this area. Several areas of old-growth Douglas-fir forest occur within a mile of the lower McCloud River. These sites have an especially high diversity of plant and animal species because of the diversity of microhabitats present. Many other areas support Douglas-fir forest that is mature (but is not old-growth) or in an earlier successional stage of this forest type. Douglas-fir forest intergrades in portions of the study area with mixed conifer forest, oak forest, and riparian forest (Patterson 1975, Podolak and Dudgeon 1986, Hesseldenz pers. comm.).

Two kinds of oak forest (one evergreen, the other deciduous) are common on sites not dominated by Douglas-fir. Canyon live oak forest is best developed on steep, rocky slopes, a common habitat in the canyon of the lower McCloud River. Canopy cover is often sparse, giving the community more of a woodland than a forest character. Associated shrubs are drought-tolerant species characteristic of the nearby chaparral, such as greenleaf manzanita and deer brush. These areas contain a relatively

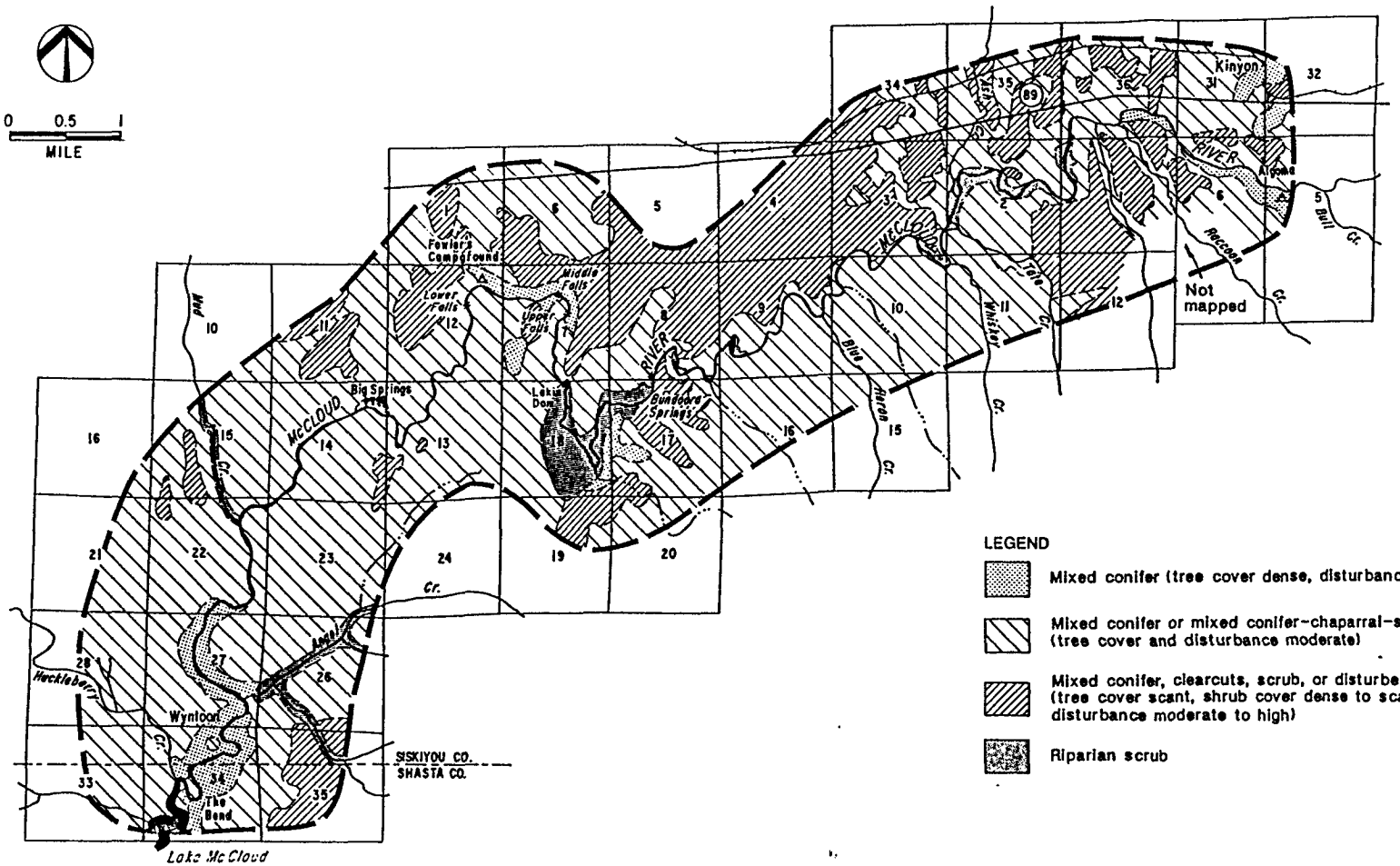

FIGURE 4-1A.
VEGETATION OF THE McCLOUD RIVER

Source: July 1985 aerial photographs

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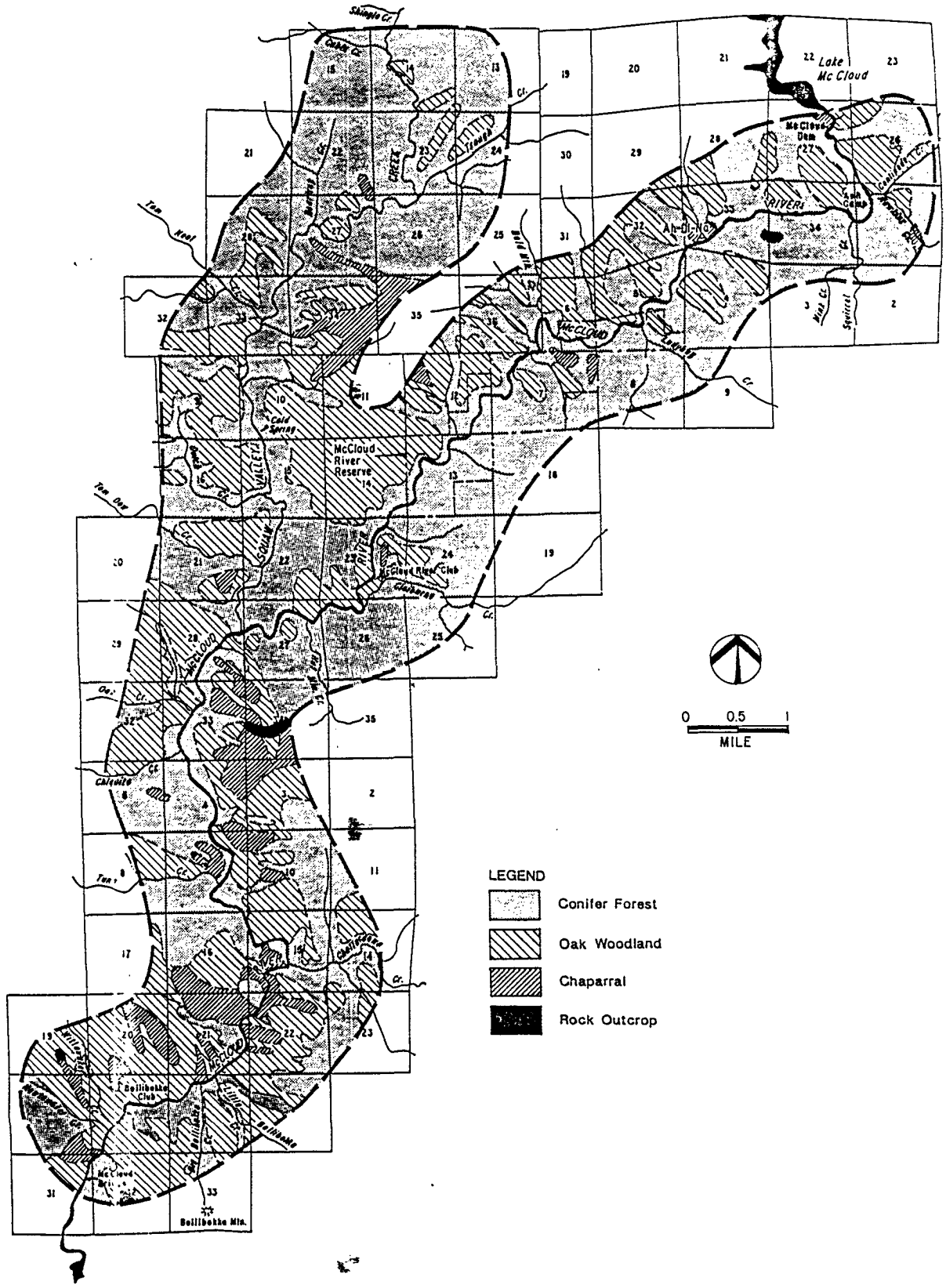

FIGURE 4-1B. VEGETATION OF THE McCLOUD RIVER

Source: July 1985 Aerial Photographs

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high diversity of herbs and small shrubs, including rock-cress, wild buckwheat, monkeyflower, penstemon, balsam root, daisy, and others (Patterson 1975, Podolak and Dudgeon 1986).

California black oak forest or woodland occurs on more moderate slopes and on flats. These trees, and the often associated deer brush, establish quickly after fires or other disturbance. This community represents an intermediate successional stage on sites that were once disturbed and may eventually succeed to Douglas-fir forest. Other plants often found in this community are Sierra coffeeberry, filbert, poison-oak, dogwood, sanicle, and bedstraw.

Mixed conifer forest occurs throughout the study area but is most widespread on the volcanic uplands bordering the upper McCloud River. Ponderosa pine and Douglas-fir are the most abundant trees; also present are white fir, incense-cedar, sugar pine, knobcone pine, California black oak, and Oregon white oak. Common understory shrubs are Sierra whitethorn, prostrate ceanothus, bitterbrush, and greenleaf manzanita. Characteristic plants include wild buckwheat, Ross's sedge, needlegrass, mountain pennyroyal, and groundsel. Mixed conifer forest along the lower McCloud River is typically a mixture of Digger pine and Douglas-fir, together with a variety of smaller trees and shrubs.

The lowest portion of the secondary study area also contains small amounts of knobcone pine forest on dry, upper slopes of the river canyon. This forest type is more prevalent along the McCloud arm of Shasta Lake than along the river itself.

Chaparral and Scrub Communities

Chaparral is a dense growth of woody shrubs with small, thick, evergreen leaves adapted to drought and fire. Chaparral generally occurs on hot, dry slopes that are rocky or have poor soil development. Chaparral is one of the most characteristic vegetation types in California, encompassing a wide variety of plant communities. In the study area, chaparral is occasional on slopes above the lower McCloud River. Species composition varies with successional status but is generally dominated by greenleaf and whiteleaf manzanitas. Also prevalent are bush poppy, poison-oak, and Brewer oak.

Scrub vegetation is a scattered to dense growth of shrubs that are not generally adapted to fire or prolonged drought. Scrub occurs in cooler, moister situations than chaparral, and usually in deeper soils. Scrub vegetation in the study area is similar to that of the western Great Basin. Dominant species are Sierra whitethorn and bitterbrush; others include rabbitbrush and service berry.

Scrub vegetation along the upper McCloud River forms a matrix with the mixed conifer forest and sometimes intergrades with it. Farther south, scrub vegetation may also intergrade with chaparral.

Riparian and Spring Communities and Habitats

Rivers, moist drainages, and springs support plant communities very different from those in drier habitats. Species occurring in riparian (riverside) or other moist zones almost always have unlimited access to groundwater and many have high water requirements. The density of shrubs, small trees, and groundcover plants is higher here than in most other communities.

Riparian forests in the study area are best developed along the banks of the McCloud River and larger tributaries such as Squaw Valley Creek. Overstory trees include white alder, bigleaf maple, and Pacific yew, in addition to the more widespread Douglas-fir, black oak, incense-cedar, and ponderosa pine. Shrubs such as vine maple, dogwood, willow, filbert, spicebush, and poison-oak are abundant. Western azalea, spikenard, or chain fern also may be found where additional moisture is provided by small tributaries. Common groundcover plants near streambanks include barberry, greenbriar, snowberry, wild ginger, violet, iris, starflower, thimbleberry, and dense carpets of several kinds of moss (Patterson 1975, Podolak and Dudgeon 1986).

Willows occasionally form dense thickets of riparian willow scrub at broad areas in the river channel. Wet, rocky, or gravelly sites in or beside the stream support large patches of Indian rhubarb, horsetail, and sedge. Rocky outcrops and embankments support stonecrop, alum root, Howell's lewisia, and carpets of moss.

Wet conditions are not confined to the river and its major tributaries. Springs, seeps, and moist gullies or "mesic coves" are common in the study area along the lower McCloud River. Their vegetation is similar to that of streambanks in the riparian zone but with a predominance of plants adapted to shaded light (Patterson 1975, Podolak and Dudgeon 1986). Wet soil at springs and seeps may provide habitat for several rare or uncommon mosses (Kunkel 1975).

Although these habitats are most numerous along the lower McCloud River, the largest by far is at Big Springs, on the upper McCloud River. This spring has an unusual abundance of riparian and wet-site herbs and shrubs. The extent and quality of this water-dependent vegetation at Big Springs are unique in the McCloud River watershed and very unusual in California.

Rock Outcrops and Sparsely Vegetated Habitats

Rock outcrops and cliffs occur frequently along the McCloud River and Squaw Valley Creek. They are found adjacent to river channels, on canyon sides, and on ridges. Although these outcrops are largely unvegetated, they provide habitats for plants that can grow with little or no soil, or can establish and thrive in small cracks and crevices. Many mosses, lichens, and vascular plants are adapted to these habitats; most of these are uncommon or absent in the adjacent forest, chaparral, or other communities. All three of the rare plants known from the study area occur in these habitats. The type of rock in an outcrop (e.g. basalt, granite, slate, or limestone) is a major factor determining which species it supports. Outcrops in the study area are numerous, widespread, and of several rock types, and thus contribute significantly to botanical diversity in the area.

The most important outcrops in the study area are those in the McCloud limestone formation along the lower McCloud River. Common species here include showy phlox, brewer's rock-cress, wallflower, fetid groundsel, and virgate phacelia. Outcrops of McCloud limestone are the only habitat of the rare Shasta eupatory. Shasta limestone habitats in the study area offer many opportunities for important biological research.

Other botanically important outcrops are those supporting populations of the rare Howell's lewisia. These occur within and adjacent to the river channel along the lower McCloud River and several tributaries, including Squaw Valley Creek. An outcrop near Fowler's Campground on the upper McCloud River reportedly supports the rare Scott's Mountain phacelia (California Natural Diversity Data Base 1987).

Disturbed Habitats

Portions of the Douglas-fir and mixed conifer forests in the secondary study area have been disturbed by logging operations and associated road construction. Tree removal increased the amount of light and heat reaching the forest floor, decreased competition among species, and altered the physical, chemical, and biological properties of soil and litter. These changes allowed the proliferation of "pioneer" species such as deer brush, cheatgrass, various weedy forbs, and "light-loving" shrubs and vines such as gooseberry and blackberry (Patterson 1975). Areas in which secondary succession has been renewed by logging activities may appear to be botanically rich, with many different species, but lack the ecological complexity of mature or old-growth forests.

Special-Status Species

Special-status plant species are species included on the following lists:

- o Federal-listed, proposed, and candidate threatened and endangered species (50 FR 39526-39584),
- o California-listed and candidate rare, threatened, and endangered species (California Department of Fish and Game 1987),
- o California Native Plant Society-listed rare and endangered plant species (Smith and York 1984).

Three rare plants occur within the secondary study area, all in rock outcrop habitats (see above). The status, habitat, and distribution of these plants in the study area are listed in Table 4-2. None of the rare plants has been designated as threatened or endangered under the California or U. S. Endangered Species Acts.

The rarest of these is probably the Scott Mountain phacelia, which was reportedly seen near Fowler's Campground in 1979. This population has not been verified or seen since then (California Natural Diversity Data Base 1987). Most occurrences of this plant are in the Scott Mountains west of Mt. Shasta (Smith and York 1984).

Howell's lewisia is by far the most abundant of the rare plants in the study area and is the only one to occur within the primary study area. Many other populations are known from Shasta, Trinity, Humboldt, and Del Norte Counties, and from southwestern Oregon. Plants are difficult to distinguish from other more common varieties of the species (Smith and York 1984).

Shasta eupatory was originally discovered on limestones between the McCloud and Pit Rivers and subsequently found near the McCloud arm of Shasta Lake (Taylor and Stebbins 1978). No populations are specifically known from within the secondary study area, but geological mapping indicates a strong likelihood that the species would be found if certain parts of the study area were surveyed.

Primary Study Area

The river channel and riparian corridor of the McCloud River and Squaw Valley Creek contain portions of many of the plant communities described above. Riparian forest, willow scrub, and the vegetation of rocky habitats are the most abundant plant communities in the primary study area. They are also among the most important plant communities regionally because

Table 4-2. Special-Status Plant Species in the McCloud River Secondary Study Area

Common and Scientific Names	Status	Habitat and Distribution
Shasta eupatory (*Eupatorium shastense*)	CA: -- FED: C3c CNPS: 4	Limestone outcrops above lower McCloud River
Howell's lewisia (*Lewisia cotyledon* var. *howellii*)	CA: -- FED: C2 CNPS: 3	Cool, damp rock outcrops along lower McCloud River, Squaw Valley Creek, and other tributaries
Scott Mtn. phacelia (*Phacelia dalesiana*)	CA: -- FED: C2 CNPS: 1b	Mixed evergreen forest near Fowler's Campground

Sources: Smith and York (1984), Podolak and Dudgeon (1986), California Natural Diversity Data Base (1987), Hesseldenz (pers. comm.).

Status Explanations:

CA (California Endangered Species Act): E = Listed Endangered; T = Listed Threatened.

FED (Federal Endangered Species Act): C1 = Candidate for listing (Category 1); C2 = Candidate for listing (Category 2); C3 = No longer a candidate for listing because it is extinct (C3a), not a valid taxon (C3b), or too common for listing (C3c).

CNPS (California Native Plant Society): 1a = Presumed extinct; 1b = Rare and endangered in California and elsewhere; 2 = Rare or endangered in California, but more common elsewhere; 3 = In need of further study to clarify status; 4 = Of limited distribution.

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they contribute greatly to the overall species diversity and ecological complexity of the watershed.

Outstanding botanical features within the primary study area include: 1) numerous populations of the rare Howell's lewisia, 2) extensive spring-dependent vegetation at Big Springs, and 3) areas of relatively abundant Pacific yew along the upper McCloud River below Big Springs and the lower McCloud River at the Preserve and McCloud River Club. Pacific yew, while not a special-status species, is sensitive to land disturbance and is an indicator species of undisturbed forest areas.

CONCLUSIONS

Botanical resources are rated as very good to excellent along: 1) the lower McCloud River from the first riffle below McCloud Dam to the high pool elevation of Shasta Lake, 2) the upper McCloud River from the first riffle below Lower Falls to the buildings at The Bend, and 3) Squaw Valley Creek from Cabin Creek to the McCloud River. Factors supporting this rating are: 1) the generally wild and undisturbed quality of riparian and other vegetation in these areas, 2) the presence of Howell's lewisia, which is rare, but not unique in the region, and 3) the unusual character and diversity of vegetation at Big Springs. Nevertheless, these resources are not considered to be extraordinary.

Botanical resources would be given a lower rating along: 1) the McCloud River from Algoma to Lower Falls, and 2) Squaw Valley Creek from Shingle Creek to Cabin Creek. Factors preventing a higher rating are: 1) the lesser abundance of riparian vegetation, and 2) the significant disturbances to riparian and adjacent conifer forest vegetation caused by recreational use, road construction, and logging activities. Most of the disturbance is minor, but at heavily used sites it is locally severe. Botanical resources in these areas are rated as fair to good.

BIBLIOGRAPHY

References Cited

California. Department of Fish and Game. 1987. State and federal lists of endangered and threatened animals of California. The Resources Agency. Sacramento, CA. 4 pp.

California. Natural Diversity Data Base. 1987. Unpublished data base analyses. Sacramento, CA.

Kunkel, G. 1975. Cryptograms of the McCloud River Preserve: a floristic survey. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 28 pp.

Patterson, C. 1975. A preliminary report of the McCloud Preserve flora. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 26 pp.

Podolak, E. and S. Dudgeon. 1986. A floral inventory of the McCloud River Preserve. Prepared for: The Nature Conservancy, San Francisco, CA. Unpublished report. 14 pp.

Smith, J. P., Jr. and R. York. 1984. Inventory of rare and endangered vascular plants of California. 3rd edition. Special Publication No. 1. California Native Plant Society. Sacramento, CA. 174 pp.

Taylor, D. W. and G. L. Stebbins. 1978. A new species of Eupatorium (Asteraceae) from California. Madrono 25(4):218-220.

Personal Communications

Hesseldenz, T. October 13, 14, 15, 1987. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Meeting.

Chapter 4 Appendix

COMMON AND SCIENTIFIC NAMES OF PLANT SPECIES LISTED IN THIS CHAPTER

Chapter 4 Appendix

COMMON AND SCIENTIFIC NAMES OF PLANT SPECIES LISTED IN THIS CHAPTER

Common Name	Scientific Name
Alum root	*Heuchera* sp.
Balsam root	*Balsamorhiza* sp.
Barberry	*Berberis nervosa*
Bedstraw	*Galium* sp.
Bigleaf maple	*Acer macrophyllum*
Bitterbrush	*Purshia tridentata*
Blackberry	*Rubus* spp.
Brewer oak	*Quercus garryana* var. *breweri*
Brewer's rock-cress	*Arabis breweri*
Bush poppy	*Dendromecon rigida*
California black oak	*Quercus kelloggii*
Canyon live oak	*Quercus chrysolepis*
Chain fern	*Woodwardia fimbriata*
Cheatgrass	*Bromus mollis*
Coral root	*Corallorhiza maculata*
Daisy	*Erigeron* sp.
Deer brush	*Ceanothus integerrimus*
Digger pine	*Pinus sabiniana*
Dogwood	*Cornus* spp.
Douglas-fir	*Pseudotsuga mertensiana*
Fetid groundsel	*Senecio foetidus*
Filbert	*Corylus cornuta*
Gooseberry	*Rubus* spp.
Greenbriar	*Smilax californica*
Greenleaf manzanita	*Arctostaphylos patula*
Groundsel	*Senecio integerrimus*
Horsetail	*Equisetum* sp.
Howell's lewisia	*Lewisia cotyledon* var. *howellii*
Incense-cedar	*Calocedrus decurrens*
Indian rhubarb	*Peltiphyllum peltatum*
Iris	*Iris tenuissima*
Knobcone pine	*Pinus attenuata*
Monkeyflower	*Mimulus* spp.
Mountain pennyroyal	*Monardella odoratissima*
Needlegrass	*Stipa* sp.
Oregon white oak	*Quercus garryana*
Pacific yew	*Taxus brevifolia*
Penstemon	*Penstemon* spp.
Poison-oak	*Toxicodendron diversiloba*
Ponderosa pine	*Pinus ponderosa*
Prostrate ceanothus	*Ceanothus prostratus*
Rabbitbrush	*Chrysothamnus* sp.
Rock-cress	*Arabis* sp.
Ross's sedge	*Carex rossii*

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Common Name	Scientific Name
Sanicle	Sanicula sp.
Scott Mtn. phacelia	Phacelia dalesiana
Sedge	Carex spp.
Service berry	Amelanchier alnifolia
Shasta eupatory	Eupatorium shastense
Showy phlox	Phlox speciosa
Sierra coffeeberry	Rhamnus rubra
Sierra whitethorn	Ceanothus cordulatus
Snowberry	Symphoricarpus rivularis
Spicebush	Calycanthus occidentalis
Spikenard	Aralia californica
Starflower	Trientalis latifolia
Stonecrop	Sedum spp.
Sugar pine	Pinus lambertiana
Thimbleberry	Rubus parviflora
Vine maple	Acer circinatum
Violet	Viola sp.
Virgate phacelia	Phacelia virgata
Wallflower	Erysimum capitatum
Western azalea	Rhododendron occidentale
White alder	Alnus rhombifolia
White fir	Abies concolor
Whiteleaf manzanita	Arctostaphylos viscida
Wild buckwheat	Eriogonum spp.
Wild ginger	Asarum spp.
Wild rose	Rosa gymnocarpa
Willow	Salix hindsiana
Wintergreen	Pyrola picta
Woodland star	Lithophragma spp.

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WILDLIFE RESOURCES EVALUATION

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Chapter 5

WILDLIFE RESOURCES EVALUATION

Wildlife resources are an important component in the ecological description of riparian and riverine communities. Because of their undisturbed character, wild and scenic rivers often support high densities of wildlife species, including many special-status species. Some species fill important ecological niches or provide recreational enjoyment for many Californians.

Habitat quality is an important determinant of wildlife resources. Breeding, feeding, and resting habitats are critical components necessary for species survival, growth, and reproduction (Verner and Boss 1980). Riparian forests, wetlands, old-growth forests, and other major habitat types determine the range, distribution, and abundance of wildlife species within the study area.

Most wildlife species are sensitive to disturbance of their natural environments. Once major habitat alterations have occurred, many wildlife species suffer population reductions or abandon areas completely. Wildlife species dependent on riparian areas, wet meadows, old-growth forests, or other sensitive habitats are especially vulnerable to habitat alterations.

This chapter evaluates wildlife resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud River extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

The following description of wildlife resources is based on information contained in previous unpublished reports prepared for The Nature Conservancy's McCloud River Preserve (Preserve), a California Natural Diversity Data Base (NDDB) search for recorded sightings of sensitive species and important natural communities, contacts with California Department of Fish and Game (DFG) and U. S. Forest Service (USFS) personnel, discussions with local experts, and interpretation of photographs and maps of the study area.

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The study area was divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately 2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act.

Scientific names of animals mentioned in this chapter are listed in Chapter 5 Appendix.

RESOURCE CHARACTERIZATION

Regional

From its source on an upland plateau, the McCloud River flows through chaparral and scrub habitats, rocky canyons, and mixed coniferous forests. The study area lies in a transition zone between the Central Valley and the Cascade Range (Figure 1-1); wildlife species from both areas occupy the McCloud River drainage. The pristine character of the lower McCloud River and Squaw Valley Creek watersheds provides high-quality habitat for a diversity of wildlife species.

The most intensively studied portion of the study area is contained within the 2,330-acre McCloud River Preserve (Preserve) owned by The Nature Conservancy (Hesseldenz pers. comm.). Approximately 841 invertebrate species (Hajek 1975), 94 bird species, 13 reptile species, eight amphibian species, and 36 mammal species have been recorded on the Preserve (Hayes 1975, Hayes and Kraai 1975, Hesseldenz pers. comm.).

Public access is not permitted on most of the private land in the McCloud River drainage and the wildlife resources of these areas have not been surveyed intensively (Hesseldenz pers. comm.). It is likely, however, that these areas contain similar wildlife species to those found on the Preserve.

Some USFS lands have been inventoried for special-status species and other areas have been identified for future surveys. Recent surveys of USFS lands have revealed the presence of numerous special-status species in the McCloud River and Squaw Valley Creek watersheds (Brumley and Phelps pers. comms.).

Special-Status Species

Species-status wildlife species are species included on the following lists:

- Federal-listed, proposed, and candidate threatened and endangered species (50 CFR 37958-37967),
- California-listed and candidate threatened and endangered species (California Department of Fish and Game 1987),
- California fully protected species. Although not listed as endangered or threatened, fully protected species are protected by law in California (California Department of Fish and Game 1987).
- Other species of special concern to DFG (Remsen 1978, Williams 1986).

Several State- and federal-listed species have been observed in the McCloud River and Squaw Valley Creek drainages and vicinity, including bald eagle, peregrine falcon, wolverine, Shasta salamander, and the Shasta sideband snail (Table 5-1). The presence of wolverine at low elevations is rare in California. Other special-status species known to occur within the study area, but which have not been included on State or federal threatened or endangered species lists, include the northern goshawk, sharp-shinned hawk, osprey, spotted owl, willow flycatcher, yellow warbler, and fisher (Table 5-1).

A rare (but unlisted) species of butterfly was taken at the McCloud Fishing Station in 1881; the taxonomic status of this subspecies is currently under review (Emmel pers. comm.).

Secondary Study Area

The McCloud River and Squaw Valley Creek provide habitat for a diversity of amphibian, reptile, bird, and mammal species restricted to one or a few specific habitats. Major habitats within the 2-mile-wide secondary study area include upland forest, California black oak forest, mixed-conifer forest, chaparral and scrub habitats, riparian and spring communities, and rock outcrop and other sparsely vegetated habitats. The following paragraphs briefly describe the characteristic wildlife species of each of these community types within the secondary study area.

Upland Forests

Stands of Douglas-fir dominate much of the study area and provide habitat for spotted owls, northern goshawks, pileated woodpeckers and other special-status species. Flocks of golden-

Table 5-1. Special-Status Wildlife Species Within and Near the McCloud River Study Area

Species	Legal Status[a]	Location and Date	Source
Bald eagle	FE/SE	a. McCloud Reservoir nest discovered 1982, occupied in 1983, status in 1984 unknown. Successful nesting in 1985. Nesting also recorded at Lake Shasta.	California Natural Diversity Data Base 1987, Brumley pers. comm.
		b. Observed on Preserve at least five times up to 1975.	Hayes 1975
Peregrine falcon	FE/SE	Nesting eyries at North Gray Rock (McCloud River arm of Shasta Lake).	Brumley pers. comm.
Northern goshawk	FS	a. Observed twice over Preserve prior to 1975.	Hayes 1975
		b. Three known nesting territories within 3 miles of McCloud River near Algoma and Kinyon.	Phelps pers. comm.
Osprey	None[a] (CSC)	Recorded numerous times along the McCloud River, especially near Lake McCloud.	Hesseldenz pers. comm.
Golden eagle	CP	Observed soaring over Preserve.	Hesseldenz pers. comm.
Sharp-shinned hawk	None[a] (CSC)	Observed at least four times on the Preserve up to 1975; three of these sightings were in the Ladybug Creek drainage.	Hayes 1975
Spotted owl	FS	a. Two Spotted Owl Management Areas (SOMA MC-4, MC-9) adjacent to or overlapping the McCloud River near Algoma and near the south end of Lake McCloud.	Phelps pers. comm.
		b. Observed on the Preserve near Ladybug Creek.	Hesseldenz pers. comm.
Willow flycatcher	None[a] (CSC)	Seven individuals located on the upper McCloud River (between Upper Falls and Algoma) and vicinity.	Phelps pers. comm.
Bank swallow	None[a] (CSC)	Observed five times on north end of Preserve up to 1975; nesting sites on roadcut between Ah-Di-Na Campground and the Preserve.	Hayes 1975
Yellow warbler	None[a] (CSC)	Observed at least 10 times on the Preserve up to 1975; two nesting records from the Ladybug Creek drainage.	Hayes 1975
Wolverine	ST	Tracks, scat, and hairs found near the mouth of Ladybug Creek in Spring 1982.	Hesseldenz pers. comm.
Fisher	FS	Probably occurs in the McCloud arm of Shasta Lake.	Brumley pers. comm.
Shasta salamander	C2/ST	a. Ten individuals observed on Westside McCloud arm of Lake Shasta from Dekkas Rock Campground north to McCloud Bridge in 1975.	California Natural Diversity Data Base 1987
		b. Twenty individuals observed under oak logs and two observed under limestone rocks in 1969 and 1973.	California Natural Diversity Data Base 1987
		c. Observed above a spring that flows into a tributary of Squaw Valley Creek in 1983.	California Natural Diversity Data Base 1987
		d. Numerous sightings on Dutch Creek (tributary of Squaw Valley Creek).	Hesseldenz pers. comm.

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Table 5-1. (Continued)

Species	Legal Status[a]	Location and Date	Source
Shasta sideband snail	C2	a. Observed at Samwell Cave and slope below, near the east bank McCloud River arm of Shasta Lake in 1979.	California Natural Diversity Data Base 1987
		b. Observed on the west slope of Bollibokka Mountain, 0.75 mile east of McCloud Bridge in 1979.	California Natural Diversity Data Base 1987
		c. Observed on Ellery Creek on Gillman Road, 15 miles northeast of I-5 junction, west side of the McCloud River arm of Shasta Lake in 1980.	California Natural Diversity Data Base 1987
		d. Summit of Hirz Mountain, on the west side of the McCloud River arm of Shasta Lake, 2 miles southwest of Samwell Cave.	California Natural Diversity Data Base 1987

[a] Legal status codes and explanations

Federal = U. S. Fish and Wildlife Service (50 CFR 37958-37967)

FE = Listed as Endangered under the federal Endangered Species Act.
FT = Listed as Threatened under the federal Endangered Species Act.
PE = Proposed for federal listing as Endangered under the federal Endangered Species Act.
PT = Proposed for federal listing as Threatened under the federal Endangered Species Act.
C1 = A Candidate species under review for federal listing. Category 1 includes species for which the U. S. Fish and Wildlife Service (USFWS) presently has enough biological information on file to support the appropriateness of a rule for listing as endangered or threatened. Other nonbiological information needs and/or time and staff limitations have so far prevented development and publication of proposed and final rules concerning such species.
C2 = A Candidate species under review for federal listing. Category 2 includes species for which the USFWS presently has some biological information indicating that listing as endangered or threatened may be appropriate, but for which further biological research and field study is usually needed to clarify the most appropriate status.

Note: Category 2 species are not necessarily less rare or less threatened than Category 1 species. The distinction relates to the amount of data available and is therefore administrative rather than biological.

Federal = United States Forest Service

FS = USFS sensitive; these species are not officially listed but are under study for classification as threatened or endangered, or have low population densities, or restricted range.

State = California Department of Fish and Game (1987)

SE = Listed as Endangered under the California Endangered Species Act.
ST = Listed as Threatened under the California Endangered Species Act.
CP = Fully Protected species under the California Fish and Game Code.
CSC = Species of Special Concern as indicated by DFG (Remsen 1978).

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crowned kinglets, chestnut-backed chickadees, and red-breasted nuthatches forage in the canopies of these forests. Hermit thrushes, varied thrushes, dark-eyed juncos, and other bird species can be found in forest understories.

Reptiles such as northern alligator lizards and amphibians including Pacific giant salamanders and Pacific tree frogs occur in forest understories.

Stands of canyon live oak within the upland forest community have a diversity of mammal species including brush mouse, spotted skunk, and coyote.

California Black Oak Forest

Black-throated gray warblers, orange-crowned warblers, and solitary vireos are common insectivorous birds in California black oak forests. Western gray squirrels, acorn woodpeckers, and other acorn specialists harvest the mast of these forests in fall.

Small mammals in the black oak forest include deer mouse, shrewmole, and Townsend's chipmunk.

Mixed Conifer Forest

Typical insectivorous bird species such as western wood-pewees, golden-crowned kinglets, hermit warblers, and yellow-rumped warblers forage in the high canopy and use small branches for nesting substrates. Areas with snags attract hairy woodpeckers, red-breasted sapsuckers, and northern flickers.

Large carnivores like black bears, bobcats, and mountain lions occur in conifer habitats of the McCloud River drainage. Small mammals such as California ground squirrel and northern pocket gophers burrow into the soil in sparsely vegetated areas.

Western fence lizards occur in open portions of the forest, while northern alligator lizards are associated with denser stands of trees.

Chaparral and Scrub Communities

Scattered areas of scrub vegetation attract bird species such as rufous-sided towhees, fox sparrows, dark-eyed juncos, and white-crowned sparrows. Small mammals such as brush mice, deer mice, and ringtail also frequent the scrub communities of the McCloud River and Squaw Valley Creek drainages.

Riparian Communities

Bird species such as house wrens, yellow warblers, Wilson's warblers, and lazuli buntings nest and forage in the willows, maples, and alders growing along the river. Willow flycatchers occur in willow thickets above Upper Falls to Algoma (Table 5-1).

Mammals such as raccoons and beavers also frequent riparian areas. Pacific giant salamanders, California newts, and other amphibians are found in the leaf litter near streams. Reptile species in these habitats include western fence lizards, northern alligator lizards, garter snakes, and western rattlesnakes.

The high abundance and diversity of wildlife in riparian habitats is a function of several interrelated factors, including vegetation structure, microclimate conditions, edge effects, and availability of water, food, and cover (Thomas et al. 1979). Riparian habitats are attractive to a large array of wildlife species because the forest layers provide foraging opportunities for trunk- and branch-foragers like woodpeckers, nuthatches, and squirrels; foliage-gleaners like warblers, vireos, and kinglets; and ground foragers like finches, sparrows, mice, and lizards. Furthermore, contiguous stretches of riparian habitat provide migratory corridors for many birds, mammals (including mule deer), reptiles, and amphibians (Thomas et al. 1979). Riparian areas have high wildlife value; riparian vegetation along the McCloud River and Squaw Valley Creek probably supports a higher abundance and diversity of wildlife species per unit acreage than any other habitat in the study area.

Rock Outcrops and Sparsely Vegetated Habitats

Steep rock outcrops along the McCloud River and Squaw Valley Creek provide habitat for rock wrens and canyon wrens.

McCloud limestone formations provide habitat for two rare wildlife species, the Shasta salamander and the Shasta sideband snail. Specific distributional records for these species are given in Table 5-1.

Special-Status Species

The secondary study area was not surveyed in the field for special-status wildlife species. It is likely that populations of protected wildlife species, in addition to those listed in Table 5-1, occur within the study area. Private lands such as those owned by the Hearst Corporation, the Bollibokka Club, and the McCloud River Club probably have undiscovered populations of special-status species that have been sighted in nearby areas. Most observations of special-status wildlife species in the

McCloud River and Squaw Valley Creek drainages have been made outside the secondary study area (Table 5-1).

Primary Study Area

The McCloud River and Squaw Valley Creek channels probably contain some acreage of all major habitats described above. Major habitats within the river channels include riparian vegetation and areas scoured of vegetation by high flows. Riparian habitats are a valuable wildlife resource because of their great habitat diversity.

Common mergansers, American dippers, and belted kingfishers forage for aquatic insects and small fish within the stream. River otters occur within the McCloud River and Squaw Valley Creek. None of these species have any listed status, but they are easily observed and of special interest to many recreationists.

Mammal species such as mule deer, raccoon, black bear, and mountain lion make use of river corridors for foraging, drinking, and resting. These areas, unobstructed by man-made structures such as dams, may provide a corridor for deer and other mammal species.

A variety of amphibian species could potentially occur in different portions of the primary study area including Pacific treefrogs, western toads, and yellow-legged frogs. Reptile species that occur within the river channel and its adjacent banks include western fence lizards, western skinks, gopher snakes, mountain kingsnakes, California kingsnakes, garter snakes, and western rattlesnakes.

CONCLUSIONS

Wildlife resources are rated as excellent in the McCloud River and Squaw Valley Creek study area. These drainages provide important habitat for a diversity of amphibians, reptiles, birds, and mammals, including many special-status species. Grazing pressure and logging have disturbed some of the slopes above the river (especially in the upper McCloud River), but the entire river channel has a wild character. The absence of dams, diversions, and significant development along each study segment contributes to high-quality habitats that sustain exceptional wildlife resources in northern California.

The exceptional wildlife resources within the study area are not unique. Similar resources and habitats are present in wilderness and remote areas throughout the State. Consequently, wildlife resources are not considered to be extraordinary in the McCloud River study area. Wildlife values, in concert with

botanical and fishery resources, however, constitute an extraordinary ecological resource value when considered together. (See Volume I - "Scientific, Ecological, and Educational Resources.")

BIBLIOGRAPHY

References Cited

California. Department of Fish and Game. 1987. State and federal lists of endangered and threatened animals of California. The Resources Agency. Sacramento, CA. 4 pp.

California. Natural Diversity Data Base. 1987. Unpublished data base analyses. Sacramento, CA.

Hajek, A. E. 1975. Invertebrate fauna study. Unpublished report. 35 pp.

Hayes, M. P. 1975. A report on the birds and herpetofauna of the McCloud River Preserve. Unpublished report.

Hayes, M. P. and P. Kraai. 1975. Report on the mammals of the McCloud River Preserve. Unpublished report. 16 pp.

Remsen, J. V. 1978. Bird species of special concern in California. (Nongame Wildlife Investigation, Wildlife Management Branch, Administrative Report No. 78-1.) California Department of Fish and Game. Sacramento, CA. 54 pp.

Thomas, J. W., C. Maser, J. E. Rodeik. 1979. Wildlife habitats in managed rangelands--the Great Basin of southeastern Oregon riparian zones. (General Technical Report PNW-80.) USDA, Forest Service, Northwest Forest and Range Experiment Station. Portland, OR. 18 pp.

Verner, J. and A. S. Boss (tech. coords.). 1980. California wildlife and their habitats: western Sierra Nevada. (General Technical Report PSW-37.) USDA, Forest Service, Pacific Southwest Range and Experiment Station. Berkeley, CA. 439 pp.

Williams, D. F. 1986. Mammalian species of special concern in California. (Nongame Wildlife Investigations, Wildlife Management Branch, Administrative Report No. 86-1.) California Department of Fish and Game. Sacramento, CA. 112 pp.

Personal Communications

Brumley, T. November 3, 1987. Forest Biologist. Shasta-Trinity National Forest, Shasta Lake Ranger District, McCloud, CA. Telephone conversation.

Emmel, J. F. December 31, 1986. California Conservator. The Nature Conservancy, Hemet, CA. Letter.

Hesseldenz, T. October 23, 1987. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Telephone conversation.

Phelps, K. November 3, 1987. Wildlife Biologist. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation.

Chapter 5 Appendix

COMMON AND SCIENTIFIC NAMES OF ANIMAL SPECIES LISTED IN THIS CHAPTER

Chapter 5 Appendix

COMMON AND SCIENTIFIC NAMES OF ANIMAL SPECIES LISTED IN THIS CHAPTER

Common Name	Scientific Name
Mammals	
Beaver	*Castor canadensis*
Black bear	*Ursus americanus*
Bobcat	*Felix rufus*
Brush mouse	*Peromyscus boylii*
California ground squirrel	*Spermophilus beecheyi*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Fisher	*Martes pennanti*
Mountain lion	*Felis concolor*
Mule deer	*Odocoileus hemionus*
Northern pocket gopher	*Thomomys talpoides*
Raccoon	*Procyon lotor*
Ringtail	*Bassariscus astutus*
River otter	*Lutra canadensis*
Spotted skunk	*Spirogale gracilis*
Townsend's chipmunk	*Eutamias townsendi*
Western gray squirrel	*Sciurus griseus*
Wolverine	*Gulo gulo*
Birds	
Acorn woodpecker	*Melanerpes formicivorous*
American dipper	*Cinclus mexicanus*
Bald eagle	*Haliaeetus leucocephalus*
Bank swallow	*Riparia riparia*
Belted kingfisher	*Ceryle alcyon*
Black-throated gray warbler	*Dendroica nigresens*
Canyon wren	*Catherpes mexicanus*
Chestnut-backed chickadee	*Parus rufescens*
Common merganser	*Mergus merganser*
Dark-eyed junco	*Junco hyemalis*
Fox sparrow	*Passerella iliaca*
Golden-crowned kinglet	*Regulus satrapa*
Golden eagle	*Aquila chrysaetos*
Hermit thrush	*Cathurus guttatus*
Hairy woodpecker	*Picoides villosus*
Hermit warbler	*Dendroica occidentalis*
House wren	*Troglodytes aedon*
Lazuli bunting	*Passerina amoena*

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Common Name	Scientific Name
Birds (cont'd.)	
Northern flicker	Colaptes auratus
Northern goshawk	Accipiter gentilis
Orange-crowned warbler	Vermivora celata
Osprey	Pandion haliaetus
Peregrine falcon	Falco peregrinus
Pileated woodpecker	Dryocopus pileatus
Red-breasted nuthatch	Sitta canadensis
Red-breasted sapsucker	Sphyrapicus ruber
Rock wren	Salpinctes obsoletus
Rufous-sided towhee	Pipilo erythrophthalmus
Sharp-shinned hawk	Accipiter striatus
Solitary vireo	Vireo solitarius
Spotted owl	Strix occidentalis
Varied thrush	Ixoreus naevius
Western wood-pewee	Contopus sordidulus
White-crowned sparrow	Zonotrichia leucophrys
Willow flycatcher	Empidonax traillii
Wilson's warbler	Wilsonia pusilla
Yellow-rumped warbler	Dendroica coronata
Yellow warbler	Dendroica petechia
Reptiles	
California kingsnake	Lampropeltis getulus
California newt	Taricha torosa
Garter snake	Thamophis sirtalis and T. couchi
Gopher snake	Pituophis melanoleucus
Mountain kingsnake	Lampropeltis zonota
Mountain yellow-legged frog	Rana boylei
Northern alligator lizard	Gerrhonotus coeruleus
Pacific giant salamander	Dicamptodon ensatus
Pacific treefrog	Hyla regilla
Shasta salamander	Hydromantes shastae
Western fence lizard	Sceloporus occidentalis
Western rattlesnake	Crotalus virdis
Western skink	Eumeces skiltonianus
Western toad	Bufo boreas
Invertebrates	
Butterfly[a]	Euphydryas chalcedona dwinellei
Shasta sideband snail	Monadenia troglodytes

[a] Rare, unlisted species without a common name.

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FISHERY RESOURCES EVALUATION

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Chapter 6

FISHERY RESOURCES EVALUATION

Fishery resources comprise an important and integral part of existing natural resources in California. Aquatic environments--ranging from small mountain streams to large valley rivers and from small pristine ponds to large man-made impoundments--sustain a diverse array of fish species. The assemblage of fishes is unique and provides significant benefits to the people of California. Fishery resources are a dominating factor in local economies in certain regions of the State, and commercial salmon fisheries and recreational fisheries for salmon, trout, and striped bass are nationally significant. California's fishery resources, both historically and presently, have contributed immensely to California's wealth of natural resources, as well as to its economy.

California fishes depend on the maintenance of aquatic communities in which they survive, grow, and reproduce. Land use activities and water resources development can modify habitats and increase, reduce, or eliminate fish populations. The California Wild and Scenic Rivers System currently provides protection to selected important anadromous fishery habitat in California. One of the primary reasons cited for designating northcoast rivers to wild and scenic river status was to protect these important resources. Fishery resources are, therefore, considered critically important in the evaluation of rivers nominated for inclusion in the California Wild and Scenic Rivers System.

DATA SOURCES AND METHODOLOGY

The McCloud River fishery resources evaluation was based on a field reconnaissance on October 13-15, 1987, agency file data, published and unpublished reports obtained from State and federal agencies, published and unpublished literature on The Nature Conservancy's McCloud River Preserve (Preserve), anecdotal information obtained from individuals knowledgeable of the river fishery, and miscellaneous literature. California Department of Fish and Game (DFG) and Preserve personnel and reports were the primary information sources.

The McCloud River was divided into two segments--upper and lower--for data presentation. The upper segment includes 20 river miles from the U. S. Forest Service (USFS) campground at Algoma to McCloud Reservoir (Figure 1-2). The lower segment encompasses approximately 23 river miles from McCloud Dam to

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Shasta Lake (Figure 1-2). The 10-mile study reach on Squaw Valley Creek was unsegmented. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments. Surface water elevation fluctuations at both Shasta Lake and McCloud Reservoir each generally affect approximately 2 river miles on a temporary basis.

The study area was also divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately 2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act.

Scientific names of fishes mentioned in this chapter are listed in Appendix 6-1.

RESOURCE CHARACTERIZATION

Regional

The McCloud River is a major tributary of the Sacramento River, draining about one-third (670 square miles) of the upper Sacramento River Basin. Originating at Colby Meadow at an elevation of 4,250 feet, the McCloud River flows approximately 59 miles in a southwesterly direction to Shasta Lake. The river changes from a small, low-gradient stream to a moderately large river over this course. Springs on the southeastern slopes of Mt. Shasta provide significant inflow, especially at Big Springs. Corresponding changes in fish community structure are readily apparent. Several trout species comprise the major components of the fishery resources of the McCloud River.

Three waterfalls located within a 1.5-mile section of the upper McCloud River were historic barriers to upstream migrating fish (Figure 1-2). The previous fishery of the McCloud River up to these falls included chinook salmon (including winter-run fish), steelhead trout, rainbow trout, and bull trout (formerly called Dolly Varden). The only native fish above the falls was upper McCloud River redband trout. Nongame fish in the McCloud River included Sacramento squawfish, hardhead, Sacramento blackfish, Sacramento sucker, and prickly sculpin. Except for prickly sculpin, these species primarily occurred downstream of Tuna Creek Falls, located downstream of Tuna Creek in the lower McCloud River. The completion of Shasta Dam in 1945 and the subsequent filling of Shasta Reservoir inundated 16 miles of the McCloud River, eliminating all runs of anadromous fish (chinook

salmon and steelhead trout). McCloud Dam, built upstream of Shasta Dam in 1965 (Figure 1-2), further restricted fish movements and created two segregated fisheries.

Bull trout, endemic in California to the McCloud River, have not been documented in the McCloud River system since 1975. Extensive DFG surveys in 1977-78 did not locate a single bull trout (Rode 1987). Recent fishery sampling programs and angling also have not resulted in any bull trout catches. Consequently, the bull trout is thought to be extirpated from California waters. The bull trout's decline has been attributed to habitat inundation, upstream extension or introduction of potential competitors such as brown trout, flow stabilization, elimination of juvenile anadromous salmonids as prey, and blockage of historic spawning habitat (Moyle 1976). Most of these factors are related to construction and operation of Shasta and McCloud Dams.

Upper McCloud River redband trout are present in the McCloud River near Algoma, in several tributaries upstream of Middle Falls, and in some isolated drainages in the area. Redbands constitute a special group of undescribed native western North American trout related to rainbow trout. Originally native to much of the Pacific Northwest, redband trout populations have been dramatically reduced, primarily because of hybridization and competition with nonnative trout and destruction of critical habitat. Redband trout in the upper McCloud River appear to be distinct from other redband trout populations based on electrophoretic studies (Berg 1987). The upper McCloud redband trout is electrophoretically distinct from other California native and hatchery trout, despite a long history of stocking other strains in the upper McCloud River drainage. Regionally, redband and redband-like trout exist in several McCloud River tributaries upstream of the study area, including Sheepheaven, Tate, Bull, Moosehead, Edson, and Swamp Creeks (Gerstung 1980).

Redband trout are currently noted as a species of special concern (Johnson 1987) and were nominated for listing under the Endangered Species Act of 1973 (50 FR 37958-37967). Recently, redband trout endemic and restricted to the upper McCloud River have been found to be a genetically distinct subspecies of rainbow trout (Berg 1987). The McCloud River populations, like other populations in the Pacific Northwest, independently diverged from a common ancestor, coastal rainbow trout.

Another interesting historical note was the establishment in 1879 of the first rainbow trout egg-taking station in California at Green's Creek, a McCloud River tributary now covered by Shasta Lake. The McCloud River rainbow became known as "the rainbow of the fish culturist" because eggs from this population accounted for rainbow trout plants in the 1880s to eastern states as well as many countries throughout the world (Rode 1987).

Introduced brown and brook trout presently occur in much of the McCloud River drainage along with hatchery strains of stocked rainbow trout. Hatchery stocking of rainbow trout currently occurs in the upper McCloud River, Lake McCloud, and Shasta Lake.

Secondary Study Area

The secondary study area comprises many tributaries of the McCloud River. Most of the tributaries maintain wild trout populations. Rainbow trout populations typically dominate these streams. Brown and brook trout are dominant in others. Some tributaries may provide important spawning or nursery habitat for trout populations within the primary study area; trout frequently use smaller tributaries during these life history events (Bjornn 1971, Everest 1973, Erman and Hawthorne 1976). Tributaries can also be important sources of trout recruitment into larger streams.

Tate Creek is a major tributary of the McCloud River just upstream of Algoma. This high-gradient stream provides excellent trout spawning and nursery habitat (Wales 1939). Brown trout inhabit the lower reaches of the creek. Small populations of redband trout are found throughout the creek (Berg pers. comm.). Other tributaries that may provide spawning and nursery habitat for trout within the upper McCloud River include Bull, Whiskey, and Angel Creeks.

Approximately 12 direct tributaries to the lower McCloud River exist. Hawkins, Claiborne, Squaw Valley, and Chatterdown Creeks are the largest tributaries. These creeks support rainbow trout and some brown trout populations and contain good nursery and spawning habitat (Wales 1939). Most other tributaries maintain smaller populations of rainbow trout and less nursery and spawning habitat. Tom Neal and Tom Dow Creeks, tributaries to Squaw Valley Creek, maintain rainbow trout populations.

All streams tributary to the lower McCloud River are subject to general fishing regulations, including a 10-trout bag limit with no special gear restrictions.

Primary Study Area

Upper McCloud River

The upper McCloud River originates on a midelevation plateau at Colby Meadow, situated 4,250 feet above sea level. The McCloud River here is a small, low-gradient stream, meandering through forests and open meadows. This habitat is characteristic of the McCloud River from Algoma to Upper Falls

(Figure 1-2). From Upper Falls to Big Springs, the river flows approximately 4 miles through a shallow canyon characterized by numerous pools and runs. Big Springs, named for a series of springs which flow from the north bank, contribute about 800 cubic feet per second (cfs) of water into the McCloud River, more than 10 times greater than the average summer flow upstream. This natural spring inflow changes the McCloud River into a large, clear, cold-water river with summer water temperatures seldom exceeding 50°F. The river flows unimpaired for 5.5 miles before entering McCloud Reservoir.

The upper McCloud River fishery consists of approximately equal numbers of wild rainbow and brown trout, with smaller populations of brook trout (Deinstadt pers. comm.). Wild populations of redband, brown, and brook trout also are present throughout the upper McCloud River above Middle Falls and offer good fishing except at the numerous access points where hatchery trout are planted and high angler pressure reduces wild populations.

Catchable-sized rainbow trout are stocked annually by DFG at most road access points from the Bartle area to Lower Falls. This area is easily accessible and receives heavy fishing pressure (Strate and Underwood 1982). Generally, relatively few hatchery trout are found downstream of the plunge pool located below Lower Falls (Rode pers. comm.). Wild rainbow trout are abundant below the waterfalls and can reach 20 inches in length. A few brown trout are found in this area, too, but some are in poor condition because of the unfavorably cold water temperatures. The upper McCloud River maintains an excellent wild rainbow trout fishery. Private property and restricted access downstream of Lower Falls to McCloud Reservoir are major factors contributing to current trout population levels.

Standard fishing regulations are in effect on the upper McCloud River. The bag limit for trout is 10 fish.

Lower McCloud River

The lower McCloud River flows 24 miles through rugged mountainous canyons and dense mixed coniferous forests from McCloud Dam to Shasta Lake. Flows are highly regulated by McCloud Dam. Minimum monthly flow releases of 40-50 and 160-210 cfs are required below McCloud Dam and Ah-Di-Na, respectively. Hawkins Creek provides much of the minimum flow requirement at Ah-Di-Na during normal years. Mean monthly flows from 1967 to 1985 ranged from 198 to 220 cfs at Ah-Di-Na during June to October. Flows would have ranged from 924 to 1,245 during the same period without McCloud Dam diversions (U. S. Geological Survey 1967-85).

Water quality is generally good except for occasional episodes of high turbidity attributed to Mud Creek inflow and

sediment sluicing from McCloud Dam. Reductions in natural flushing flows and increased sedimentation have degraded spawning habitat in several areas, particularly immediately below McCloud Dam (Rode 1987).

A large section of the lower McCloud River is managed as a California Wild Trout Water. In 1976, the California Fish and Game Commission designated a 10.5-mile reach below McCloud Dam for special management and habitat protection. The California Wild Trout Program was established by the California Fish and Game Commission in 1971 to manage certain State waters exclusively for wild trout. The primary purpose of the Wild Trout Program is to identify, perpetuate, and enhance natural and attractive trout fisheries by emphasizing wild trout strains, in contrast to the majority of the State's accessible waters, which are managed by planting catchable-sized hatchery trout on a "put-and-take" basis.

Wild trout angling is considered a quality experience that provides the angler with an opportunity to fish in aesthetically pleasing and environmentally productive waters where trout populations are largely unaffected by the angling process. Stocking of catchable-sized trout is prohibited in Wild Trout Waters, and special angling regulations specific to each water can be adopted. Angling and gear restrictions within Wild Trout Waters on the lower McCloud River include a 2-trout bag limit from McCloud Dam to Ladybug Creek, 0-trout bag limit in the upper 2 miles of the Preserve (Ladybug Creek to southern boundary of Section 14), and complete fishing closure in the lower 4 miles of the Preserve. The method of take is restricted to artificial lures only with a single barbless hook. Other regulations are enforced on the Preserve as well. The bag limit downstream of the Preserve on the McCloud River, Squaw Valley Creek, and other tributaries is 10 trout.

Much of the lower McCloud River represents classic "pocket water." The habitat is characterized by long, boulder-strewn runs 1.5-3 feet in depth and 15-1,200 feet in length, alternating with large bedrock pools 6-12 feet deep and 60-300 feet long. Instream cover for trout is provided by boulders, cobble, turbulent water, deep pools and runs, some cut-banks, and occasional downed trees and other debris. The river and pools become larger in downstream areas. (Rode 1987)

The present fishery of the lower McCloud River is dominated by wild rainbow and brown trout. The most common fish is the native rainbow trout. It is a highly colorful and vigorous fish, whose fighting qualities have earned the lower McCloud River its reputation as one of the top wild trout fisheries in California. An average of 88 percent of the reported trout catch at the Preserve is rainbow trout, with anglers reporting about 12 percent of the caught trout 14 inches in length or larger. Rainbow trout over 20 inches in length are sometimes caught. (Rode 1987)

Brown trout are resident throughout the lower McCloud River but are greater in number in downstream areas. Because they reach large sizes (to 32 inches), brown trout add an exciting element to the wild trout fishing experience; anglers report about 19 percent of brown caught at the Preserve are 14 inches in length or larger. McCloud River brown trout undertake substantial migrations between the river and Shasta Lake. (Rode 1987)

Prickly sculpin, Sacramento sucker, Sacramento squawfish, and smallmouth bass are also present in the lower McCloud River. Except for prickly sculpin, which are common throughout the lower McCloud River, all of these species are found predominantly below Tuna Creek Falls.

The lower McCloud River fishery is noted for its relatively high catch rate with anglers reporting catches of 1.3 trout per angler hour in the Preserve. This rate is substantially higher than values recorded for three other northern California Wild Trout Waters, where rates ranged from 0.42 to 0.83 trout per hour. (Rode 1987)

Squaw Valley Creek

Squaw Valley Creek is the primary tributary of the McCloud River. The study corridor includes the lower 10 miles of Squaw Valley Creek. The creek flows through a moderately steep bedrock channel, bordered on either side by steep canyon walls with numerous small shelves. The watershed is heavily forested within the study area, and stream shading is extensive. Fisheries habitat is in excellent condition and consists of interspersed riffles, runs, and bedrock pools.

Few data exist on the fish populations of Squaw Valley Creek. Recent DFG sampling indicates rainbow and brown trout comprise about 92 and 8 percent of the trout fishery, respectively (Deinstadt pers. comm.). Estimates from snorkeling surveys indicated 80 percent of the trout were rainbow trout (Rensink and Parmenter 1986). A few large rainbow and brown trout from the McCloud River may spawn in Squaw Valley Creek.

CONCLUSIONS

The McCloud River supports one of the premiere wild trout fisheries in California. Catch rates are high, the average size of both creeled and released trout has remained large, and a significant portion of the catch has consisted of trophy-sized trout in much of the river. The McCloud River has also played a significant historical role in the expansion of rainbow trout distribution throughout the world.

The upper McCloud River contains extraordinary fishery resource from Lower Falls to Huckleberry Creek. The wild rainbow trout fishery here is exceptional and trophy-sized rainbow and brown trout can be caught. The McCloud River above Lower Falls does not maintain extraordinary fishery resources. The fishery here is dominated by hatchery-raised rainbow trout at most road access locations and relatively small wild trout a short distance from these heavy use areas. Although this fishery is rated as good, catchable "put-and-take" rainbow trout fisheries and fisheries for relatively small wild trout are quite common in California and do not represent extraordinary resources as defined in this report.

Redband trout habitat in the watershed lies within much of the upper study area. Redband trout, while ecologically significant in terms of trout zoogeography, speciation, and evolution in California, do not constitute extraordinary resources as defined in this report.

The lower McCloud River represents one of the finest wild trout streams in California, and the entire segment from 0.25 mile downstream from McCloud Dam to the McCloud Bridge near Shasta Lake is rated as extraordinary. Large populations of trophy-sized rainbow and brown trout are present throughout the segment, and the quality angling experience is unsurpassed in California.

Squaw Valley Creek supports a good trout fishery, primarily for wild rainbow trout and a few wild brown trout. The creek may also provide spawning habitat and recruitment for McCloud River fish. The Squaw Valley Creek study segment is rated as good and does not represent an extraordinary fishery.

BIBLIOGRAPHY

References Cited

Berg, W. 1987. Evolutionary genetics of rainbow trout, Parasalmo gairdnerii (Richardson). (Ph.D. dissertation.) University of California, Davis. Davis, CA. 126 pp.

Bjornn, T. C. 1971. Trout and salmon movements in two Idaho streams as related to temperature, food, stream flow, cover, and population density. Transactions of the American Fisheries Society 100:423-438.

Erman, D. C. and V. M. Hawthorne. 1976. The quantitative importance of an intermittent stream in the spawning of rainbow trout. Transactions of the American Fisheries Society 105:675-681.

Everest, F. H. 1973. Ecology and management of summer steelhead in the Rogue River. (Fisheries Research Paper No. 7.) Oregon State Game Commission. Portland, OR. 48 pp.

Gerstung, E. R. 1980. 1979 Annual report of the Threatened Salmonids Project. California Department of Fish and Game, Inland Fisheries Branch. Sacramento, CA. Unpublished report. 39 pp.

Johnson, J. E. 1987. Protected fishes of the United States and Canada. American Fisheries Society. Bethesda, MD. 42 pp.

Moyle, P. B. 1976. Inland fishes of California. University of California Press. Berkeley, CA. 405 pp.

Rensink, G. and S. Parmenter. 1986. 1983 Fisheries studies on the McCloud River Club, Lower Squaw Valley Creek, and the Lower McCloud River Preserve. The Nature Conservancy. McCloud, CA. Prepared for: The McCloud River Club, McCloud, CA. 36 pp.

Rode, M. 1987. California Wild Trout Management Program, McCloud River Wild Trout Area Management Plan (Draft). (Inland Fisheries Administrative Report No. 1987.) California Department of Fish and Game. Sacramento, CA. Unpublished report. 67 pp. + tables.

Strate, B. and T. Underwood. 1982. McCloud River survey. Prepared for: U. S. Forest Service, McCloud Ranger District, McCloud, CA. Unpublished data.

U. S. Geological Survey, Water Resources Division. 1967-85. Water resource data for California, Part 1, Volume 2, and water data report series for California. Sacramento, CA.

Wales, J. H. 1939. General report of investigations on the McCloud River drainage in 1938. California Fish and Game 25(4):272-309.

Personal Communications

Berg, W. October 12, 1987. Doctoral Candidate. University of California, Davis, CA. Telephone conversation.

Deinstadt, J. M. October 12, 1987. Fisheries Biologist. California Department of Fish and Game, Rancho Cordova, CA. Memo.

Rode, M. October 14, 1987. Fisheries Biologist. California Department of Fish and Game, Mt. Shasta, CA. Meeting.

Chapter 6 Appendix

COMMON AND SCIENTIFIC NAMES OF FISH SPECIES LISTED IN THIS CHAPTER

Chapter 6 Appendix

COMMON AND SCIENTIFIC NAMES OF FISH SPECIES LISTED IN THIS CHAPTER

Common Name	Scientific Name
Brown trout	*Salmo trutta*
Rainbow trout	*Salmo gairdneri*
Redband trout	*Salmo* sp.
Steelhead trout	*Salmo gairdneri*
Brook trout	*Salvelinus fontinalis*
Bull trout	*Salvelinus confluentus*
Chinook salmon	*Oncorhynchus tshawytscha*
Sacramento blackfish	*Orthodon microlepidotus*
Sacramento squawfish	*Ptychocheilus grandis*
Hardhead	*Mylopharodon conocephalus*
Sacramento sucker	*Catostomus occidentalis*
Smallmouth bass	*Micropterus dolomieui*
Prickly sculpin	*Cottus asper*

RECREATIONAL RESOURCES EVALUATION

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Chapter 7

RECREATIONAL RESOURCES EVALUATION

Water is recognized as an important feature of the outdoor recreation experience. Many of the most popular outdoor activities are dependent on streamflow and the immediate stream environment. The presence of flowing water at streamside and instream recreation sites is without question an important factor in recreation site selection. Recreational use simultaneously is dependent upon and influences scenic, fishery, and wildlife values--values that determine wild and scenic river eligibility. Because of the intense competition for water resources in California, it is important to identify recreational needs for water and to protect extraordinary recreational opportunities for Californians and out-of-state visitors.

This chapter evaluates recreational resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud River extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

Recreational information for the McCloud River was obtained from federal and State agencies and a number of other individuals and interest groups. Field reconnaissance on October 13-16, 1987 provided additional information.

The McCloud River was divided into two segments--upper and lower--for data presentation. The upper segment includes 20 river miles from the U. S. Forest Service (USFS) campground at Algoma to McCloud Reservoir (Figure 1-2). The lower segment extends 23 miles from McCloud Dam to Shasta Lake. The 10-mile study reach on Squaw Valley Creek was unsegmented. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments.

The study area also was divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately

2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act. The primary and secondary study areas are interrelated for this resource; therefore, separate analyses for each of these study areas were not conducted.

RESOURCE CHARACTERIZATION

Regional

The McCloud River watershed maintains opportunities for a wide variety of recreational activities. Most of the river's watershed is located within Shasta-Trinity National Forest. The Shasta-Trinity National Forest in turn is bordered by the Klamath, Modoc, Six Rivers, and Lassen National Forests. The McCloud River flows into Shasta Lake, which is part of the Whiskeytown-Shasta-Trinity National Recreation Area. Portions of the upper watershed are located on the slopes of Mt. Shasta, designated as a national recreation area. Two State parks, a national park, and a national monument exist within 90 miles of the McCloud River. In addition, numerous private recreational developments in the region and land controlled by Pacific Gas and Electric Company, such as McCloud Reservoir, are open to public recreation use.

The mountains which rise above the northern end of the Central Valley near the junctions of the Sierra Nevada, Coast Ranges, and Cascade Range are heavily used by Californians for recreation. The population in the region is expected to grow 18 percent by 1990, and outdoor recreation participation will increase at an even higher rate (U. S. Forest Service 1986). One of the four major recreational issues for the Shasta-Trinity National Forest is the need for water-associated recreation (U. S. Forest Service 1986).

Primary and Secondary Study Areas

The McCloud River corridor offers opportunities for a number of recreational activities, including fishing, camping, hiking, nature observation and interpretation, and some limited opportunities for whitewater boating. One of the biggest factors limiting recreational use on the river is access. More than 35 miles of the 44-mile McCloud River study segment is privately owned. Some private lands, such as The Nature Conservancy property and much of the private land above Fowler's

Campground, are accessible to the general public. Many other private lands are fenced and posted.

The upper McCloud River corridor from 0.5 mile below Lower Falls to McCloud Reservoir is owned by the Hearst Corporation and is inaccessible, to the general public. Upstream, the land is owned and controlled by Champion Timberlands or USFS. USFS lands are fully accessible to the public. Champion lands are generally accessible but overnight camping is not allowed. Fire ring evidence indicates, however, that some camping does occur. USFS is presently negotiating with Champion Timberlands for a land exchange that would bring more of the river corridor in this area into public ownership (Hesseldenz pers. comm.).

The first 0.8 mile of the lower McCloud River corridor below McCloud Reservoir is owned by the Hearst Corporation. A road parallels the river here and is open to the public. The next 5 miles of river corridor are USFS land. An undeveloped campground known as Ash Camp is located on the McCloud River about 1.0 mile downstream from McCloud Dam and the access road heads up the Hawkins Creek watershed from Ash Camp. Vehicular access to the river is available in only one reach below Ash Camp, from near the USFS Ah-Di-Na Campground to the USFS boundary and end of the road 1.7 miles below Ah-Di-Na. The river is accessible only by trail between Ash Camp and Ah-Di-Na. From the end of the road 1.7 miles below Ah-Di-Na, the upper portion of the Nature Conservancy's McCloud River Preserve (Preserve) and a short reach of river flowing through USFS land near the mouth of Bald Mountain Creek is accessible by trail; this trail provides access to 2.5 miles of river. The lower 3.0 miles of river within the Preserve is closed to fishing and general public use. A small parcel of public land along the river corridor exists just below the Preserve and is inaccessible to the general public because the lower portion of the Preserve is closed to public use. Downstream of this small parcel, the river corridor is completely privately owned by two membership fishing clubs and is inaccessible to the general public.

The creek corridor along Squaw Valley Creek, from near the beginning of the study section at Cabin Creek downstream to within approximately 1.25 miles of the confluence with the McCloud River, is owned and managed by the USFS. The final 1.25 miles of creek corridor are owned by the McCloud River Club, and public access is not allowed.

A small road winds down the valley through USFS and then McCloud River Club lands to the McCloud River Club headquarters on the McCloud River. The road has several locked gates restricting public vehicular access to Squaw Valley Creek. McCloud River Club members are the only individuals allowed vehicular use of this road. The public is allowed access by foot to the public land along Squaw Valley Creek.

Camping

Five developed USFS campgrounds are located along the McCloud River. The three developed campgrounds along the upper McCloud River are Fowler's Camp, Cattle Camp, and Algoma. There is also a developed picnic ground at Lower Falls. Ah-Di-Na and McCloud Bridge are developed campgrounds on the lower McCloud River. Use at McCloud Bridge Campground, located on the extreme lower end of the McCloud River or on Shasta Lake, depending on reservoir levels, is oriented more toward reservoir than river recreation (Stevens pers. comm.). Ash Camp is also a popular camping area, although it has no facilities.

River campgrounds are used heavily (Table 7-1). Forty percent theoretical capacity is the nationally accepted level of maximum advisable occupancy of a developed camp site (U. S. Forest Service 1986). Use beyond that level deteriorates the site and reduces the quality of the recreational experience. Percent occupancy at the river campgrounds ranges from 50 percent at Ah-Di-Na to 120 percent at Cattle Camp.

Fishing

The McCloud River is famous for its fishery resources and is considered by many to be one of California's premiere trout streams. (See "Fishery Resources Evaluation.")

The California Department of Fish and Game (DFG) plants approximately 35,000 catchable-sized rainbow trout annually in the upper McCloud River above Lower Falls (Rode pers. comm.). Assuming all planted fish are caught at an average catch rate of 0.5 fish per hour, fishing for hatchery trout represents about 5,800 recreation visitor days (RVD) per year. (An RVD is 12 visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.) A fishery exists for wild trout throughout the upper McCloud River, and substantial fishing occurs for these wild trout. Quantitative estimates of fishing pressure are unavailable, but limited access reduces angling opportunities significantly. Field observations between Big Springs and McCloud Reservoir indicate that the recreational fishing potential is outstanding but susceptible to degradation if access were increased. No special fishing regulations apply to the upper McCloud River.

Special fishing regulations exist for the upper portion of the lower McCloud River. (See "Fishery Resources Evaluation.") The river from McCloud Reservoir downstream to just below the Bald Mountain Creek river bend is open to the public for fishing. Reservations are needed to fish at the Preserve, and special angling regulations are enforced. The Nature Conservancy allows 10 anglers per day on the Preserve. Five spots are held for first come-first serve status; the remaining five spots are filled by reservation.

Table 7-1. Estimated Recreational Visitor-Days at Developed Campgrounds and Picnic Areas Along the McCloud River

Campground	Number of Units	Recreational Visitor-Days Per Year	Percent Theoretical Capacity
Algoma	8	7,474	100
Cattle Camp	Unknown	15,481	100
Fowler's	40	29,945	75-80
Ah-Di-Na	17	8,842	50
Lower Falls Picnic Area	0	3,700	NA

Sources: Russum and Koehler pers. comms.

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The lower McCloud River is well known throughout the State and country for trophy rainbow and brown trout fishing. It is not unusual to find people from outside California camping at Ah-Di-Na while visiting the McCloud River for its fishing and scenic experiences. The number of RVDs spent in this section of the river is unknown, but 1,800 people visited the Preserve in 1984. More than half of these recreationists came for the angling experience (Hesseldenz pers. comm.).

Recreational fishing on the 13 miles owned by private fishing clubs is limited. The McCloud River Club has 10 members, only five of whom are active. The Bollibokka Club membership size is larger at around 20-25 individuals. The number of RVDs spent by club members and the amount of fishing pressure exerted on the lower 13 miles of the river is very small.

Squaw Valley Creek receives very little fishing pressure although fishing is good in the lower sections of the creek and the area is quite scenic.

Hiking

The Pacific Crest National Scenic Trail (PCT) extends from Canada to the Mexican border, a distance of 2,600 miles. The PCT crosses the McCloud River near the confluence of Hawkins Creek with the lower McCloud River. A footbridge crosses the river at this point, and the trail follows along the north side of the river valley between Ash Camp and Ah-Di-Na. Just below the confluence of Cabin Creek and Squaw Valley Creek, the trail crosses Squaw Valley Creek by footbridge. The PCT is the only maintained trail in the McCloud Ranger District. Hiking and backpacking opportunities exist along the McCloud River but are limited by the lack of trails and access. The lower McCloud River and Squaw Valley Creek are surrounded by the East and West Girard roadless areas and are within a proposed wilderness area.

Another major focus of many of the visitors who come to the Preserve is nature interpretation and scientific research. The Preserve has an interpretive trail system, and several biological-oriented research projects have focused on McCloud River flora and fauna.

Whitewater Boating

A small amount of private boating, mostly kayaking, occurs on the upper McCloud River between Lower Falls and McCloud Reservoir. The number of raft trips is limited by the uncomfortably low water temperatures, suboptimum water conditions, low-flow problems at the put-in, and a long paddle across McCloud Reservoir to get to the take-out. No more than 300 float trips per year are made on the upper McCloud River (Phelps pers. comm.). The Hearst Corporation has protested all boating

on the upper river, claiming it is a form of trespass. Kayakers can use the upper river almost all year, and the scenery is spectacular.

A controversy developed in 1982-83 regarding whitewater boating on the McCloud River. In May 1982, a commercial rafting company ran an exploratory trip down the river and applied to the USFS for a commercial use permit to run rafting trips on the lower McCloud River. The permit application was protested by private landowners because of generally unsuitable rafting conditions, inadequate overnight camping locations, technical and dangerous boating conditions, potential ecological disturbances, use conflicts with fishing, and management and trespass problems. The USFS eventually denied the permit.

CONCLUSIONS

The McCloud River is most well known for its semipristine condition and trophy trout fishery. The quality of the angling experience alone results in an extraordinary rating for recreational resources throughout most of the McCloud River study segments. The river offers many diverse angling opportunities. Anglers can gain relatively easy vehicular access at the three waterfalls on the upper McCloud River and fish for hatchery trout. Trophy-sized wild trout can be caught at Ash Camp or Ah-Di-Na on the lower McCloud River, two other easily accessible locations. Extended hiking and scrambling opportunities to find secluded fishing spots on public land are also available. Anglers have the opportunity to fish under strictly catch-and-release regulations under a two-trout-per-day bag limit or under the standard 10-trout bag limit. Limited access reduces the value of the McCloud River to the public, but this limited access is a major factor prohibiting overuse of the area.

Rafting in the upper McCloud River is restricted to a narrow time of suitable flows each year. Logistic problems at put-in and take-out sites are considerable, and the legality of public rafting through private property has not been resolved. Nonetheless, a few rafters each year float from Lower Falls to McCloud Reservoir. The trip is extraordinary because of the scenic qualities of the river corridor, which are unsurpassed in California. (See "Scenic Resources Evaluation.") Hiking, backpacking, camping, kayaking, nature observation, and ecological values also contribute to the extraordinary recreational experience.

Extraordinary recreational resources are present from Upper Falls to Huckleberry Creek on the upper McCloud River. While camping, hiking, and fishing opportunities exist upstream of Upper Falls, and the level of use is high, these opportunities are not extraordinary. Riverside camping and hatchery trout fishing are common in California. Extraordinary scenic

resources such as Big Springs, the three waterfalls, large summer flows, and a rugged canyon environment are absent upstream of Upper Falls, as are opportunities to fish for trophy-sized trout. Recreational resources, therefore, are rated as good upstream of Upper Falls.

Below Huckleberry Creek, the McCloud River exhibits impacts from McCloud Reservoir water level fluctuations. Rafting and other recreational opportunities are rated as fair in this segment, while fishing is very good.

Recreational resources from 0.25 mile downstream of McCloud Dam to the USFS bridge near Shasta Lake are extraordinary. This rating is based primarily on extraordinary fishing opportunities but is also based on hiking, camping, nature observation, and ecological values that contribute to the recreational experience. The short river segments above and below this reach are adversely influenced by the presence of McCloud Dam and Shasta Lake, respectively. Consequently, these segments do not contain extraordinary recreational resources.

Recreational opportunities on Squaw Valley Creek include hiking, backpacking, fishing, and nature observation. The river corridor is pristine, and recreation is limited to wilderness activities. Recreation is rated as good in Squaw Valley Creek but not extraordinary. The lack of a single extraordinary recreational opportunity precludes a higher overall rating.

BIBLIOGRAPHY

References Cited

U. S. Forest Service. 1986. Draft environmental impact statement: Shasta-Trinity National Forests land and resource management plan. USDA, Shasta-Trinity National Forest. Redding, CA. Ca. 1,000 pp.

Personal Communications

Hesseldenz, T. October 13-16 and November 3, 1987. Preserve Manager. McCloud River Preserve, The Nature Conservancy, McCloud, CA. Telephone conversation and meeting.

Koehler, P. January 6, 1988. Resource Technician. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation.

Phelps, K. October 16 and 23, 1987. Wildlife Biologist. Shasta-Trinity National Forest, McCloud Ranger District, McCloud, CA. Telephone conversation and meeting.

Rode, M. October 13, 1987. Fisheries Biologist. California Department of Fish and Game, Mount Shasta, CA. Meeting.

Russum, J. October 2, 9, and 16, 1987. Resource Officer. Shasta-Trinity National Forest, McCloud Ranger District, McCloud CA. Telephone conversation and meeting.

Stevens, R. October 10, 1987. Recreation and Lands Officer. Shasta-Trinity National Forest, Shasta Lake Ranger District, Redding, CA. Telephone conversation.

Chapter 8

SCENIC RESOURCES EVALUATION

All natural resource values contribute to scenic qualities. Unique in this respect, aesthetics are influenced by geologic, hydrologic, botanical, wildlife, fishery, recreational, and cultural resource values. Scenic qualities of a river corridor are sensitive and can be significantly reduced by inappropriate land use, water development, or overcrowding by recreationists. Quality aesthetic resources are a key component of designated wild and scenic rivers. All wild and scenic rivers typically maintain aesthetic resources rated as good or extraordinary, and as a consequence, aesthetic resources are excellent indices of wild and scenic rivers.

This chapter evaluates scenic resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

The McCloud River was divided into two segments--upper and lower--for data presentation. The upper segment includes 20 river miles from the U. S. Forest Service (USFS) campground at Algoma to McCloud Reservoir (Figure 1-2). The lower segment extends 23 miles from McCloud Dam to Shasta Lake. The 10-mile study reach on Squaw Valley Creek was unsegmented. McCloud Reservoir inundates 5 miles of the McCloud River between the upper and lower segments. Surface water elevation fluctuations at both Shasta Lake and McCloud Reservoir each generally affect approximately 2 river miles on a temporary basis.

The study area also was divided into regional, secondary, and primary study areas. The regional study area lies generally within the watershed boundary of the McCloud River. The secondary study area includes the area within an approximately 2-mile-wide corridor (boundaries located 1 mile from each riverbank) along the nominated river segments (Figure 1-2). The primary study area lies within the nominated river segments but extends only up to the first line of permanently established riparian vegetation on both riverbanks. Primary study area

boundaries coincide with boundaries established by definition in the California Wild and Scenic Rivers Act. The primary and secondary study areas are interrelated for this resource, and separate analyses for each study area were not conducted. The river and surrounding landscape together form the visual images that sequentially comprise the river's visual corridor; it is inappropriate to separate one element from the other.

Past Studies

As part of the forest planning effort, the U. S. Forest Service (USFS) has assessed visual resources of public lands within the McCloud River and Squaw Valley Creek watersheds. The USFS used its standard visual management system for the analysis. The first step in the USFS methodology is to classify landscapes by variety. Variety is evaluated using form, line, color, texture, and combinations thereof. USFS variety classes are rated A, B, or C (U. S. Forest Service 1974). Viewsheds in variety class A are considered distinct and of unusual or outstanding visual quality. Class B viewsheds contain variety common throughout the region. Variety class C refers to areas with features having little variety.

Sensitivity levels are then assigned to the landscape to reflect public concern for the scenic quality of the area. Sensitivity levels range from 1 to 3, with 1 representing the most sensitive scenic qualities. Foreground, middleground, and background distance zones from viewing points are also assigned to each area. One of five visual management objectives is then assigned to each area: preservation, retention, partial retention, modification, or maximum modification.

The USFS has rated the visual quality within the foreground of the entire McCloud River study area as variety class A and sensitivity level 1, with a visual quality objective of retention. On the lower McCloud River outside the immediate river corridor (i.e., 200 feet on either side of the river), most river canyon slopes visible from the water have been rated as variety class B and sensitivity level 1 with a visual quality objective of partial retention. On the upper McCloud River most of the viewshed outside the immediate river corridor has been rated as variety class C and sensitivity level 1, with a visual quality objective of partial retention.

Along Squaw Valley Creek, the immediate creek corridor was rated as variety class A and sensitivity level 3, with a visual quality objective of partial retention. The remainder of the visual corridor along Squaw Valley Creek was rated as variety class B and sensitivity level 3, with a visual quality objective of maximum modification.

The USFS visual assessment was oriented toward the total landscape and not the river corridor itself. Although the assessment provides valuable background information, an approach focused on the riverscape itself was needed.

Study Methodology

The visual resource assessment methodology used in this study generally followed the approach outlined by Litton et al. (1974). The visual resource analysis process is illustrated in Figure 8-1. The setting unit, the basic unit of analysis emphasized in this study, is composed of the landscape, which generally includes the river, and the waterscape, which includes the immediate visual corridor seen from the river. The landscape or waterscape may be dominant at the scale of the setting unit. Setting units can be described by evaluating physical characteristics of the river landscape including: enclosure features; boundary and landform definition; and vegetation, cultural, and land use patterns; and waterscape including: prominence, continuity, and transition.

Criteria used to evaluate landscape and waterscape components in this analysis are unity, variety, and vividness. Unity is the degree to which natural and man-made landscape elements are compatible and form a harmonious and coherent whole. Variety expresses the degree of richness or diversity in the landscape. Vividness measures the memorability and distinctiveness of the landscape. Unity, variety, and vividness values must be integrated because no single criterion is adequate to evaluate aesthetic resources, and the three criteria vary in their importance. Together, the criteria represent a continuum (Litton et al. 1974). An example of how these criteria are used to evaluate visual quality within a setting unit is provided in Table 8-1 as developed from Litton et al. (1974). Setting units were rated overall as poor, fair, good, or extraordinary.

Numeric values were not assigned to the criteria in this study. Criteria were used first as a tool to define the landscape and second as a checklist to consider all relevant factors. Any visual assessment requires a certain amount of professional judgment. Scenic quality is difficult to define but generally represents the overall impression retained after traveling through an area. The study team considered not only physical components of the landscape but also ephemeral landscape qualities and the relative qualities of the riverscape in a regional context.

Setting unit evaluations were facilitated by a field reconnaissance survey. The study team made an aerial reconnaissance of the river corridor in a fixed-wing airplane and then hiked and photographed the corridor on October 13-15, 1987. Approximately 250, 35mm color slides were taken for use in the visual analysis.

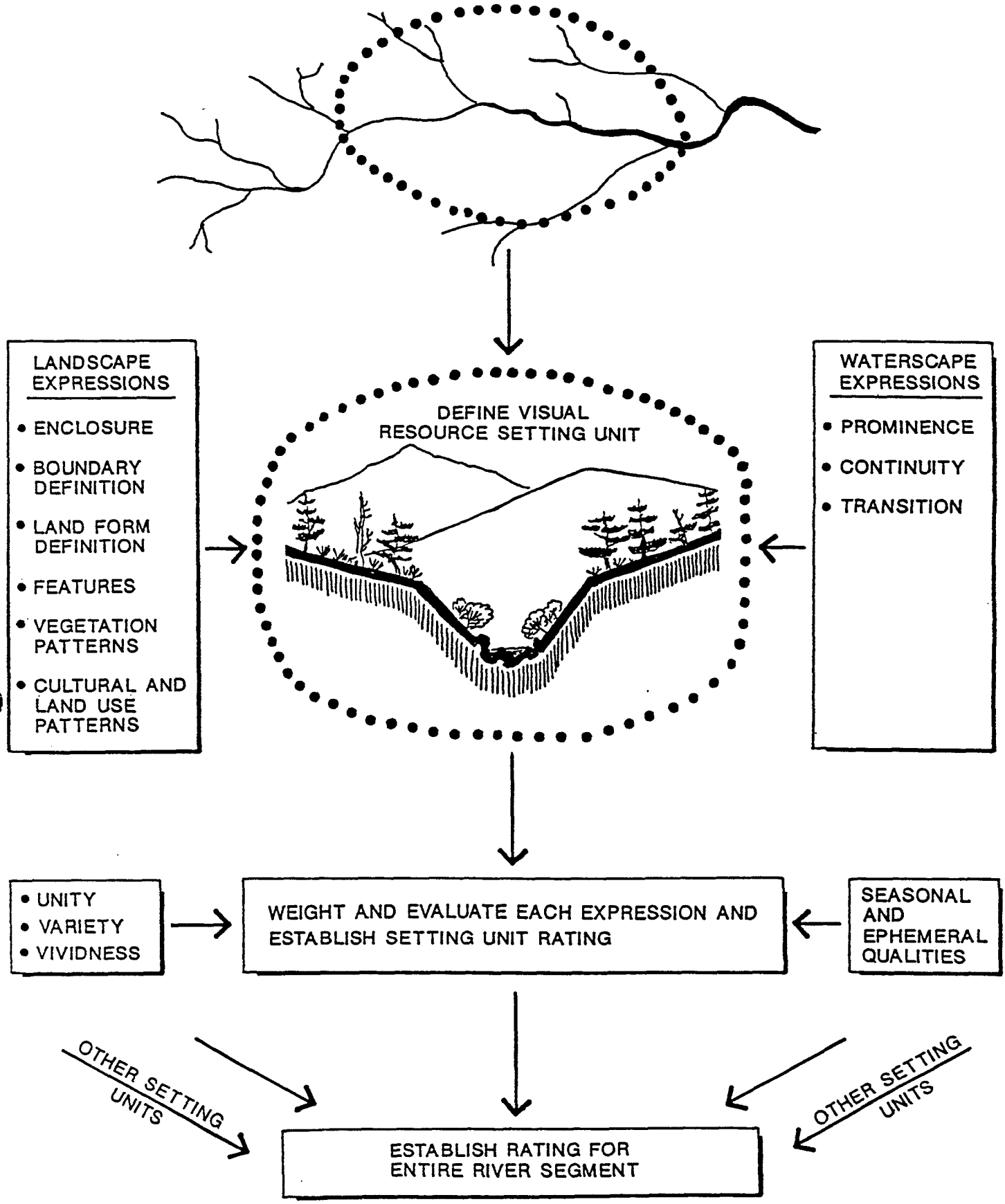

FIGURE 8-1. VISUAL RESOURCE ANALYSIS PROCESS

Table 8-1a. Example of Visual Quality Evaluation (Extracted from Litton et al. 1974)

	LANDSCAPE EXPRESSION					
	Enclosure		Boundary Definition		Features	
	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality
Unity	Evident spatial dimension and limits to setting. Space enclosed by setting appears to be measurable with no vague openings into other settings. Crater or caldera definition.	Setting configuration produces vague and detached extensions of space. Total enclosure of setting never apparent from any vantage point. Limits to enclosure weakly defined space. One setting drifts into spaces of adjoining settings.	Recognizable edge to enclosure. Setting rim strongly defined. Regular basin, symmetric corridor with focal feature closures.	Vague definition--neither feeling of enclosure or openness. Ill-defined edges. Continued absence of enclosure--agoraphobic condition.	Features have evident interrelationship, same material, color, and texture. Arranged in compositional groups to form pattern.	Interrelationship not evident among features, chaotic assemblage. Appear to be scattered randomly about setting.
Variety	Contrast of scales within enclosure - small-scale side enclosures into large-scale central enclosure. Contrast between types and degree of enclosure - transition from completely open to strongly enclosed symmetric corridor.	Uniform scale within total enclosure. Variations inconspicuous. Continuous type and degree of enclosure all along route.	Adjacent and opposing landforms create dramatic contrast. Gradual slope to vertical outcrops, pinnacles or cliffs. Flat floodplain opposite river-cut bluff. Contrast in sequential landforms along watercourse. Canyon walls opening to floodplain. Floodplain constructing to young, eroding valley.	Adjacent and opposing landforms indifferently different. Neither evident expression of continuity or contrast.	NA	NA
Vividness	Ratio of depth over width highest in region. Average elevational difference between height of enclosure rim and water body greatest in region. Area - width - length - depth, etc. or great or unique for region. Panoramic - many distant focal points.	Ratio of depth to width average to region. Depth average to region - width of setting greater than average. Common to region - average dimensions. Oppressively confining bottom of trench. Claustrophobic condition.	Uniqueness of landform to region. Widest floodplain, longest and highest continuous escarpment. Highly dissected hill and valley relief. Bold shoulders cut by deep ravines.	Common to region. Inconspicuous because of ubiquity. Conspicuousness due to disturbed condition, erosional topography from logging, grading cut and fill faces.	Presence of large features - highest peak in region, largest or tallest escarpment. Regionally distinctive or conspicuous. Feature present as backdrop to body of water - reflected image in water. Feature coincides and reinforces focal direction of water - feature at corridor enclosure termination. Water features are	No distinctive features. Numerous small features with a common appearance. Feature not visibly related to water presence. Feature in a position to water body so as not to be visible along or across water surface. Water feature hidden by vegetation/ terrain - hazardous

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Table 8-1a. Continued

	LANDSCAPE EXPRESSION					
	Land Form Definition		Vegetation Pattern		Cultural and Land Use Pattern	
	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality
Unity	Consistent pattern evident around setting. Entire setting composed of consistent land form expression. Slope definition of undulating hill and swale repetition. Encircling scree slope. Opposing canyon walls.	Inconsistent and varying combination of land forms without evident pattern. Opposing slopes of valley unrelated.	Entire setting covered by single vegetation type. Consistent symmetry of vegetational zones up opposing valley slopes.	No vegetation pattern apparent. Chaotic mixture of many assorted vegetation types. Vegetation density and height obscures water presence, landform definition, and features. Severely limits the number of vantage points within setting.	Consistent pattern within landscape unit that does not extend to larger region. Valley in crop pattern surrounded by continuous forest cover. Development patterns reinforce natural patterns. Highways paralleling drainage courses, fences following contour lines.	Development has no apparent pattern and appears to sprawl across the landscape. Development forms no apparent pattern, or the pattern that is evident conflicts with the natural pattern. Highways zigzagging across drainage pattern.
Variety	Striking contrast between adjacent settings. Shady, moist riparian forest to open flats of meadow and sage.	Contrast between natural and disturbed vegetation patterns - clear-cut balds, fire scars, earth and snowslides adjoining virgin stands.	Strongly developed pattern from consistent variety within setting. Contrast between north- and south-facing slopes, riparian and non-riparian, and high elevations and lower elevations. Bald ridges and forested slopes. Pattern development within setting contrasts with adjacent setting vegetation pattern.	Vegetation pattern weakly defined. Neither consistent cover nor contrasting expression. Apparently random distribution of vegetational types. Variety increased to chaotic degree by introduction of exotic species in unrelated plantings. Variety decreased by forest practices.	Increase the richness of variation in natural patterns. Planting of hedgerows and field borders on flat plains; breaking of continuous forest cover with openings of meadows.	Development has evidently decreased the natural diversity by imposing a structured pattern of conformity. Grid street and utility layout. Removal of indigenous vegetation.
Vividness	Unique vegetation cover associated with setting, as tallest redwoods, most extensive flat of cottonwoods, alder, or aspen.	Vegetation cover extends homogeneously over entire region without exception to any setting. Tiaga cover in south-central Alaska, fir forests of Oregon, wheatlands of prairie.	Sharply defined edges. Prominent ridges against the sky or outlined against distant horizons. Edge itself stands out from setting-bald ridge to forested slopes, rock outcrops to grassland slopes.	Vague edges that blend with setting and external settings beyond. Ridge line difficult to distinguish.	Development of striking features. Country estates along the rivers of tidewater Virginia and Maryland. Provide strong contrast to natural sweep of the land or water. Town cluster.	Development of features that degrade the surrounding landscape. Industrial operations, mining scars, dumps, production of smoke and particulate matter, utility grids, billboards.

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Table 8-1b. Example of Visual Quality Evaluation (Extracted from Litton et al. 1974)

	WATERSCAPE EXPRESSION					
	Prominence		Continuity		Transition	
	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality	Description of Perceived Higher Visual Quality	Description of Perceived Lower Visual Quality
Unity	Size and appearance of water body and the enclosing setting harmoniously balance one another. Unifying proportions.	Size and appearance of water body out of scale with setting that encloses it. Water body oversized or undersized to setting, as misfit river, or reservoir/ drowned valley.	Waterscape has strongly defined internal unity that extends beyond setting (usually in two directions) to imply distant continuity with other settings. Changes in setting unit are reflected by a change in the waterscape unit, or a change to a different waterscape unit. Edge of waterscape unit and setting unit coincident.	Weakly defined continuity - waterscape composed of segmented reaches or bodies without a well-expressed connective and directive link. Changes in setting unit have no apparent relation to the character of the waterscape unit.	Shore definition acts as transition grade to link water to setting. Dramatic sweep from water to shore to setting in harmonious continuity of transition.	Shore and setting definitions appear unrelated to each other. Neither continuity or contrast expression to their juncture.
Variety	Contrasts in prominence of waterscape within setting unit. Narrow stream widens into lake, lake changes to wide stream meanders. Contrasts in degree of water prominence in sequence of vantage points around the setting. Surprising changes of water image.	Constant size and appearance of waterscape through setting unit - no variation apparent. Prominence of water unchanged from all vantage points in the setting. Image of size and appearance remain constant.	Adjacent waterscape units provide striking contrast within setting unit.	Adjacent waterscape units provide clashing contrast within setting unit - as wild flow into dammed stagnant stretch.	Dramatic alteration between contrast and harmonious blending of shore to setting. Beach to cliff face bounded to beach to low meadow transitions. Break in canyon walls by side valley notches.	Monotonous continuity of same transition expression all along shore and setting juncture. Continuous low mud bank to willow flat transitions along river.
Vividness	Evident movement features as rapids, waterfalls. Large expanse of water surface evident. Striking appearance by virtue of clarity, color, of light reflection.	Still water - no movement evident. Narrow streak of area of surface water insignificant in scale to surrounding setting. Water appearance backgrounds or blends with setting. Browngreen water color blends with setting. Water usually seen at nonreflective angles	Distant views of waterscape beyond either end of setting unit.	Waterscape can not be seen to be totally within or without the setting unit.	Striking contrast between shore definition and setting definition. Gentle broad beach to towering granite cliffs.	Clashing contrast between shore definition and setting definition. Contrast between degraded and pristine, eroding, and stable. Recession rim of reservoir adjoining a forested preserve.

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RESOURCE CHARACTERIZATION

This section of the report discusses the actual visual resources of the McCloud River as determined using the methodology described above. First, the general regional setting is described, and then attributes of each visual resource setting unit are discussed and evaluated.

Regional

The upper McCloud River drains a broad, flat plateau covered by coniferous forest. Mt. Shasta, with its snow- and glacier-covered flanks, rises from the plateau as the dominant feature in the landscape. The river cuts down through the broad plateau at Upper Falls and occupies a more canyon-like setting to McCloud Reservoir.

Below McCloud Reservoir, the McCloud River drainage becomes much more mountainous as the river descends from 3,200 feet at McCloud Reservoir to 1,065 feet at Shasta Lake. The region is characterized by large, steep, v-shaped valleys covered with coniferous and oak forests. Peaks rise 2,000-3,000 feet above the river corridor.

The turquoise color frequently found in the McCloud River is caused by the discharge of glacial silt into the river from Mud Creek, which drains Mt. Shasta's Konwakiton Glacier. Depending on hydrologic conditions, the glacial silt periodically gives McCloud Reservoir and the river below a beautiful turquoise color. This distinctive water color, typical of streams and rivers found draining glacial valleys in British Columbia and Alaska, is unique in California.

Setting Units

Study segments of the McCloud River and Squaw Valley Creek were divided into 10 setting units (Figure 8-2). Each setting unit represents a fairly distinct viewshed although there is variability within, and transition between, setting units. Visual resources in each setting unit are described in the following paragraphs. Photographs of typical views from each setting unit are presented in Chapter 8 Appendix.

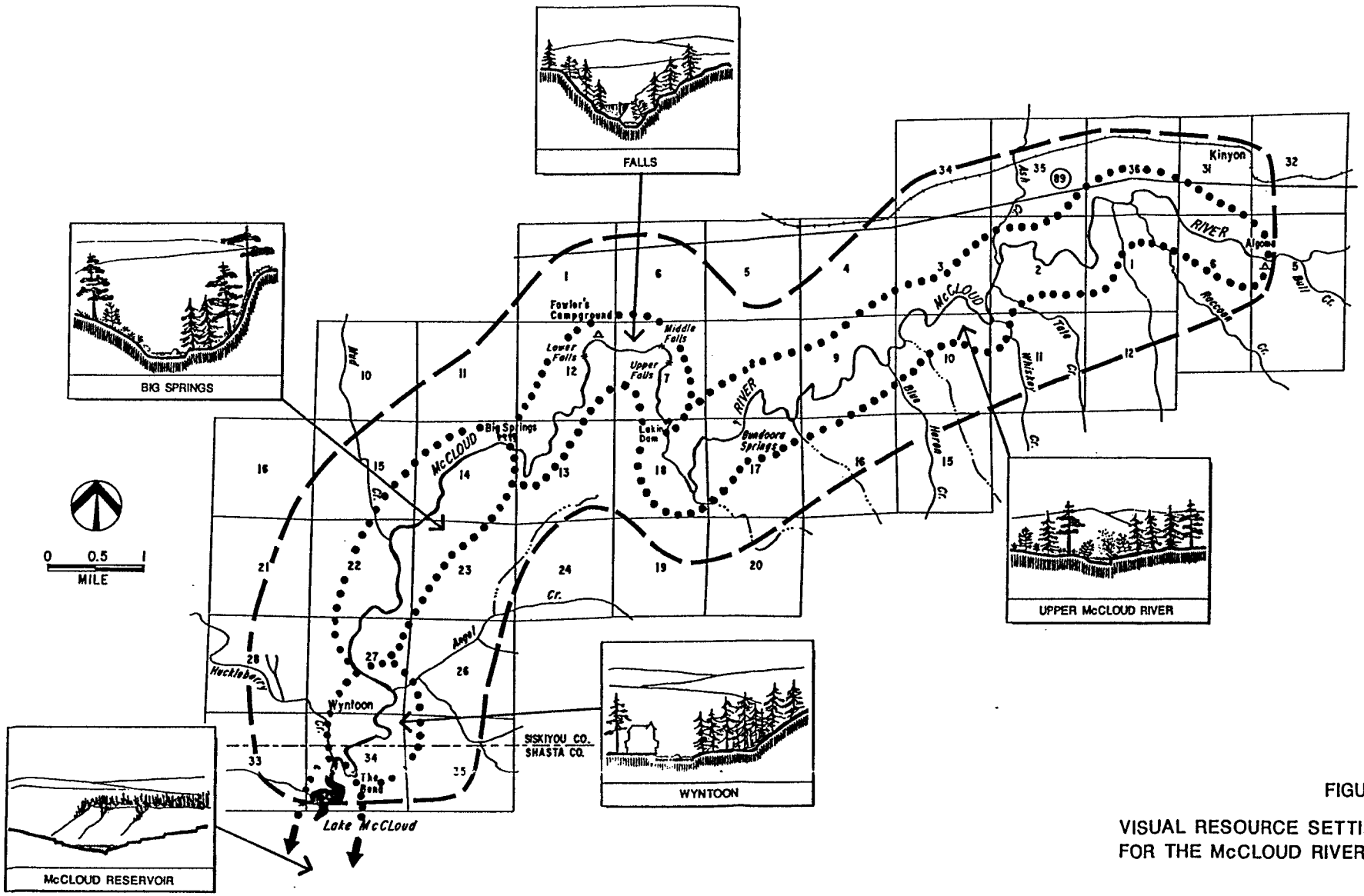

FIGURE 8-2A.

VISUAL RESOURCE SETTING UNITS FOR THE McCLOUD RIVER

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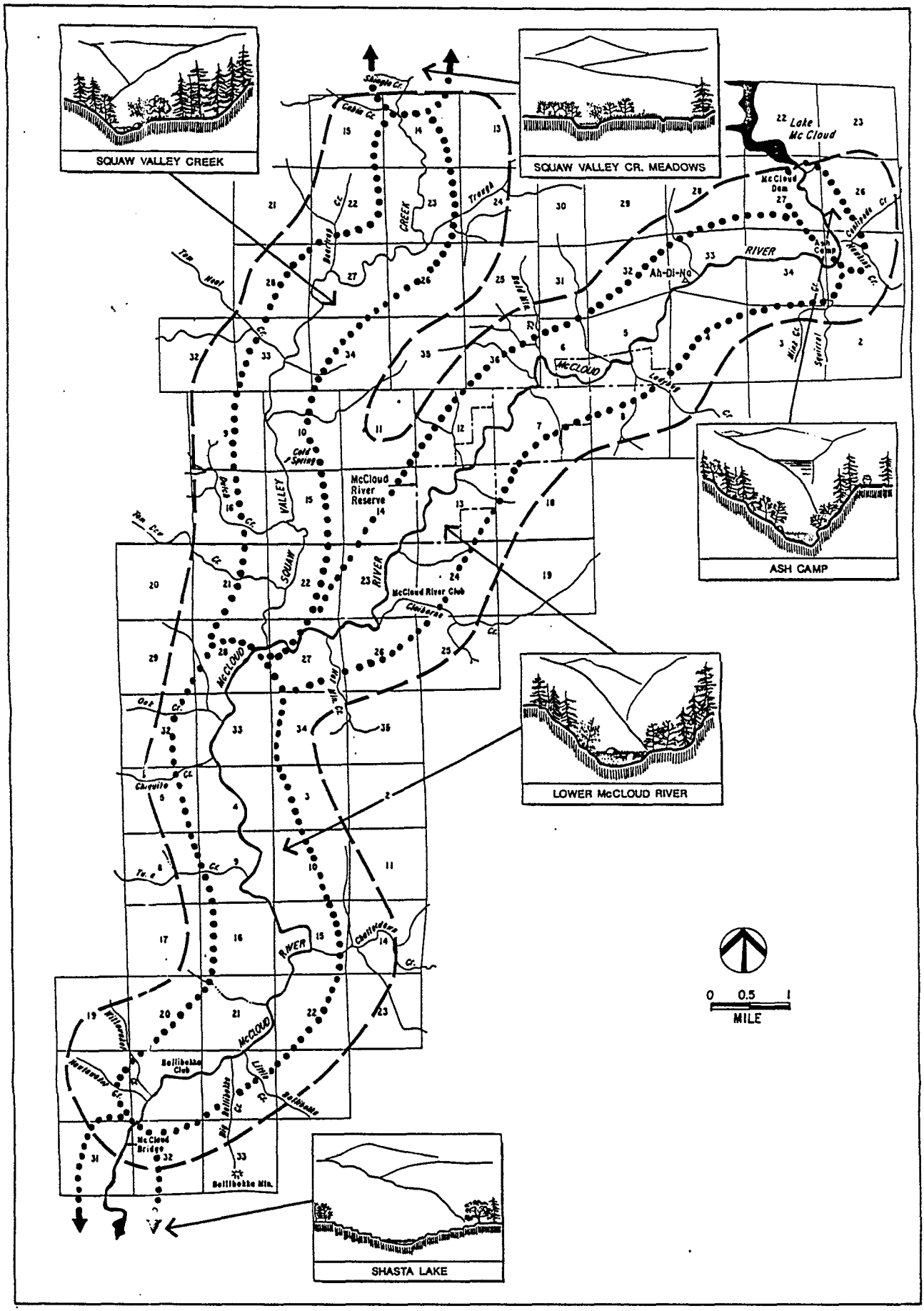

FIGURE 8-2B. VISUAL RESOURCE SETTING UNITS FOR THE McCLOUD RIVER

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Upper McCloud River

The McCloud River moves through cobble-bottomed riffles and meandering, willow-lined reaches in this setting unit. The flat terrain limits views from this plateau region to fairly uniform foreground views of mixed conifer and scrub forest, with little variation in visual texture or form in the landscape. Near Lakin Dam, a small concrete diversion dam located near Upper Falls, the river meanders through flat meadows surrounded by willows. Timber management has affected the visual quality of the area. Dirt roads criss-cross the area, and the remains of past harvests are often present. Although the immediate river retains its natural appearance, there are no strong images in this setting unit, flows are relatively low, and the river does not stand out in comparison to other creeks in the region. For these reasons, the visual quality of this setting unit is rated as fair to good.

Falls

This setting unit is composed of the river corridor from Upper Falls to above Big Springs. The river begins to drop out of the plateau in this area; the river remains in a v-shaped valley or canyon below this setting unit, while above it the river is much less constrained. Three significant waterfalls are located in the upper half of the setting unit. Upper Falls is a single, gushing waterfall that drops 20 or more feet through a fracture in the rock ledge that creates the falls. Below the falls is a large pool enclosed by an amphitheater-like bedrock arrangement. Middle Falls is 25- to 30-feet high. The water spreads out and comes over this fall in thin ribbons and spraying cascades. Wet rocks at the falls are coated with fresh, green moss, and the tightly enclosed basin surrounding the falls is filled with the mists and sounds of the falls. Lower Falls has a public picnic ground and viewing area located just downstream. This falls is a prominent water feature but is probably the least spectacular of the three.

Dirt roads, present along the river corridor throughout most of this setting unit, are set back and concealed by vegetation. These roads generally do not impact the visual quality of the views from the river. The strong images of the three waterfalls located in this short reach of river create memorable impressions. The visual quality rating of the river through this setting unit is extraordinary.

Big Springs

This 3-mile reach of river has exceptional scenic qualities. The river is mainly a series of deep riffles and runs, with few pools. Surrounding canyon slopes are covered by a fairly open canopy of mixed conifer forest, with an understory

of scrub vegetation. At the upper end of the setting unit, large volumes of clean, clear water burst out of the dry hillside creating the striking impression of Big Springs. The lush, green color of the mosses around the springs and the blankets of green watercress floating on the spring water add to the intensity of the image. Some logging activity has occurred in the past, but the river corridor remains in a fairly pristine condition. The only signs of cultural modifications are the logging road bridge located approximately halfway between Big Springs and Wyntoon and a small, abandoned hut at Big Springs. The undisturbed nature of this corridor, large flows of astonishingly clear water, and the strong and unique images at Big Springs give the visual quality of this setting unit an extraordinary rating.

Wyntoon

This setting unit represents the river corridor associated with the private riverfront development owned by the Hearst family. The Wyntoon complex is located on a large, flat terrace. There are seven large buildings in the complex and a bridge across the river. The older buildings were designed by the famous architect Bernard Maybeck and are painted on the outside with life-size murals of characters from Grimm's fairy tales. Several buildings overhang the river, and beautiful, informally landscaped courtyards replete with lush lawns and marble statues are visible from the river. The images here are striking and present a fairytale-like picture of grandeur. The water clarity and river characteristics are striking.

The river corridor remains essentially natural between Wyntoon and The Bend. This section consists of a 1-mile-long series of runs and riffles. A few buildings, some tennis courts, and an abandoned swimming pool are located in this section. Most are set back in the forest and are not evident from the river. The same is true of roads on both sides of the river.

The lower end of the setting unit begins at The Bend. The structure referred to as "the castle" is located here. It is a large, stone masonry building set on the river's edge overlooking the high-water line of McCloud Reservoir. A few more recently constructed buildings are also located at The Bend, along with an outdoor swimming pool and bathhouse. Much of the land is landscaped and covered with lawn although most of the riverbank remains natural. A small section of riprap exists at the main road entrance to The Bend.

Although cultural modifications have altered the natural riverscape in this setting unit, the development is in and of itself enchanting and is well designed to visually complement the beauty of the river. The water clarity and river

SCENIC RESOURCES EVALUATION

characteristics are outstanding. For these reasons, the visual quality of this setting unit is rated as extraordinary.

McCloud Reservoir

This setting unit includes the section of river that is located between high- and low-reservoir water line and is thus seasonally inundated. McCloud Reservoir itself is excluded from this study. The upper boundary of this setting unit is Huckleberry Creek. Scenic qualities are reduced with downstream distance because the bathtub ring effect increases and the river remains inundated for longer periods. The bathtub ring effect is most significant below Huckleberry Creek.

Mud Creek, which is diverted into Huckleberry Creek, naturally carries a large silt load into McCloud Reservoir. As reservoir levels drop each year, more than 2 miles of the McCloud arm of the reservoir convert to a free-flowing river. The resulting bathtub ring and thick silt deposits below Huckleberry Creek make the river corridor appear barren and sterile. For this reason, the visual quality of this setting unit is rated as poor.

Ash Camp

This setting unit includes the river corridor from the McCloud Reservoir Dam downstream to the bend in the river just below Hawkins Creek. A road along the ridge parallels the river throughout this setting unit but is visually unobtrusive. The road leads to an undeveloped campground known as Ash Camp. A variety of scenic vistas of the river's large pools and cascading water exist from this road. The dam is a prominent visual feature in the landscape and can be considered a negative visual element. Except for a 0.25-mile reach immediately below the dam, the river corridor maintains a natural character. Natural positive features of this river dominate negative features in the viewscape. The visual quality rating in this setting unit is extraordinary.

Lower McCloud River

This setting unit represents a long stretch of river from just below Hawkins Creek to the influences of Shasta Lake. Visual character remains similar throughout the entire setting unit despite variety in landform and waterscape prominence. The river generally appears pristine and wild. Steep, heavily forested mountain slopes, picturesque cascading whitewater, and deep, long, green- or turquoise-colored pools characterize the river corridor. Most of the river corridor is lined with large Douglas-fir or beautiful black and canyon oaks, which add to the grandeur of the setting.

A few buildings are located along this 25-mile stretch of river at The Nature Conservancy McCloud River Preserve (Preserve), the McCloud River Club, the mouth of Chatterdown Creek, and the Bollibokka Club. Dirt and gravel roads also come down to the river at these club headquarters, at the USFS Ah-Di-Na Campground, and across from the mouth of Chatterdown Creek. The total number of buildings is small compared to the length of the river, and the buildings themselves tend to fit into the visual settings. The Bollibokka Club access road parallels the river on the west side for several miles, but in most locations the road is high on the ridge and is not visible from the river. Past (25+ years) timber harvests can be seen from the Preserve at a few vista points, but time has allowed the visual landscape along the river to recover.

Vivid views, unique water color, and the pristine viewscape result in a visual quality rating of extraordinary in this setting unit.

Shasta Lake

This setting unit represents the mouth of the McCloud River where it drains into Shasta Lake. Water surface elevations on the reservoir fluctuate 60-120 vertical feet between spring and late fall. This fluctuation moves the mouth of the river up and down the arm of the reservoir. The location of the mouth can vary within a 2-mile distance, depending on season, runoff, and reservoir operations. At high levels, Shasta Lake extends a few hundred yards above the USFS bridge. At low levels, the mouth moves downriver a few miles from the USFS bridge, and a bathtub ring of steep, treeless slopes with mostly barren soil and rock is evident along the banks of the river. Some of the area within the bathtub ring above the USFS bridge has a fair covering of grass and herbaceous plants, probably because this area is flooded for a shorter duration.

The river corridor in this setting unit has lost most of its past scenic features because of the dominant, sterile, visual impact of the bathtub ring. For this reason, the visual quality of this setting unit is rated as only poor to fair.

Squaw Valley Creek Meadows

This setting unit represents the creek corridor north from Cabin Creek upstream to the study area boundary. This short reach of Squaw Valley Creek has a reduced stream gradient. Roads on both sides of the creek impinge on the creek corridor in many locations. Views from the creek itself are constrained to a small foreground area by the thick alder growth along the stream's edge. Bare and scrub-covered landslides and timber harvesting near the creek reduce its visual quality. Although there are some spectacular views of Mt. Shasta across the large

meadows, the creek itself is not very scenic. Thus, the visual quality of this setting unit is rated as fair.

Squaw Valley Creek

Squaw Valley Creek is a major tributary to the McCloud River. This setting unit, a steep-sided, v-shaped valley in pristine condition, extends from Cabin Creek to the mouth of Squaw Valley Creek. A small one-lane scenic road winds down the valley to the entrance of the McCloud River Club. The road crosses the creek at five locations; otherwise it is located high on the valley slopes and is not visible from the creek. The small, one-lane bridges do not generally conflict with the natural character of the creek corridor.

Scenic resources along the creek corridor are of exceptional quality. There are a variety of views as the creek drops toward the river through sequences of riffles, pools, and whitewater sliding over water-worn bedrock. Large Douglas-fir stands and occasional oaks found along the slopes add majestic and colorful touches to the corridor. The visual quality of this setting unit is considered extraordinary.

CONCLUSIONS

Considered as a whole, the visual resources of most of the McCloud River and Squaw Valley Creek study areas are extraordinary. Vivid views of large, pristine river valleys with beautiful white water and deep pools are rare in California. The McCloud offers these features but is special beyond that. Its water clarity above Huckleberry Creek and periodic turquoise color below give the river outstanding visual quality. The river also offers remarkable and unique visual images at the three waterfalls and Big Springs and the enchanting views of Wyntoon and The Bend. These combined features make the McCloud's visual resources worthy of the rating extraordinary.

Specifically, visual resources are extraordinary from Upper Falls to Huckleberry Creek and from 0.25-mile downstream of McCloud Dam to the USFS bridge crossing near Shasta Lake. Squaw Valley Creek maintains a pristine character that is extraordinary from Cabin Creek to the McCloud River.

BIBLIOGRAPHY

References Cited

Litton, B. R., et al. 1974. Water and landscape, an aesthetic overview of the role of water in the landscape. Water Information Center Inc. Port Washington, NY. 314 pp.

U. S. Forest Service. 1974. National Forest landscape management. The visual management system. (Agriculture Handbook Number 462.) Washington, DC. 47 pp.

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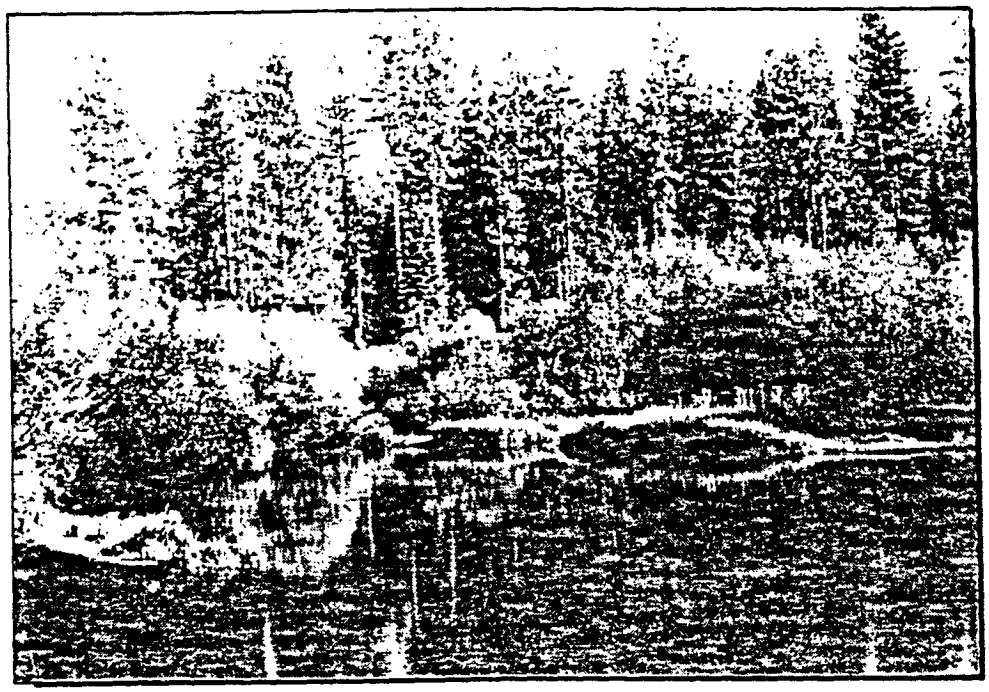
Chapter 8 Appendix

TYPICAL PHOTOGRAPHS OF McCLOUD RIVER VISUAL RESOURCE SETTING UNITS

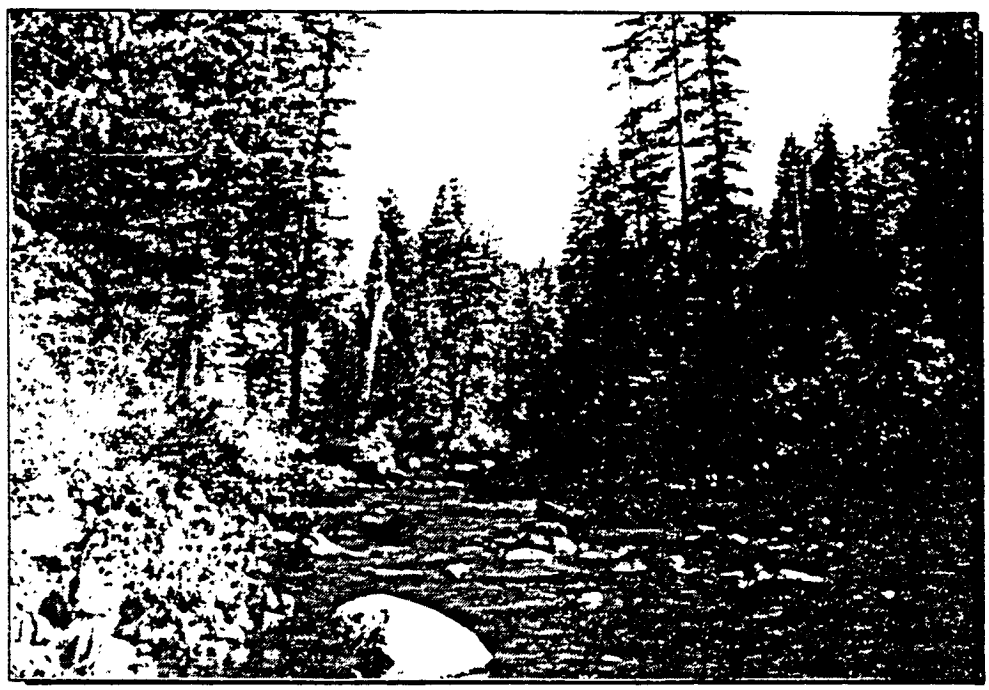
UPPER McCLOUD RIVER SETTING UNIT

C-015031

UPPER McCLOUD RIVER
SETTING UNIT (cont'd.)



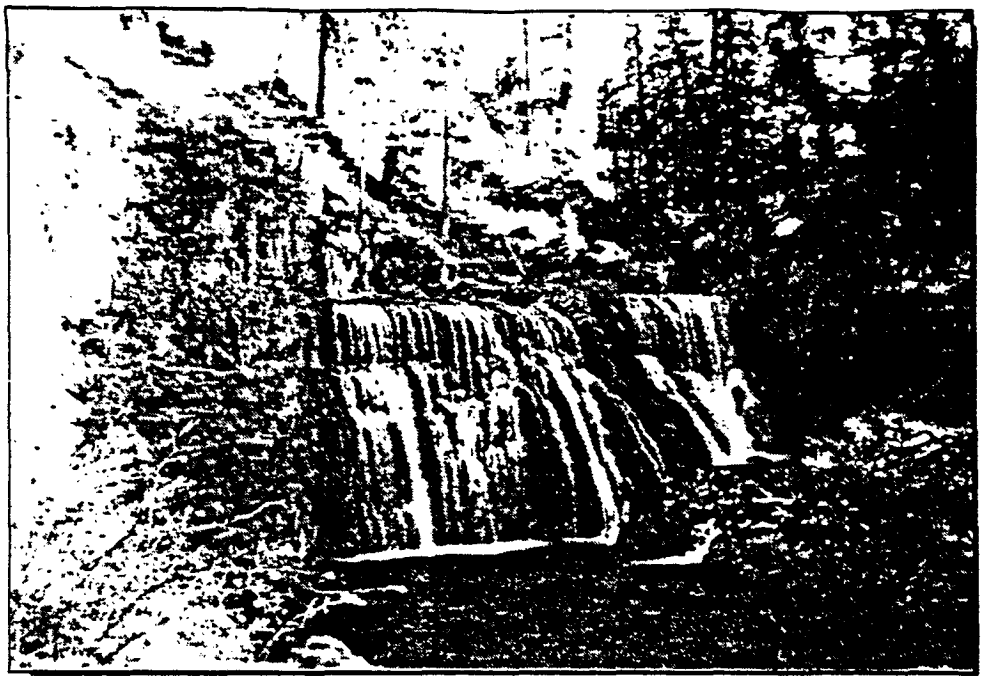
(Lower Falls)



(Above Lower Falls)

FALLS SETTING UNIT

C-015033



(Middle Falls)

(Upper Falls)

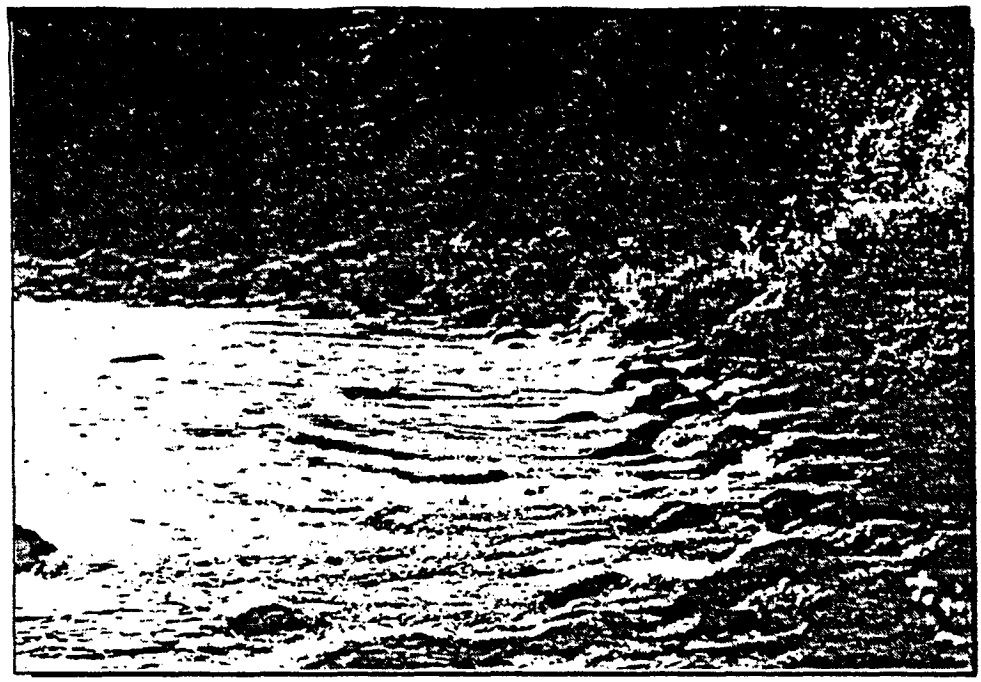
FALLS SETTING UNIT
(cont'd.)

C-015034

(Upstream of Big Springs)

BIG SPRINGS
SETTING UNIT

(Upstream of Big Springs)

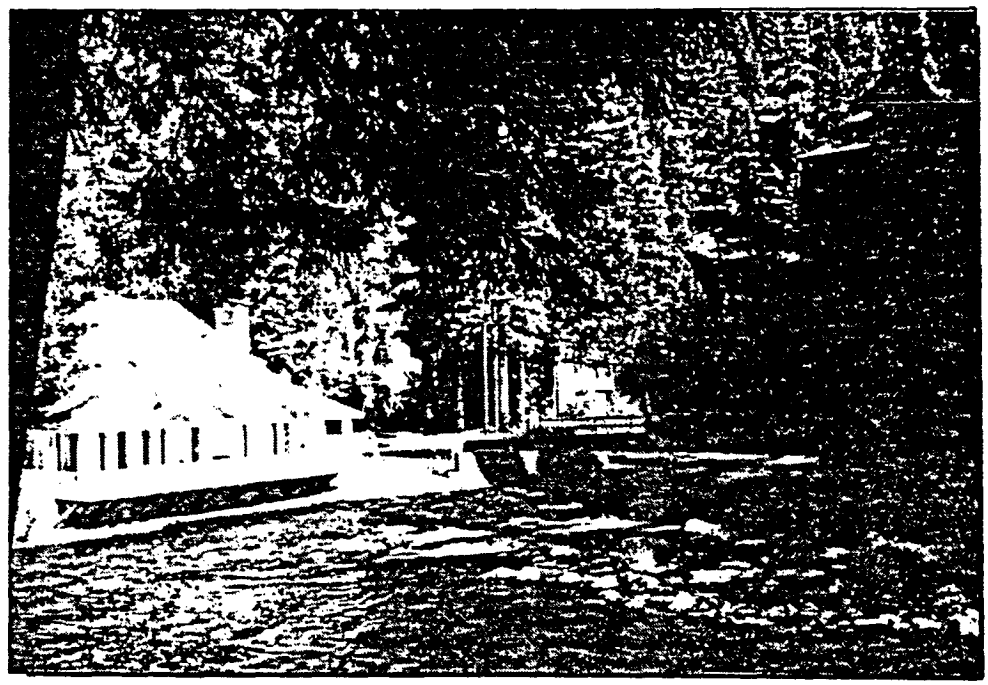


(At Big Springs)

(At Big Springs)

BIG SPRINGS SETTING UNIT
(cont'd.)

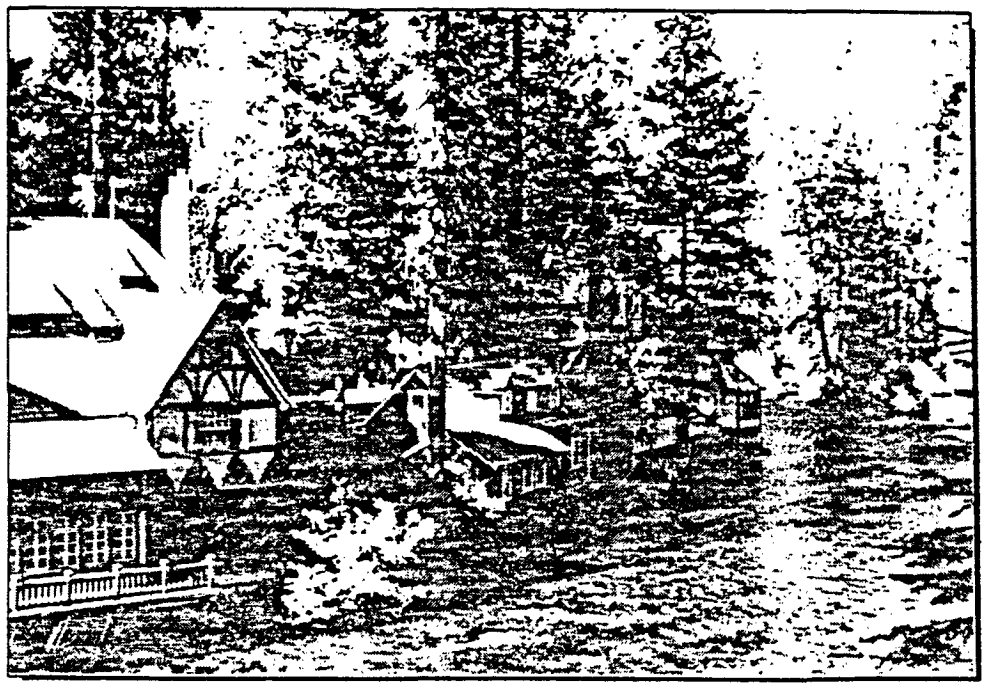
C-015036



WYNTOON SETTING UNIT

C-015037

WYNTOON SETTING UNIT
(cont'd.)



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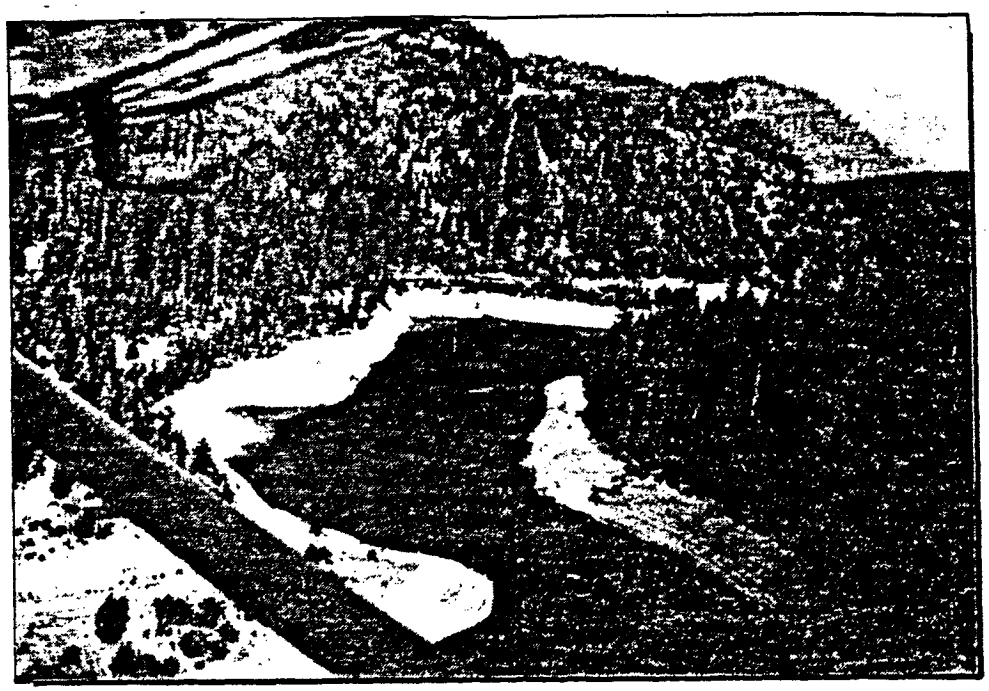
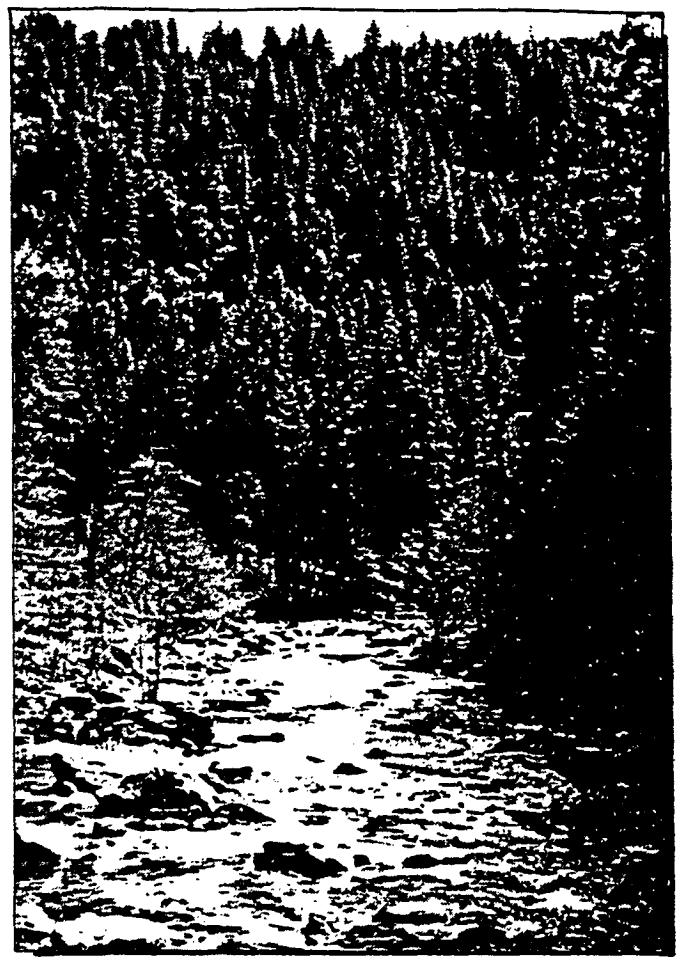
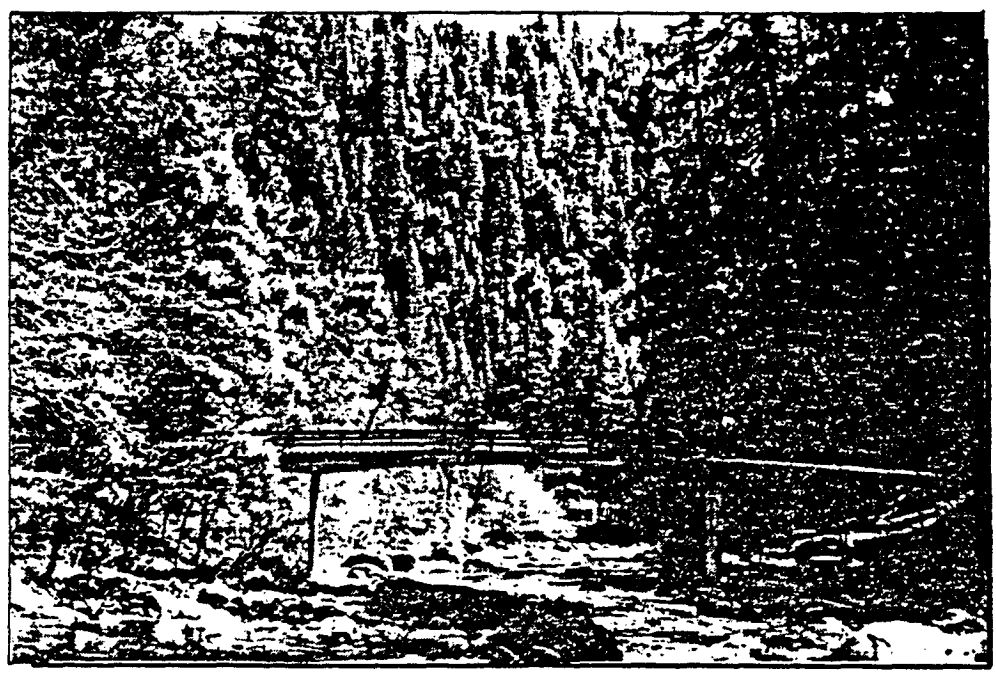
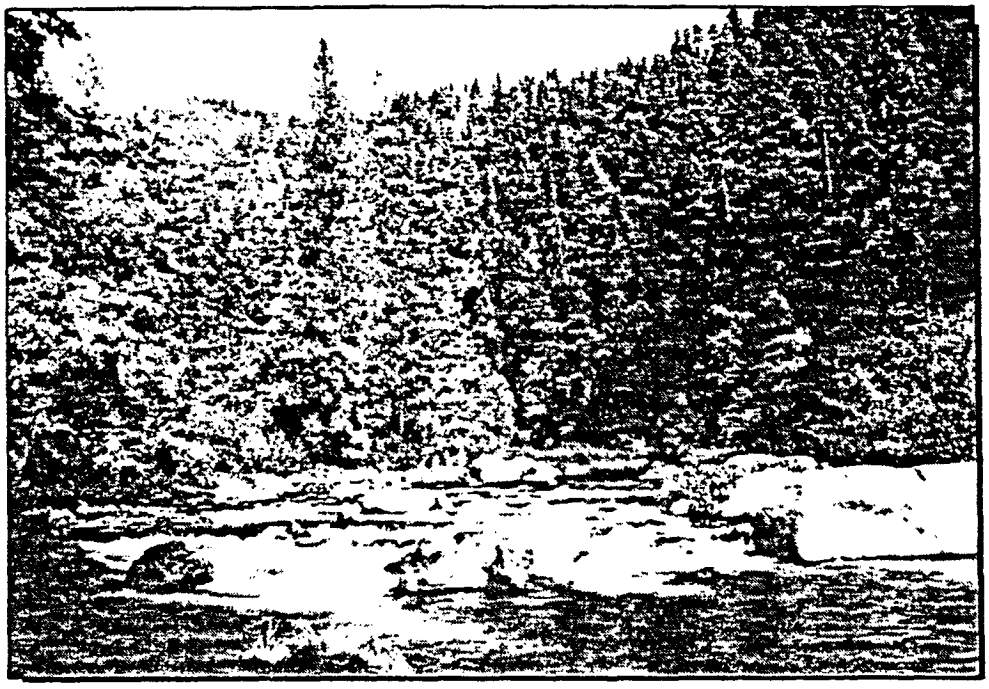


McCLOUD RESERVOIR SETTING UNIT

ASH CAMP
SETTING UNIT



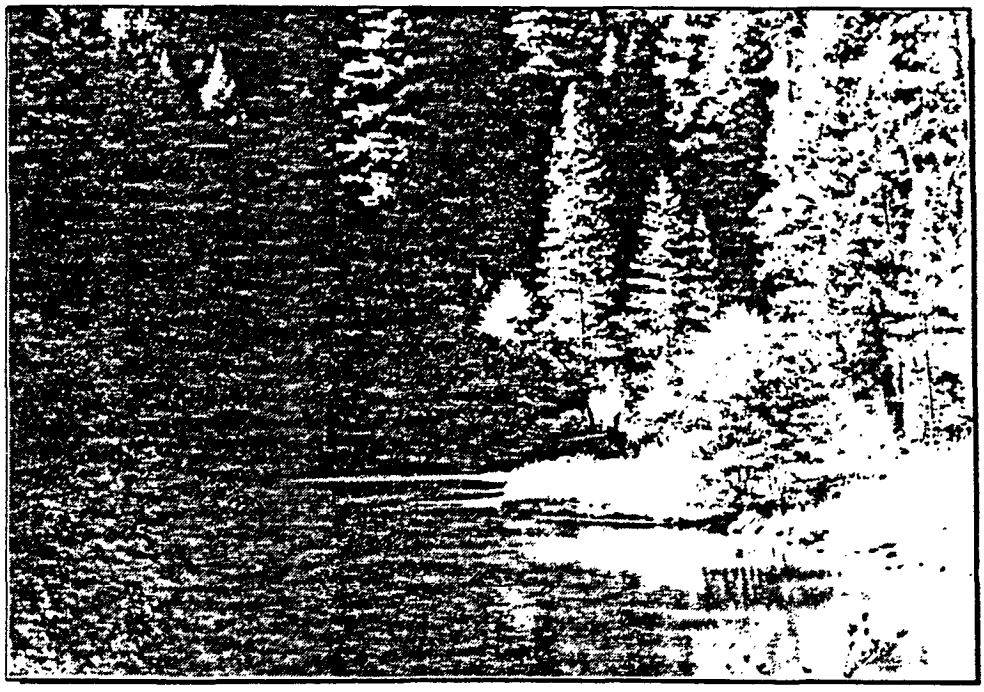




LOWER McCLOUD RIVER SETTING UNIT

C-015041

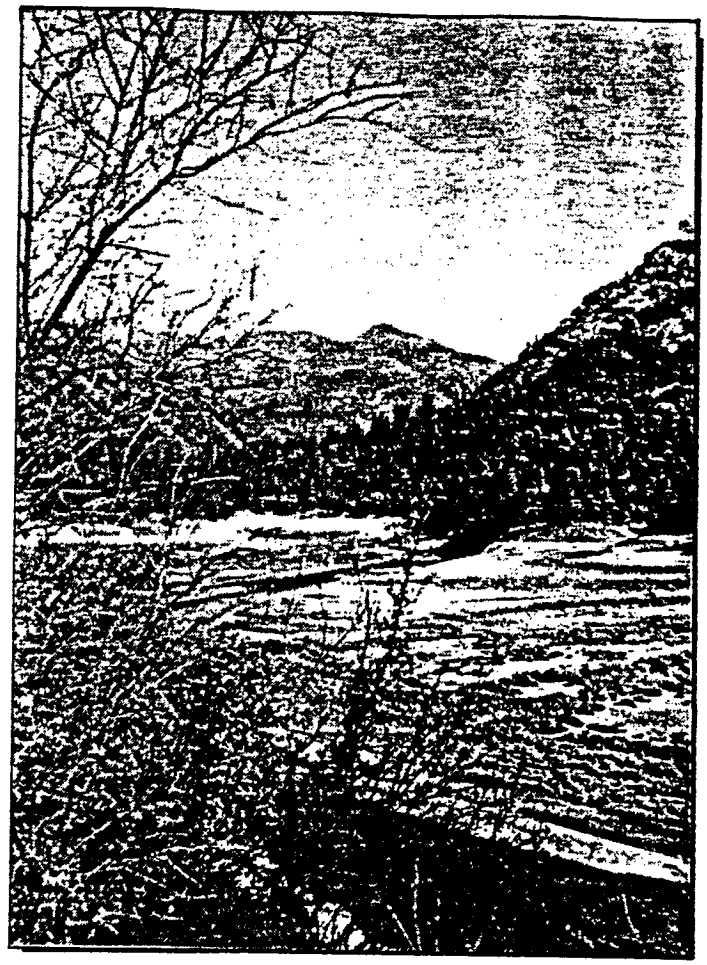
C-015041

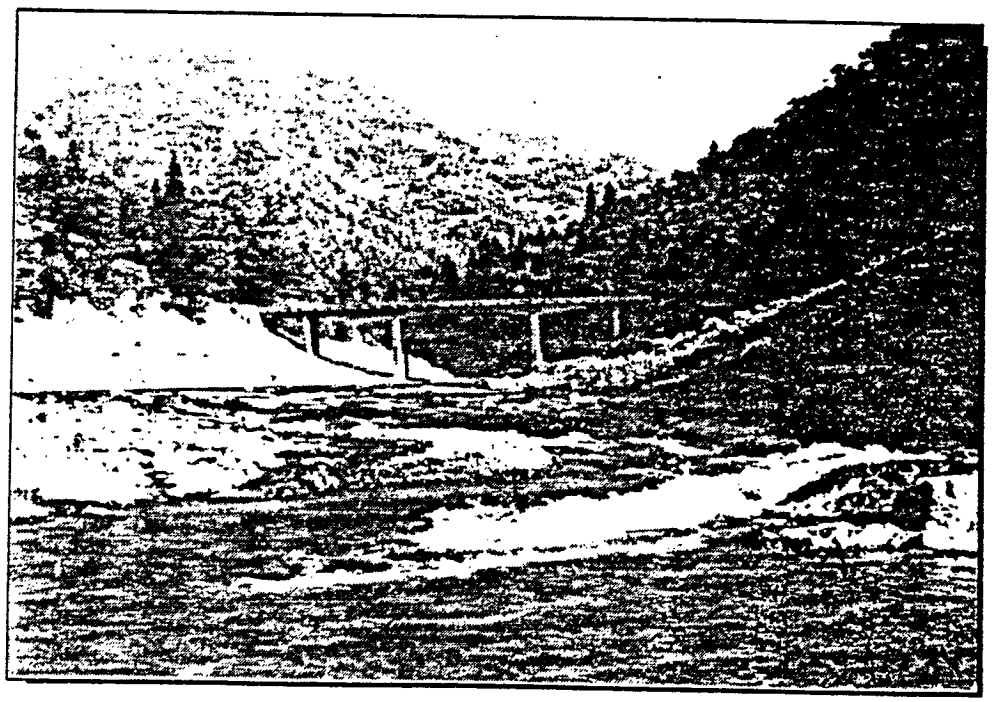


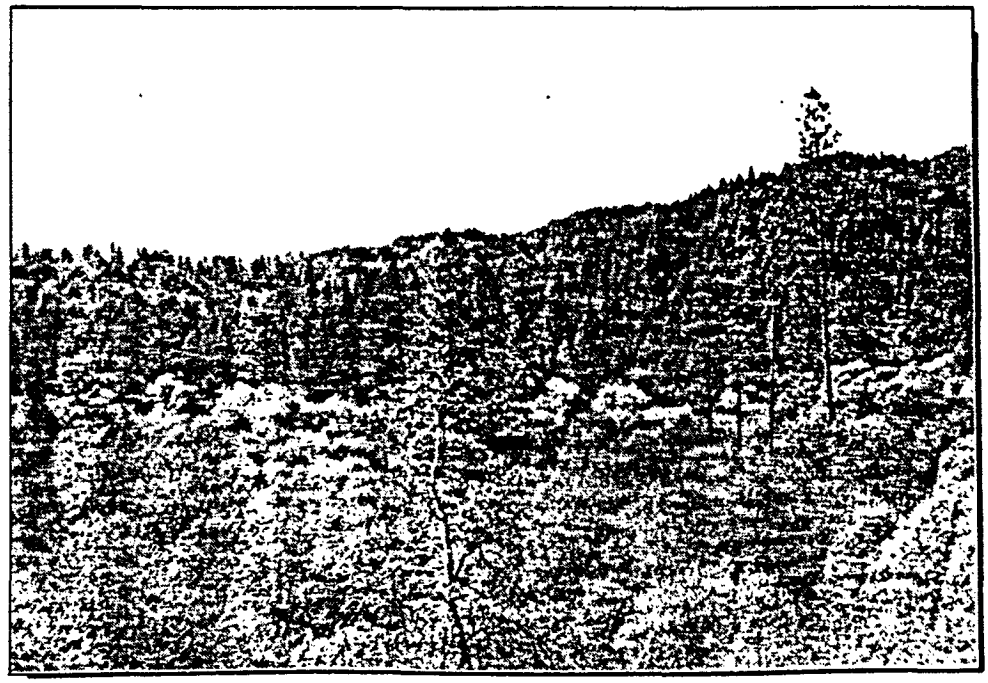
LOWER McCLOUD RIVER SETTING UNIT
(cont'd.)

C-015042

SHASTA LAKE
SETTING UNIT







SQUAW VALLEY CREEK MEADOWS SETTING UNIT

SQUAW VALLEY CREEK
SETTING UNIT

C-015045

SQUAW VALLEY CREEK SETTING UNIT
(cont'd.)

CULTURAL AND HISTORIC RESOURCES EVALUATION

C—015047

Chapter 9

CULTURAL AND HISTORIC RESOURCES EVALUATION

Cultural and historic resources typically do not determine eligibility for wild and scenic designation. Nonetheless, an area's historical resources, which survive as cultural legacies of those experiences that shape human and American history, represent important, sometimes irreplaceable, resources. Cultural and historic resources generally are concentrated near rivers, and significant resources are common along many California rivers. Cultural and historic resources also can contribute to the scenic and recreational resources of a river.

This chapter evaluates cultural and historic resources within nominated segments of the McCloud River and Squaw Valley Creek. Nominated segments on the McCloud extend from Algoma to the confluence with Lake McCloud and from McCloud Dam to Shasta Lake (Figures 1-1 and 1-2). McCloud Dam and Reservoir are excluded. The single nominated segment on Squaw Valley Creek extends from the northern boundary of Section 14 T38N R3W to the confluence of Squaw Valley Creek and the McCloud River (Figures 1-1 and 1-2).

DATA SOURCES AND METHODOLOGY

The McCloud River watershed played an important role in the prehistory and history of northcentral California. This chapter reviews two segments of the McCloud River totaling 43 miles and a 10-mile segment of Squaw Valley Creek within a corridor roughly 2 miles wide along each segment. Both published and unpublished literature sources form the basis of the review. Site file records at the Shasta-Trinity National Forest in Redding and the Northeastern Information Center at Chico were consulted for an inventory of known archaeological sites. Individuals knowledgeable of local archaeology were interviewed as well.

Brief reviews of the regional prehistory and ethnography of northcentral California are given as they pertain to the McCloud River watershed, followed by a review of known historical events occurring along the river. Previous archaeological research, known cultural resources, and cultural resource sensitivity in the area are discussed.

RESOURCE CHARACTERIZATION

Prehistory

The known prehistory of the Shasta-Trinity National Forest probably extends back to the Paleo-Indian period although little is known about Paleo and Archaic period adaptations in the region. The archaeological record suggests a transition from a mobile subsistence strategy in the Archaic period to a sedentary strategy in the Late Prehistoric period, enabling large populations of prehistoric Wintu to inhabit the McCloud River watershed. A detailed description of the prehistory of the region is presented in Chapter 9 Appendix.

Ethnography

The lower McCloud River Valley (below McCloud Reservoir) was occupied in the nineteenth century by the Wintu Indians, while the upper McCloud River (above McCloud Reservoir) may have been used by both Wintu and Okwanuchu. Little is known about the Okwanuchu, who were extinct as a viable society by the mid-1800s (Theodoratus Cultural Research, Inc. 1981). The Wintu and much of their culture survives today despite their near extermination by contact with European-American society. The primary source for Wintu ethnography is Du Bois (1935). Wintu literature has been summarized in La Pena (1978), Jensen and Reed (1979), and Theodoratus Cultural Research, Inc. (1981). Additional data are contained in Guilford-Kardell (1980) and Theodoratus Cultural Research, Inc. (1984). The following discussion is drawn from these sources.

The Wintu are members of the Wintun linguistic group in the Penutian language family. Wintu territory occupied most of Shasta and Trinity Counties and parts of Siskiyou and Tehama Counties. The Wintu held the headwaters of the Trinity and South Fork Trinity Rivers, and large portions of the Sacramento, McCloud, Squaw, and Cottonwood drainages (Theodoratus Cultural Research, Inc. 1984). There were an estimated 18,000 Wintu and 259 Wintu villages in Shasta County in 1850. The McCloud River watershed was a major center of Wintu occupation, estimated to have supported 6,000-8,000 people (Guilford-Kardell 1980).

The family was the basic unit of Wintu society. Families were organized into permanent villages, and most social, political, and economic activities were organized at the village level. Villages were led by chieftains who inherited their position but maintained their status through personal abilities. Villages combined to form larger groups that were identified with particular geographical areas. These larger groups were not formally organized or led, but an individual's membership in a group was an important part of his social identity. The

groups occupying the McCloud River Valley were the Winimen and the Waimuk (Jensen and Reed 1979, Theodoratus Cultural Research, Inc. 1981).

Permanently occupied Wintu villages were located along ridges and terraces adjacent to major streams. A typical village was composed of at least one large subterranean earth lodge, between five and 15 semisubterranean bark houses, storage structures, and sweat houses. The earth lodges were 15-20 feet in diameter and served as gathering places for Wintu men (Theodoratus Cultural Research, Inc. 1981).

Chinook salmon (sometimes called king salmon), a major food source of the Wintu, were often so plentiful that individual fishermen could obtain 500 pounds of fish in a single night (Guilford-Kardell 1980). The spring salmon run was best in March, April, and May, and the fall run was most productive from August until October (Cranfield 1984). Salmon were caught by nets, harpoons, traps, and hook and line. The technique used was determined by the time of year and local stream characteristics. Communal salmon drives using nets and clubs were held in summer. The last recorded communal drive took place at Baird (now inundated by Shasta Lake) on the McCloud River in 1886. Salmon were either baked or dried and stored for winter use. The Wintu also collected freshwater shellfish, steelhead, sucker, resident trout, and whitefish (Theodoratus Cultural Research, Inc. 1981).

Black oak acorns were the primary plant food used by the Wintu. Acorns were collected in the fall, leached, ground into flour, and stored for winter use. Families often claimed ownership of particular acorn-laden oak trees. The Wintu also collected a variety of seeds (buckeye), nuts, berries, fruits, fungi, tubers, and greens. Deer were hunted communally or individually year-round. Communal brown bear hunts and rabbit drives usually were conducted in the fall. A variety of small birds, rodents, and grasshoppers also was eaten by the Wintu (Theodoratus Cultural Research, Inc. 1981).

Wintu society was devastated by contact with European-American society in the nineteenth century. A malaria epidemic wiped out 75 percent of the Wintu living in the Central Valley between 1830-33. American soldiers and settlers killed off the Wintu in the 1850s and 1860s. American economic activities damaged the environments on which the Wintu relied for subsistence. As a result, most of the Wintu social cohesion had dissolved by 1880, and only 395 Wintu were alive by 1910. Despite these impacts, the Wintu remain a viable Native American group, and much of their traditional culture survives today (Theodoratus Cultural Research, Inc. 1981).

European-American History

The McCloud River played an important role in the early exploration and settlement of Shasta and Siskiyou Counties. Relevant historical summaries are contained in Petersen (1965), Hanft (1971), Martin (1981), and Cranfield (1984), from which the following review is derived.

Early Exploration

The southern Cascades were largely unexplored by Europeans until the early nineteenth century. British and American mountain men began to traverse the area in the 1820s in search of new fur trapping territories. Peter Skene Ogden and Jedediah Smith crossed the southern Cascades, but neither is known to have traveled the McCloud River vicinity (Martin 1981).

The first expedition to traverse the McCloud River watershed was led by Alexander McLeod of the Hudson's Bay Company in 1828-29. McLeod's mission was to trap beaver in northern California before American trappers could make effective inroads into the area. McLeod pioneered the major fur trapping route through the southern Cascades, which followed the Pit River and crossed the McCloud River drainage at its mouth and headwaters.

The McLeod party was snowed in near Dead Horse Pass after spending the autumn of 1828 trapping on the upper McCloud River. The party nearly starved, and most of the pack animals died. As a result, McLeod was forced to cache his furs and supplies somewhere in the vicinity of Dead Horse Pass. The cache is reported to have been found on Bartle's Ranch, near the pass, in 1873 (Petersen 1965, Martin 1981, Cranfield 1984).

Another Hudson's Bay expedition led by John Work followed McLeod's route in 1832-33. The expedition had tragic consequences for the Wintu, who were infected with malaria. Work noted that many of the villages observed in 1832 were found abandoned on the return trip in 1833 as a result of the epidemic. Expedition members infected with the disease had to lay over at Dead Horse Pass (Martin 1981, Theodoratus Cultural Research, Inc. 1981).

Early Settlement

The McCloud River was only sparsely settled by European-Americans prior to the 1880s. The region lacked productive gold deposits and was unaffected by the rapid development of the California Gold Rush. Rugged terrain and fear of the Wintu further inhibited settlement. In 1873, the upper McCloud River was home to only a few cattlemen and shepherds (Martin 1981), and only three homesteads were located along the lower McCloud River in 1875 (Cranfield 1984). John Muir described the early

McCloud River pioneers as "various kinds of mountaineers, rare men, [and] queer characters. Their cabins were located with reference to game . . . [and were] made of sticks laid across each other without compass or square" (Muir 1888).

Joaquin Miller, one of the earliest settlers of the McCloud River and one of the few Americans who maintained good relations with the Wintu, built a square cabin on land he was given by a Wintu headman in Squaw Valley in 1855 (Cranfield 1984). Another early settler, E. W. Conner, ran a mule packing business on the upper McCloud River in 1852. Jerry Hackathorn established the first ranch on the river in 1860. Hackathorn constructed a two-level structure from hewn logs and whipsawed timber. Ross McCloud built a sawmill in Strawberry Valley on the upper McCloud River in 1858 and also built a wagon road from Soda Springs to Yreka to transport lumber (Martin 1981). Other early inhabitants included Judge J. S. Beard, who homesteaded a site on the McCloud River, and W. S. Cunningham, who owned a stage stop east of Beard (Martin 1981).

Small towns like Bartle and Elk Lawn developed along the Sisson and Fall River road along the upper McCloud River watershed in the 1890s. Elk Lawn was a stage stop on Elk Creek that consisted of a hotel, saloon, blacksmith shop, and the first post office in the McCloud River Valley. The town was abandoned by 1901 (Martin 1981).

Fish Hatcheries

The federal government established the Baird Fish Hatchery on the McCloud River in 1872 to replenish depleted stocks of Atlantic salmon on the east coast. The hatchery, run by Deputy Fish Commissioner Livingston Stone, produced almost six million eggs in its first year of operation and soon became a worldwide supplier of salmon eggs. Nevertheless, salmon yields steadily declined in subsequent years from industrial development along the Sacramento River. The hatchery operated until 1935, and the site has been inundated by Shasta Lake.

A trout hatchery was established by J. B. Campbell on Campbell's Creek above Baird in 1874, followed in 1878 by a federal hatchery on Green's Creek. The trout hatcheries were also major suppliers of fish eggs until stocks were infected by disease in 1885. The trout hatcheries were closed by 1888 (Cranfield 1984), and the sites have been inundated by Shasta Lake.

McCloud Lumber and Railroad Companies

Early attempts to commercially log the forests of the McCloud River were hampered by the lack of efficient transport of timber to mills and then to markets. The completion of the

first railway line to Strawberry Valley in 1886 opened up the upper McCloud River watershed to effective lumbering for the first time. As a result, 21 lumber mills began operating in the area between 1894 and 1920 (Cranfield 1984).

The most successful of the logging operations were the McCloud River railroad and logging companies. George Scott and Van Arsdale incorporated the McCloud River Lumber Company in 1896. The two entrepreneurs bought a bankrupt mill in Squaw Valley and planned to build a rail line connecting the mill to Sisson. The McCloud River Railroad Company was incorporated in 1897 to accomplish this purpose, and the railway was completed by 1898 (Martin 1981). Over 41,000 tons of lumber were removed from the McCloud area in the first year (Cranfield 1984). By 1907, the company operated two mills along the upper McCloud River that produced 100 million board feet of lumber (Martin 1981).

The McCloud lumber and railway companies confined most activities to the flatter terrain in the upper McCloud River watershed above Wyntoon (Cranfield 1984). In the first 20 years of operation, the companies operated temporary camps throughout the region that could be dismantled and moved. Felled timber was transported to the rail line by steam traction engines, horse teams and big wheels, and steam donkey yarders. Lumber then was transported by locomotive to the central mills at Ash Creek and McCloud. In the 1920s and 1930s, logging operations moved greater distances from the mills, and the companies began to construct permanent camps with shops and maintenance facilities. Camps of this type occurred at Hambone, Chippy Spur, Ponderosa, Tramrail, and Swobe. The McCloud River lumber and railroad companies, together representing one of the longest lived railroad logging systems in the United States (Hanft 1971, Vaughan 1985), were bought by U. S. Plywood Corporation in 1964.

The development of the lumber industry opened a new era in the history of the McCloud River. Arsdale and Scott built a company town around the original Squaw Valley mill. The town was originally known as Vandale but later the name was changed to McCloud. By 1909, the town consisted of a hotel, saloon, bank, livery stable, opera house, and more than 100 residences (Martin 1981). Many of the original company-built structures stand in McCloud today (Hanft 1971).

The companies employed more than 1,800 workers in 1907, including blacks and ethnic Chinese and Italians. Many workers lived in segregated camps on the outskirts of McCloud. In 1921, there were three Italian camps and two black camps. Each camp had four streets with 18-20 houses on a street. Relations among the workers were usually good, despite racial and ethnic segregation. A strike by 700 Italian workers in 1909 was suppressed by the National Guard (Martin 1981).

Resorts and Estates

The lower McCloud River was unaffected by the lumber industry because of steep terrain. Cool forests and good fishing began to attract wealthy sportsmen from the Sacramento Valley by the turn of the century. Much of the land along the lower McCloud River was bought up by individuals and sports clubs.

The Bollibokka Country Club was a fishermen's organization that built a log structure on the river north of Bollibokka Mountain in 1903. The original structure is still standing. The McCloud River Club was established in 1901. A clubhouse was erected on the river at the mouth of Claiborne Creek. The club burned down in 1904 and again in 1920, but the post-1920 structures stand today. The Whittiers established a summer home at Ah-Di-Na in 1904. Several cabins, a swinging bridge, two barns, a pump house, a trout holding tank, and a stone cellar were built at the resort between 1904 and 1936. Ah-Di-Na was purchased in 1936 by William Randolph Hearst, who used the complex to entertain guests. The resort burned down in 1958, but portions of the original buildings are still present on the Ah-Di-Na Campground (Martin 1981, Cranfield 1984).

The most spectacular of the resorts is at The Bend on the upper McCloud River. The area was first developed in 1883 by Justin Sisson, who built a series of summer cottages at the location to rent to fishermen and hunters. The land later was acquired by Charles Wheeler, who leased a portion to Phoebe Hearst in 1903. Phoebe Hearst built a five-tiered, Bavarian-style castle on the property and named it Wyntoon. The castle burned down in 1930, but William Randolph Hearst replaced it with a Bavarian-style village of four stone and timber castles and numerous smaller buildings centered on a fountain imported from Europe. The estate, used by Hearst until his death in 1951, is still owned by the Hearst family (Swanberg 1961, Cranfield 1984).

Dams

Shasta Dam was constructed between 1938 and 1945. At the time, it was the second largest masonry dam in the world. The dam currently supplies drinking and irrigation water and hydroelectric power for the Sacramento Valley. The filling of the reservoir inudated 20 miles of the McCloud River and flooded numerous archaeological and historical sites, including the Baird Fish Hatchery.

McCloud Dam, built in 1965, provides water for the Pit River Powerhouse. Water is diverted from the McCloud River to the Pit River system through the McCloud tunnel. McCloud Dam flooded 5 miles of river downstream of The Bend (Cranfield 1984).

Anthropological Research

The McCloud River Wintu were the subject of a number of ethnographic studies in the late nineteenth and early twentieth centuries. Only works with archaeological implications are reviewed here; readers are referred to Guilford-Kardell (1980) and Theodoratus Cultural Research, Inc. (1981) for a full history of Wintu ethnography. One of the earliest professional observers of the McCloud Wintu was B. B. Redding, who reported on McCloud Wintu flint knapping (Redding 1879) and subsistence (Redding 1881). Linguist Jeremiah Curtin worked among the Wintu between 1883 and 1889. Through his Wintu informant, Norel-Purtis, Curtin provided an inventory of names and locations of McCloud Wintu villages which has served as the basis for population estimates in the McCloud area (Guilford-Kardell 1980). J. P. Harrington catalogued Wintu place names in 1931 and 1947. His notes provide a valuable cross-check for Curtin's data (Bauman 1982). The preeminent source for Wintu ethnography is Du Bois (1935), who recorded data on Wintu subsistence, society, material culture, and religious life.

The first archaeological excavations on the McCloud River were at Potter Creek Cave and Samwel Cave (Sinclair 1904, Furlong 1906). Both caves were excavated at the turn of the century before the development of modern stratigraphic excavation techniques. Both sites contained cultural materials that may have been associated with the remains of Pleistocene fauna, but debate over the association of cultural materials with Rancholabrean fauna has raged for 60 years (Theodoratus Cultural Research, Inc. 1981).

Potter Creek Cave is located on the McCloud River, 1 mile southeast of Baird and outside the present study area (Sinclair 1904). The excavators found the bones of 52 animal species in Pleistocene deposits, including the remains of extinct shrub ox (*Euceratherium collinum*), horse (*Equus occidentalis*), bison (*Bison* sp.), camel (*Camelid* sp.), ground sloth (*Megalonyx* sp.) and mastodon (*Mastodon americanus*). Flaked stone tools were found in the cave, and some Pleistocene bone was believed to have been modified by humans.

Payen and Taylor (1976) reexcavated portions of Potter Creek Cave and obtained radiocarbon dates from material in the cave. They found that the remaining portions of the cave consisted of a Pleistocene bone layer without cultural material and an upper cultural layer without Rancholabrean fauna. Radiocarbon dates indicated a 6,000-year hiatus between the two levels, making any possible associations between cultural material and extinct fauna dubious.

Excavated by C. H. Merriam and E. L. Furlong in 1905 (Furlong 1906), Samwel Cave is located on the steep riverside bluffs south of Bollibokka Mountain just outside the study area. The cave yielded the bones of 26 Pleistocene animal species,

including the remains of extinct shrub ox and horse. The excavators also recovered stone tools from the cave that reportedly were associated with the bone material.

The material from Samwel Cave was reexamined by Treganza (1964); no convincing association of cultural material with Pleistocene fauna could be found. Treganza concluded that the faunal material was a natural bone accumulation that predated human occupation. However, Treganza described a lanceolate biface recovered from the backdirt of the original excavation. He was reluctant to call the point "Clovis-like," but the artifact has since been described as a bifacially fluted point with basal grinding (Morratto 1984). As such, Samwel Cave may well have had a Paleo-Indian occupation.

The first intensive archaeological survey of the McCloud River was conducted by two archaeologists from the University of California, Berkeley, in 1941-42 (Smith and Weymouth 1952). The survey was an intuitive reconnaissance of areas to be flooded by Shasta Dam. Thirty-one sites were located, and three sites were tested on the McCloud River. All the sites were located downstream of the present study area.

The survey focused on residential sites with house pit depressions, which seemed most concentrated on the McCloud River. Smith and Weymouth classified sites according to location on river flats, terraces, or hill crests. They noted that sites became smaller and more shallow with increasing distance from riverbank locations, reflecting a riverine-based subsistence and settlement pattern.

Smith and Weymouth identified a set of assemblages that would later be assignable to the Shasta Complex. Material recovered included Gunther Barbed and Desert Side-notched projectile points, hopper mortars and pestles with no manos, bone artifacts, beads, and some historic material. The investigators noted the similarity of the assemblage to the material culture of the Wintu and suggested that the heavy concentration of McCloud River sites was the result of displacement of the Wintu by European-Americans in the nineteenth century. There were no indications of occupation prior to a few centuries ago.

Sites in the Shasta pool area were reexamined in 1976-77, when drought conditions lowered lake levels and exposed flooded archaeological sites (Sundahl 1986). Sixty-seven new sites also were recorded. Once again, all sites were located downstream of the present study area. The Shasta pool reevaluation is significant because it recorded a wider variety of site types than had been discovered in the original survey.

Riverine sites contained assemblages that were consistent with Smith and Weymouth's observations. However, sites on slopes and knolls above major terraces contained high percentages of manos. Additionally, many of these sites contained

small corner-notched projectile points and larger side-notched and stemmed atlatl darts. Sundahl (1986) suggested these assemblages represent an Archaic occupation of the area dating back 7,000 years.

J. S. Clemmer of the Central California Archaeological Foundation surveyed the area later flooded by the McCloud Dam. Clemmer located seven sites within the present study area. Six were lithic scatters, and one contained a midden deposit approximately 50 square yards in area and 12-24 inches deep. Clemmer thought the sites were representative of a transhumant seasonal occupation of the rugged area (Clemmer 1963).

Wintu ethnohistoric data were compiled by Guilford-Kardell (1980) in an attempt to map village locations and approximate the size of Wintu populations in 1850. Guilford-Kardell relied primarily on the unpublished field notes of Curtin and Harrington, supplemented by her own native informants. She succeeded in identifying 239 village locations, including 82 in the McCloud Valley. Twenty-five locations are located in the present study area, eight of which are known archaeological site locations with house depressions or midden deposits (Steiner 1976, Guilford-Kardell 1980, Henn pers. comm.).

Two of the sites identified by Guilford-Kardell are included in a potential National Register Archaeological District located between Ah-Di-Na and Ash Camp. The potential district was originally recorded in association with the development of the Pacific Coast Trail, which extends through the Ah-Di-Na Campground (Harmon 1978). The complex includes the historic Ah-Di-Na resort, six aboriginal sites with house pit depressions, and a possible rockshelter site. Although the district is considered eligible for inclusion in the National Register, it has not yet been nominated formally (Henn pers. comm.).

Harrington's ethnographic notes on Wintu place names were compiled and collated by Bauman (1982). Bauman attempted to locate Wintu place names on U. S. Geological Survey (USGS) 15 minute maps but was limited by the lack of accurate locational data in Harrington's notes. Other researchers refined known place name locations by cross-checking the Harrington data compiled by Bauman with other ethnographic sources and with living informants (Theodoratus Cultural Research, Inc. 1984, 1985). More than 100 Wintu place names were pinpointed to specific geographic locations and plotted on USGS maps within the McCloud River study area. These included eight locations of religious or historical significance to the Wintu, and four villages not identified by Guilford-Kardell.

Archaeological surveys have largely been conducted by the United States Forest Service (USFS) since the late 1970s. The majority of these surveys in the area have been conducted in upland areas away from the McCloud River (Callahan 1975a and b,

Hoertling 1975a and b, Marocco 1975, Jeffers 1976, Sundahl 1977, 1982b, Harmon 1978, Foster nd). These surveys have failed to locate any significant cultural resources in upland areas. Although effective archaeological reconnaissance is inhibited in upland areas by rugged terrain and heavy vegetation cover (Sundahl 1982b), the lack of recorded archaeological sites in upland areas likely reflects a bias in prehistoric settlement patterns (Theodoratus Cultural Research, Inc. 1981).

A survey of the area around Fowler's Campground on the upper McCloud River located three lithic scatters and a historic cabin site (Grigsby and Fox 1977). USFS conducted a series of excavations at one of the aboriginal sites (Krieger 1987). The assemblage of the site was dominated by lithic debitage and chipped stone tools, and Gunther Stemmed and Desert Side-notched projectile points. Two mortars also were located on the site. Cultural material had been deeply buried by alluviation, but the site lacked an anthropogenic midden deposit.

Krieger noted that sites with midden deposits tend to occur farther down the McCloud River and Squaw Valley Creek drainages, while sites on the plateau of the upper McCloud River lack middens or house pits and seem to represent a transhumant occupation. She suggested that the Fowler's Campground site represented a temporary field camp utilized by special purpose hunting and collecting parties operating from larger village sites farther down the McCloud and Squaw Valley drainages.

Cultural Resource Sensitivity

In total, 45 archaeological sites have been recorded along the McCloud River between Algoma and Point McCloud (located approximately 2 miles downstream of the McCloud Bridge). These sites include 11 historic European-American components and eight Wintu villages. Additionally, there are 21 Wintu village locations that have not yet been located archaeologically. The sites between Ah-Di-Na and Ash Camp have been determined eligible for inclusion in the National Register, and other National Register eligible sites are likely to occur along the McCloud River (Henn pers. comm.). Excavations have been conducted at Samwel Cave and the Fowler's Campground site. The region lacks any large systematic surveys for cultural resources.

The identified prehistoric sites include 28 lithic scatters, one cave, four lithic scatters with house depressions, three sites with midden deposits, and one lithic quarry. The majority of prehistoric archaeological sites identified in the study area are Shasta or Wintu in origin. The 21 village locations not represented by known archaeological sites suggest that more large Wintu sites are likely to occur in the study area.

Indications of Paleo and Archaic occupation occur at Samwel Cave and possibly at the Fowler's Campground site. The lack of systematic surveys within the area renders it impossible to know if the bias toward late components is real or a function of sampling. However, Archaic components in the Shasta pool area (Sundahl 1986), Little Shoeinhorse Mountain (Sundahl 1982a), and at CA-SHA-475 (Clewett and Sundahl 1983) indicate that other early sites are likely to occur in the study area.

The 11 historic sites reported in the McCloud River area are: Wyntoon, the Bollibokka Club, the Ah-Di-Na resort, two logging camps, the Swobe railroad maintenance camp associated with the McCloud lumber and railway companies, a lumber mill at the Algoma Campground, the Sisson-Fall River road, and three late nineteenth century cabin sites. Additional unrecorded but potentially significant historical sites may occur along both the McCloud River and Squaw Valley Creek.

Site sensitivity is assessed in this study according to probable site locations and accessibility (Figure 9-1). A site distribution model prepared by Theodoratus Cultural Research, Inc. (1981) is used to evaluate site locations. The model was constructed by correlating locational variables against the distributions of 200 sites in the Shasta-Trinity National Forest. The sample includes 32 sites on the McCloud River. Prehistoric sites represent the entire sample, but it is assumed here that the model also represents the distribution of historic sites. It should be noted that the Theodoratus Cultural Research, Inc. sample is nonrandom and not based on systematic survey data.

According to the Theodoratus Cultural Research, Inc. model, level areas with slopes less than 15 percent and less than 300 feet from water have a high probability of containing cultural resources. Flat riverbank areas along the McCloud River, Squaw Valley Creek, and smaller tributaries conform to these characteristics. The majority of recorded archaeological sites occur in these areas, and it is likely that additional unrecorded resources also occur. It should be expected that prehistoric sites with midden and house pit deposits will be most common in the canyon areas below Wyntoon, while significant historic sites will be more common on the plateau above Wyntoon. These areas are accessible from the river and are likely locations for development. These areas, therefore, are designated as having the highest level of sensitivity (level 1).

Areas with slopes between 16 and 30 percent and located on intermittent streams or between 300 and 900 feet from water have a moderate probability of containing cultural resources (Theodoratus Cultural Research, Inc. 1981). The interfluvial flats and low ridges above Wyntoon conform to these characteristics. These areas may be expected to contain large numbers of potentially significant historic sites, are relatively well protected from the river, and are already economically developed. For these reasons, these areas are designated as having a moderate level of site sensitivity (level 2).

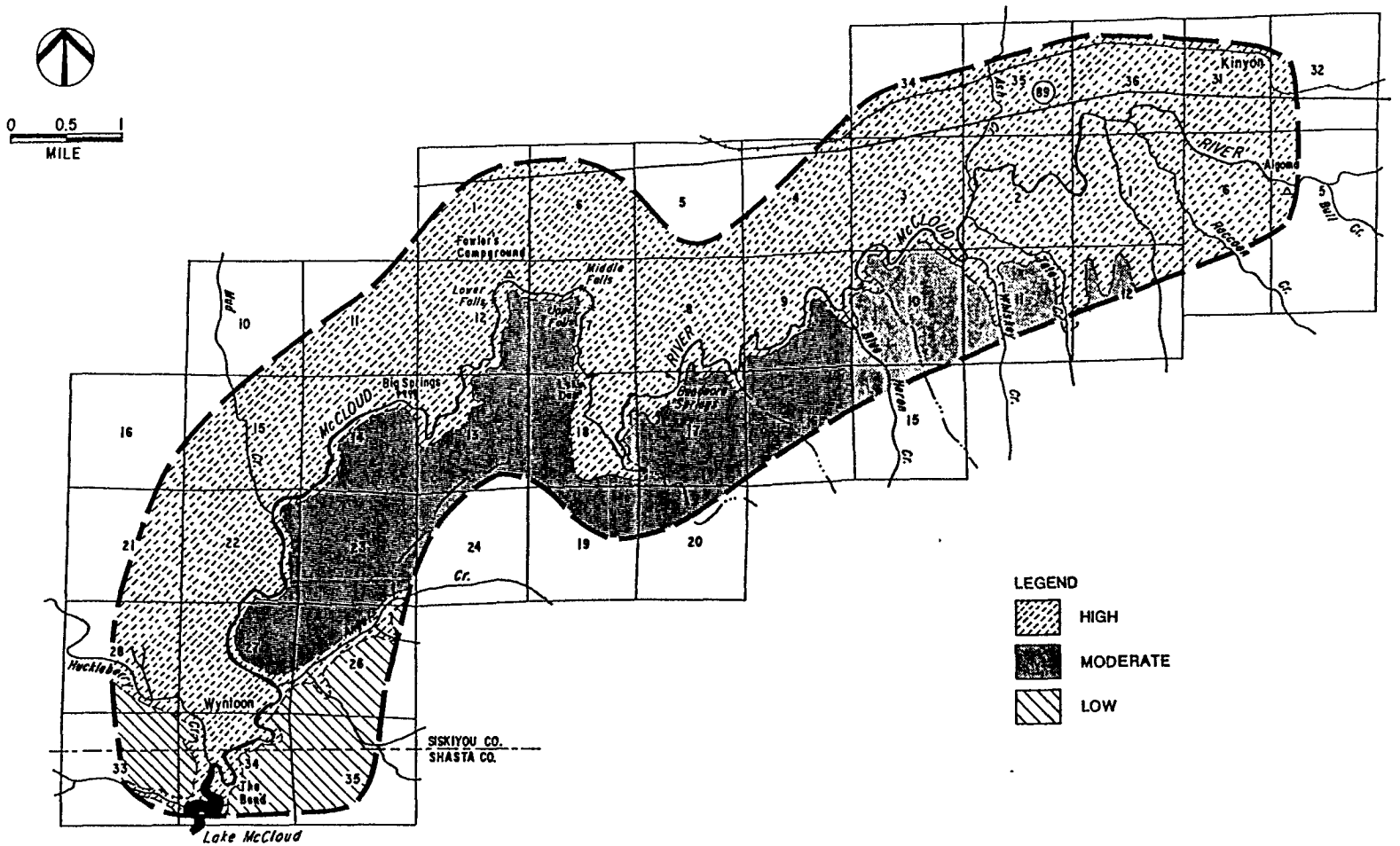


FIGURE 9-1A.
CULTURAL RESOURCE SENSITIVITY RANKINGS FOR THE McCLOUD RIVER

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C-015060

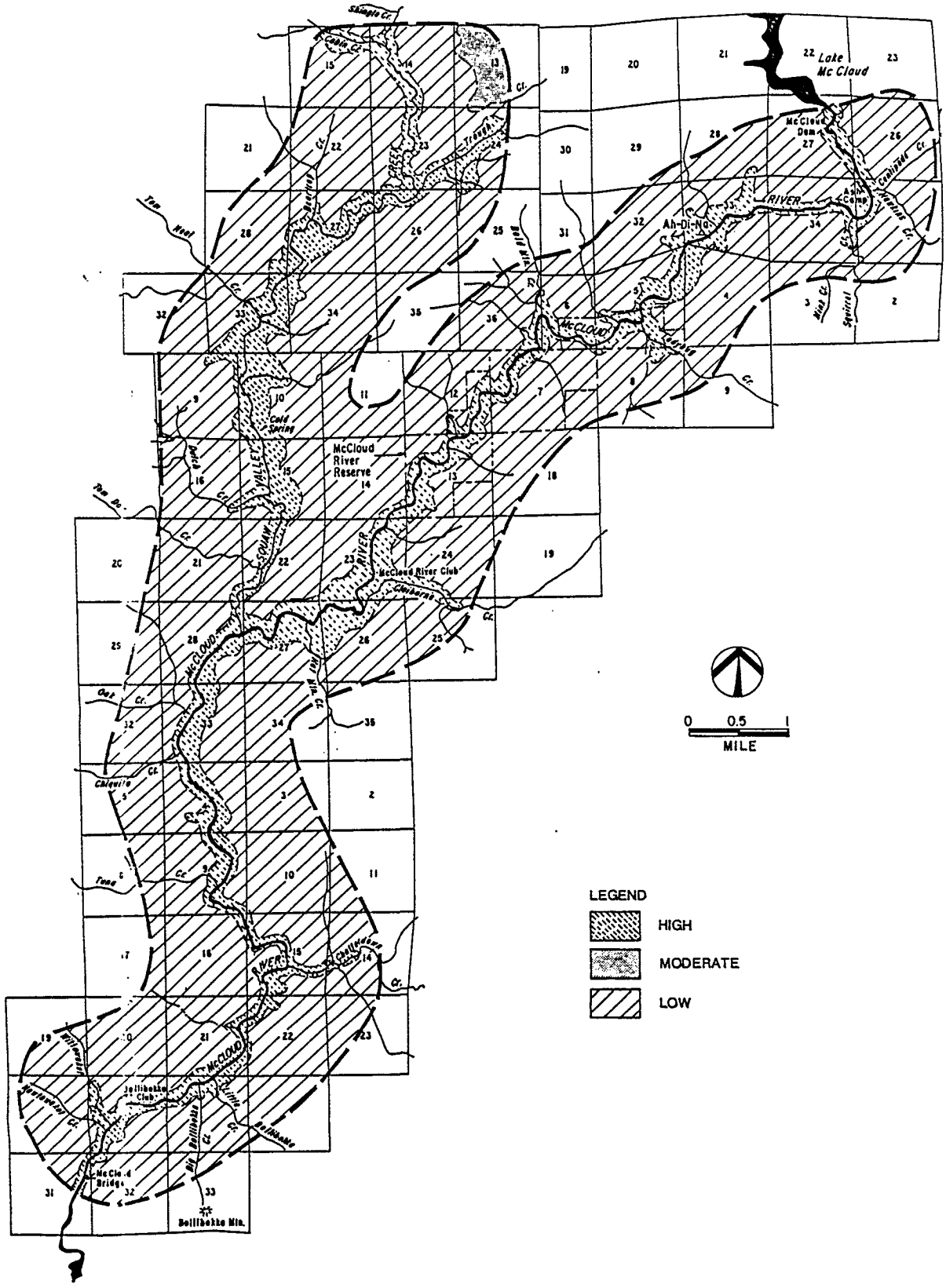

FIGURE 9-1B. CULTURAL RESOURCE SENSITIVITY RANKINGS FOR THE McCLOUD RIVER

C-015061

Steeply sloped areas more than 900 feet from water have a low probability of having cultural resources (Theodoratus Cultural Research, Inc. 1981). The steep cliffs and canyons along the McCloud River and Squaw Valley Creek below Wyntoon conform to these characteristics and seem unlikely to contain significant cultural resources. These areas may be expected to contain sites such as rockshelters or caves, but steep areas will be relatively inaccessible from the river and are unlikely locations for disturbance. For these reasons, these areas are designated as having a low level of site sensitivity (level 3).

CONCLUSIONS

Archaeological sites in the McCloud River watershed are valuable resources from both scientific and cultural points of view. The archaeological record of northcentral California is only beginning to be understood, and the McCloud River area is likely to contain significant information pertaining to the last 7,000 years of human history in California. Unlike other areas in California, modern economic development along the McCloud River has been minimal, and public access to the area has always been limited, with the result that archaeological sites along the McCloud River tend to be well preserved, retaining their research potential (Henn pers. comm.).

Cultural resources of the McCloud River and Squaw Valley Creek constitute extraordinary values. The significance of the area to the prehistoric and ethnographic records of northcentral California is great. Important archaeological sites are located from Fowler's Campground to Shasta Lake on the McCloud River. Several sites are located along Squaw Valley Creek as well. Many additional sites are yet to be discovered. This area constitutes a major center of Wintu occupation and is considered to contain extraordinary values. The area upstream of Fowler's Campground, however, does not contain the diverse and abundant sites found downstream. Consequently, the McCloud River above Fowler's Campground does not contain extraordinary cultural resource values.

Important historical sites are related to the McCloud lumber and railroad companies and are restricted to the upper McCloud River. The McCloud River lumber and railroad companies played an important role in the economic development of the region, and the railroad and logging industries have attracted a good deal of interest from local railroad and history buffs (Hanft 1971). Certain sites, such as the lumber mill at the Algoma Campground, are located on the river. Many sites, however, are located within a broad geographical area. For this reason, historical resource values were rated as good but not extraordinary.

BIBLIOGRAPHY

References Cited

Bauman, J. A. 1982. The Harrington collection of place names in north central California. Center for Applied Linguistics. Washington DC. Prepared for: Shasta-Trinity National Forest, Redding, CA. 150 pp.

Callahan, B. K. 1975a. Pacific Crest trail: archaeological reconnaissance report. (05-14-44.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

_____. 1975b. Star City Creek vault toilet installation: archaeological reconnaissance report. (05-14-95.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Clemmer, J. S. 1963. A survey of the archaeological resources in Iron Canyon and the McCloud River Reservoir. Central California Archaeological Foundation. Prepared for: Pacific Gas and Electric Company. Unpublished report. 5 pp.

Clewett, S. E. and E. Sundahl. 1983. Archaeological excavations at Squaw Creek, Shasta County, California (23-9A28-1-5067.) Shasta College Archaeological Laboratory. Redding, CA. Prepared for: Shasta-Trinity National Forest, Redding, CA. 90 pp.

Cranfield, C. 1984. A land use history of the McCloud River region, California. McCloud River Preserve. McCloud, California. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 149 pp.

Du Bois, C. 1935. Wintu ethnography. University of California publications in American Archaeology and Ethnology 36(1):1-148.

Foster, A. E. n.d. Southern Pacific Land Company right-of-way: archaeological reconnaissance report. (05-14-262.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Furlong, E. L. 1906. The exploration of Samwel Cave. American Journal of Science 22(129): 235-247.

Grigsby, K. and C. Fox. 1977. River timber site: archaeological reconnaissance report. (05-14-109.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Guilford-Kardell, M. 1980. Some pre-contact Shasta County Wintu site locations: a correlation of the previously unpublished notes of Jeremiah Curtin and J. P. Harrington with later published, recorded and unrecorded data on the Dawpom, Wenemem Puidalpom, and Waimuk areas of Wintu population. (Occasional Papers of the Redding Museum No. 1.) Redding Museum and Art Center. Redding, CA. 131 pp.

Hanft, R. 1971. Pine across the mountain: California's McCloud River railroad. Golden West Books. San Marino, CA. 224 pp.

Harmon, J. A. 1978. Pacific Coast trail, Ah-Di-Na segment: archaeological reconnaissance report. (05-14-84.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Hoertling, G. 1975a. Shirttail timber sale: archaeological reconnaissance report. (05-14-121.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

_____. 1975b. Raccoon Creek plantation: archaeological reconnaissance report. (05-14-187.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Jeffers, G. S. 1976. McCloud boat ramp: archaeological reconnaissance report. (05-14-21). USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Jensen, P. M. and P. R. Reed. 1979. An anthropological overview and cultural resources inventory of the northern Sacramento Valley and southern Cascade Range. (CA-030-CT8-004.) Bureau of Land Management, Redding District Office, Redding, CA. 182 pp.

Krieger, J. 1987. Archaeological excavations at Fowler's Campground. F. S. Site No. 05-14-61-44, Siskiyou County, California. USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. 66 pp.

La Pena, F. R. 1978. Wintu. Pp. 324-340 in California: Handbook of North American Indians, Vol. 8. Smithsonian Institution. Washington DC. 800 pp.

Marocco, B. 1975. Tate Creek special use permit: archaeological reconnaissance report. (05-14-304.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

Martin, I. B. 1981. Overview of the cultural historic resources of Euro-American and other immigrant groups in the Shasta-Trinity National Forest. (52-9A28-9-2974.) Geo-

scientific Systems and Consulting. Playa del Ray, CA. Prepared for: USDA, National Forest Service, Shasta-Trinity Forest. Redding, CA. 150 pp.

Morratto, M. J. 1984. California archaeology. Academic Press. Orlando, FL. 757 pp.

Muir, J. 1888. Picturesque California, the Rocky Mountain and Pacific slope. J. Dewey Co. San Francisco, CA. 350 pp.

Payen, L. A. and R. E. Taylor. 1976. Man and Pleistocene fauna at Potter Creek Cave, California. Journal of California Anthropology 3(1):51-58.

Petersen, E. 1965. In the shadow of the mountain: a short history of Shasta County, California. Unpublished report. 132 pp.

Redding, B. B. 1879. How our ancestors in the stone age made their implements. American Naturalist 13:667-674.

_____. 1881. California Indians and their food. The Californian 4:442-445.

Sinclair, W. J. 1904. The exploration of Potter Creek Cave. University of California Publications in American Archaeology and Ethnology 2(1):1-27.

Smith, C. E. and W. D. Weymouth. 1952. Archaeology of the Shasta Dam area, California. (Reports of the University of California Archaeological Survey, No 18.) University of California Press. Berkeley, CA. 46 pp. + 3 figures.

Steiner, M. 1976. Site forms, Ca-SHA-622, 623, 624. Northwest Information Center, California State University, Chico, CA. Unpublished data.

Sundahl, E. M. 1977. Six water quality improvement projects: archaeological reconnaissance report. (05-14-259.) USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. Unpublished report.

_____. 1982a. The Shasta complex in the Redding area, California. MA thesis. Department of Anthropology, California State University, Chico. Chico, CA. 209 pp.

_____. 1982b. Beetle dee timber sale, archaeological survey, Shasta County, California. (53-9A28-1-3490.) Shasta College Archaeological Laboratory, Redding, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA.

_____. 1986. Cultural resources of the Shasta Lake pool area, Shasta County, California. USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. 40 pp.

Swanberg, W. A. 1961. Citizen Hearst: a biography of William Randolph Hearst. Charles Scribner's Sons. New York, NY. 555 pp.

Theodoratus Cultural Research, Inc. 1981. Native American cultural overview: Shasta-Trinity National Forest. (53-9A28-9-2957.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 265 pp. + appendices.

_____. 1984. Ethnographic inventory for Public Law 95-341, north central California. (53-9A28-0-3130.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 150 pp.

_____. 1985. Mapping project: ethnographic inventory, Shasta-Trinity National Forest, Mendocino National Forest, and Redding Resource Area Bureau of Land Management. (53-9A28-0-3130.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 500 pp.

Treganza, A. E. 1964. An ethno-archaeological examination of Samwel Cave. (Cave Studies #12.) Cave Research Associates. Castro Valley, CA. 29 pp.

Vaughan. T. 1985. The McCloud River Lumber Company: archaeological investigations at two historic camps. USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. 80 pp.

Personal Communications

Henn, W. Forest Archaeologist. Shasta-Trinity National Forest, Redding, CA. Telephone conversation.

Chapter 9 Appendix

PREHISTORY OF NORTHCENTRAL CALIFORNIA

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PREHISTORY OF NORTHCENTRAL CALIFORNIA

Archaeological research in northcentral California has been summarized by Jensen and Reed (1979), Theodoratus Cultural Research, Inc. (1981), Raven (1984), and Raven et al. (1984). The known prehistory of the region has yet to be integrated into an interpretive framework that models variation in the archaeological record as adaptations by prehistoric peoples (Raven et al. 1984). Within the last 20 years, however, continued research in the southern Cascades and northern Sacramento Valley has revealed the outlines of the cultural history of the area. Productive research has addressed the Late Pleistocene occupation of northern California (Treganza 1964, Payen and Taylor 1976, Brott and Dotta 1978, cited in Theodoratus Cultural Research, Inc. 1981) and the culture history and subsistence of the Archaic (Clewett and Sundahl 1983) and Late Prehistoric (Sundahl 1982, Farber 1985) periods. The following summary is drawn from these sources.

PALEO-INDIAN

The Paleo-Indian period occurred at the end of the Pleistocene epoch, roughly between 11,500 and 8,000 years before the present (BP). The climate then was cooler and wetter than at present. Fauna was very different than it is today. Extinct mammals such as the short-faced bear, browsing ground sloth, imperial mammoths, saber-toothed cats, and dire wolves roamed the land.

Paleo-Indian tool assemblages are composed of large bifaces, blades, gravers, punches, scraper blades, side and end scrapers, spokeshaves, choppers, and small flake tools. Projectile points are edge ground, collaterally flaked, and stemmed or concave based. Ground stone tools are rare.

There is little direct evidence of Paleo-Indian subsistence. The lithic assemblages of California resemble contemporary plains and southwestern big game hunting assemblages. By extension, it is assumed that Paleo groups in California also stressed large game hunting. Easily obtained and processed small game and lacustrine plants also may have been used.

Large pluvial lakes seem to have been the focus of Paleo-Indian subsistence and settlement. Archaeological sites lack midden accumulations, house features, plant processing

equipment, storage facilities, or other indications of intensive occupation. Settlement patterns likely consisted of numerous short-term camps. Paleo hunters utilized high-return and low-cost resources by moving directly to where those resources were most available. These patterns suggest that the Paleo-Indian period represented a highly mobile foraging pattern practiced by small populations (Chartkoff and Chartkoff 1984).

Most data used in interpreting Paleo subsistence and settlement patterns are derived from archaeological research conducted outside northern California. Paleo-Indian material recovered in the region suffers from the lack of good Pleistocene contexts, excavated under rigid stratigraphic controls. Nevertheless, the southern Cascade region of the Shasta-Trinity National Forest has played an important role in the debate over the antiquity of man in northern California. This debate has concentrated in two areas: the possible occurrence of an early, preprojectile point lithic tradition and the association of cultural material with extinct fauna remains at Potter Creek and Samwel Cave. Both Potter Creek and Samwel Cave occur along the McCloud River.

Several suspected early man sites in Shasta, Siskiyou, and Tehama Counties have been proposed as representing an early man adaptation predating the fluted point horizon of 12,000 years BP (Sundahl 1976, cited in Theodoratus Cultural Research, Inc. 1981; Brott and Dotta 1978, cited in Theodoratus Cultural Research, Inc. 1981). These sites occur on Pleistocene terraces and contain lithic assemblages composed of cores, choppers, and flakes. Lithic raw materials are locally available metavolcanic stream cobbles. The sites lack projectile points, grinding tools, chalcedony or obsidian debitage, shell, or bone.

ARCHAIC PERIOD

Climatic conditions during the early and middle Holocene were warmer and drier than at present, but modern floral and faunal communities developed at this time. Environmental change led to the development of a diversified hunting and gathering pattern adapted to the exploitation of a variety of seasonally available resources. Hunter-gatherer groups moved seasonally to areas where critical resources could be obtained economically. The exploitation of new resources initiated the development of new technologies, such as basketry and ground stone tool-making. Although hunting continued to be important, plant foods became increasingly central to subsistence (Chartkoff and Chartkoff 1984). This pattern has been designated the Archaic period throughout North America.

The Archaic period in northcentral California is best understood from excavations at site CA-SHA-475 (Clewett and Sundahl 1983), located on the Squaw Creek drainage in Shasta-

Trinity National Forest, east of the McCloud River study area. The site contains more than 13 feet of cultural deposits, representing the only identified, long-term cultural sequence in the southern Cascades. The oldest radiocarbon date from the site is 6,530 ± 800 years BP. Clewett and Sundahl identified two Archaic components on the site, overlain by a Late Prehistoric Shasta occupation.

The Early Archaic component occurred between 8,000 and 5,000 years BP. It is characterized by an assemblage typologically similar to the Borax Lake complex of northwestern California. Large, wide-stemmed points of the Borax Lake type are temporally diagnostic of the period, but leaf-shaped and contracting stem points begin to occur by 6,000 years BP. Milling stones and unshaped manos occur in small numbers.

The site was most intensively occupied between 5,000 and 1,500 years BP, during the Classic Archaic period. The Classic Archaic component contains a more elaborate tool assemblage that is typologically similar to the Mendocino Complex. Stemmed Excelsior projectile points and McKee unifaces are diagnostic of the component. Manos and milling stones occur in large numbers. The period from 2,500 to 1,500 years BP may mark a transition to the Late Prehistoric Shasta Complex; medium-sized side- and corner-notched points, mortars, and pestles occur for the first time.

There is little direct evidence of Archaic subsistence and settlement, except what can be extrapolated from the Squaw Creek site and from a few Archaic sites in the Shasta Lake area (Sundahl 1986). Archaic sites occur on high terraces and upland knolls that offered access to a variety of environments where diverse resources could be obtained from a single location. Hunting and fishing were important to the diet, but the ground stone assemblage suggests there was much reliance on high-cost and low-return seeds. However, the infrequent occurrence of mortars and pestles suggests there was no emphasis on acorns (Clewett and Sundahl 1983).

SHASTA COMPLEX

The upper component of site CA-SHA-475 was typologically assignable to the Shasta Complex. The Shasta Complex was originally defined by Meighan (1955) on the basis of a series of traits shared by Late Prehistoric sites in northcentral California, including the bow and arrow, Gunther-barbed projectile points, hopper mortars, the absence of milling stones, clam shell disc beads, spire-lopped Olivella beads, Haliotis pendants, village sites with deep, ashy middens and semisubterranean structures, and site locations along major streams and rivers.

The distribution of Shasta sites corresponds with the territory of the ethnographic Wintu people, and the development of the Shasta Complex is assumed to represent the arrival of Wintun speakers in northern California (Farber 1985). Shasta was originally thought to postdate 400 years BP, but excavations in the northern Sacramento Valley have established its origins at 1,200 BP. A tentative, three-stage development has been proposed for the Shasta sites (Sundahl 1982).

Phase I lasted from 1,200 to 800 years BP. Early phase assemblages are composed of square-stemmed Gunther-barbed projectile points, winged drills, bipointed fish gorges, Olivella and Glycymeris beads, bone-gaming pieces, and incised bone pendants. Phase II occurred between 800 and 400 years BP and is characterized by contracting stemmed Gunther-barbed and general type, Desert Side-notched projectile points, obsidian blanks, sandstone pendants, paired sandstone arrow shaft abraders, and Haliotis pendants. Phase III lasted from 400 to 150 years BP and was the direct precursor of the ethnographic Wintu. Late-phase assemblages contain Redding-type Desert Side-notched, Gunther-barbed, Contracting-stemmed, and Cottonwood-triangular projectile points. Incised and biconically drilled pebble pendants, narrow, hafted drills, and clam shell disc beads also occur (Sundahl 1982).

Large structures on Shasta sites indicate a sedentary or semisedentary adaptation. Shasta sites occur along major streams and rivers, particularly at confluences of two or more drainages. Numerous Shasta components occur along the McCloud River, indicating that the region supported a large population. Subsistence was focused on a few abundant resources with high processing costs. Intensive collecting, processing, and storage of salmon and of acorns were of major importance (Sundahl 1982, Farber 1985).

The occurrence of hopper mortars and pestles without manos or milling stones was originally considered a diagnostic trait of the Shasta Complex. The dominance of hopper mortars in archaeological assemblages likely represents the importance of acorn processing in Shasta subsistence. However, subsequent investigations have demonstrated that manos and milling stones do occur in some contexts, particularly in upland drainages on sites lacking midden accumulations. The upland milling stone assemblages may represent a more mobile, generalized subsistence and settlement pattern than the sedentary pattern indicated on other Shasta sites. It is not certain whether the milling stone assemblages represent variation among the ancestral Wintu or a separate complex ancestral to the ethnohistoric Yana. The milling stone assemblages may indicate that the Shasta adapted to upland environments or climatic adversity by adopting a more mobile subsistence pattern (Farber 1985).

BIBLIOGRAPHY

References Cited

Brott, C. W. and J. D. Dotta. 1978. New problems and hypotheses in dealing with the "archaeolithic tradition": evidence from the southern Cascades. Paper presented at the 1978 annual meeting of the Society for California Archaeology. Yosemite, CA.

Chartkoff, J. L. and K. K. Chartkoff. 1984. The archaeology of California. Stanford University Press. Stanford, CA. 350 pp.

Clewett, S. E. and E. Sundahl. 1983. Archaeological excavations at Squaw Creek, Shasta County, California. (23-9A28-1-5067.) Shasta College Archaeological Laboratory. Redding, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 90 pp.

Farber, A. 1985. Alternative approaches to the Shasta Complex and adjacent expressions: assemblages, cultural ecology, and taxonomies. Journal of California and Great Basin Anthropology 7(1):75-88.

Jensen, P. M. and P. R. Reed. 1979. An anthropological overview and cultural resources inventory of the northern Sacramento Valley and southern Cascade Range. (CA-030-CT8-004.) USDI, Bureau of Land Management, Redding District Office. Redding, CA. 182 pp.

Meighan, C. W. 1955. Archaeology of the north coast ranges, California. (University of California Archaeological Survey Report 30.) University of California Press. Berkeley, CA. 30 pp.

Payen, L. A. and R. E. Taylor. 1976. Man and Pleistocene fauna at Potter Creek Cave, California. Journal of California Anthropology 3(1):51-58.

Raven, C. M. 1984. Northeastern California. Pp. 431-470 in M. J. Morratto (ed.) California Archaeology. Academic Press, Inc. Orlando, FL. 757 pp.

Raven, C. M., et al. 1984. Archaeological investigations in the Sacramento River canyon INFOTEC development Inc. (Y-2768.) Prepared for: California Department of Transportation, Sacramento, CA. 650 pp. + 8 maps.

Sundahl, E. M. 1976. Churn Creek: a possible early lithic locality in Shasta County, California. Paper presented at the Annual Meeting of the Society for California Archaeology. San Diego, CA.

_____. 1982. The Shasta Complex in the Redding area, California. (MA thesis.) Department of Anthropology, California State University, Chico. Chico, CA. 209 pp.

_____. 1986. Cultural resources of the Shasta Lake pool area, Shasta County, California. USDA, Forest Service, Shasta-Trinity National Forest. Redding, CA. 40 pp.

Theodoratus Cultural Research, Inc. 1981. Native American cultural overview: Shasta-Trinity National Forest. (53-9A28-9-2957.) Fair Oaks, CA. Prepared for: USDA, Forest Service, Shasta-Trinity National Forest, Redding, CA. 265 pp. + appendices.

Treganza, A. E. 1964. An ethno-archaeological examination of Samwel Cave. (Cave Studies #12.) Cave Research Associates. Castro Valley, CA. 29 pp.

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