

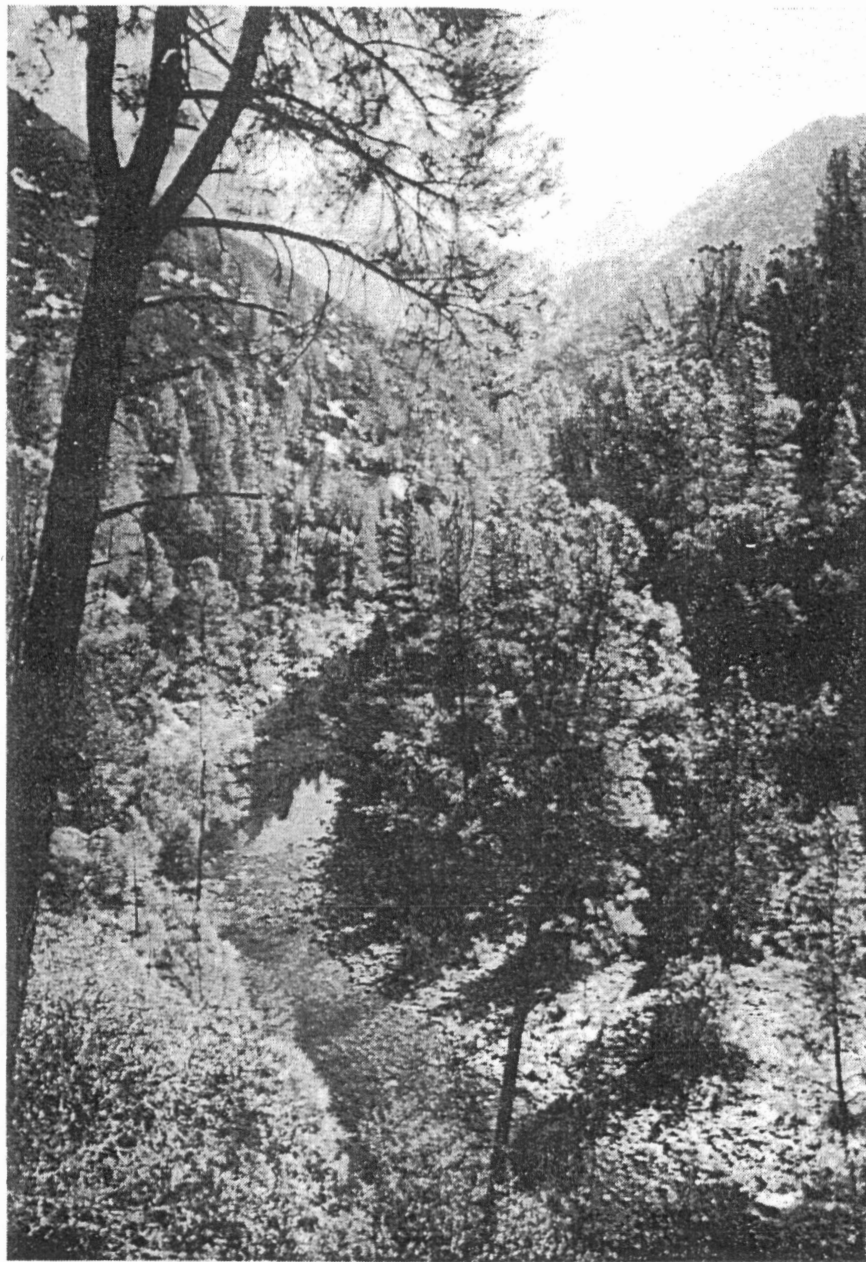
State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

SOUTH FORK MERCED RIVER WILD TROUT
MANAGEMENT PLAN^{1/}

Inland Fisheries Branch

July 1979

^{1/} This work was performed as part of Dingell-Johnson Project California F-10-R,
"Salmonid Stream Study", supported by Federal Aid to Fish Restoration funds.



SOUTH FORK MERCED RIVER CANYON

PREFACE

In 1966, the Department of Fish and Game in the California Fish and Wildlife Plan recommended expansion of trout management activities to "protect and enhance wild trout fisheries." In response to this recommendation and to concerns expressed by the public, the California Wild Trout Program was established by the California Fish and Game Commission in 1971. The primary purpose of the program is to preserve attractive trout stream fisheries which are naturally sustained by wild strains of trout as opposed to programs which feature the stocking of catchable-sized trout on a put-and-take basis. Emphasis is placed on protecting the aquatic environment to perpetuate natural production and on preserving the natural character of the streamside environment to provide a quality angling experience.

Since 1971, the Fish and Game Commission has designated eight backcountry^{2/} and nine roadside streams as wild trout streams. Each wild trout stream is to have its own management plan and regulations which will emphasize individuality and diversity.

Specific management objectives for each stream will use the general objectives of the wild trout program as guidelines. The guidelines are:

1. To maintain wild trout populations at levels necessary to provide satisfactory recreational angling opportunities.
2. To maintain and enhance where possible the habitat required for optimum wild trout production.
3. To preserve the natural character of the streamside environment.

^{2/} Remote with access largely provided by trails.

Management of backcountry streams such as the South Fork Merced River will also emphasize maintenance of the remote, secluded quality of the angling experience, which generally involves minimizing angler encounter with man-made alterations or activity.

This plan is an in-house document written to identify the Department of Fish and Game's activities in the South Fork Merced River drainage including the management direction to be taken in coordinating with agencies responsible for environmental protection. All land use planning is the ultimate responsibility of the U. S. Forest Service. As per the Memorandum of Understanding between the Department and the Forest Service, the Department will identify management direction which is intended to preserve and protect wildlife resources in natural forests and the Forest Service will recognize the Department's responsibilities and concerns along with those of the other users of the forest in their multiple use planning.

RESOURCE STATUS

General Setting

The South Fork Merced River originates near the 10,000 ft elevation in the remote southern reaches of Yosemite National Park. The river is 40 miles long and drains a 241 sq mile watershed, much of which lies within the park (Figure 1). The drainage is rugged, steep, and only slightly developed. Two settlements exist in the drainage; Wawona, a substantial recreational area located about 3 miles inside the park boundary on Highway 41, and South Fork, a small settlement located along Highway 140 at the confluence of the South Fork and the mainstem Merced River (Figure 2).

The wild trout section is 16.5 miles long, extending from the confluence of the South Fork with the mainstem Merced (1,410 ft elevation) to the Sierra

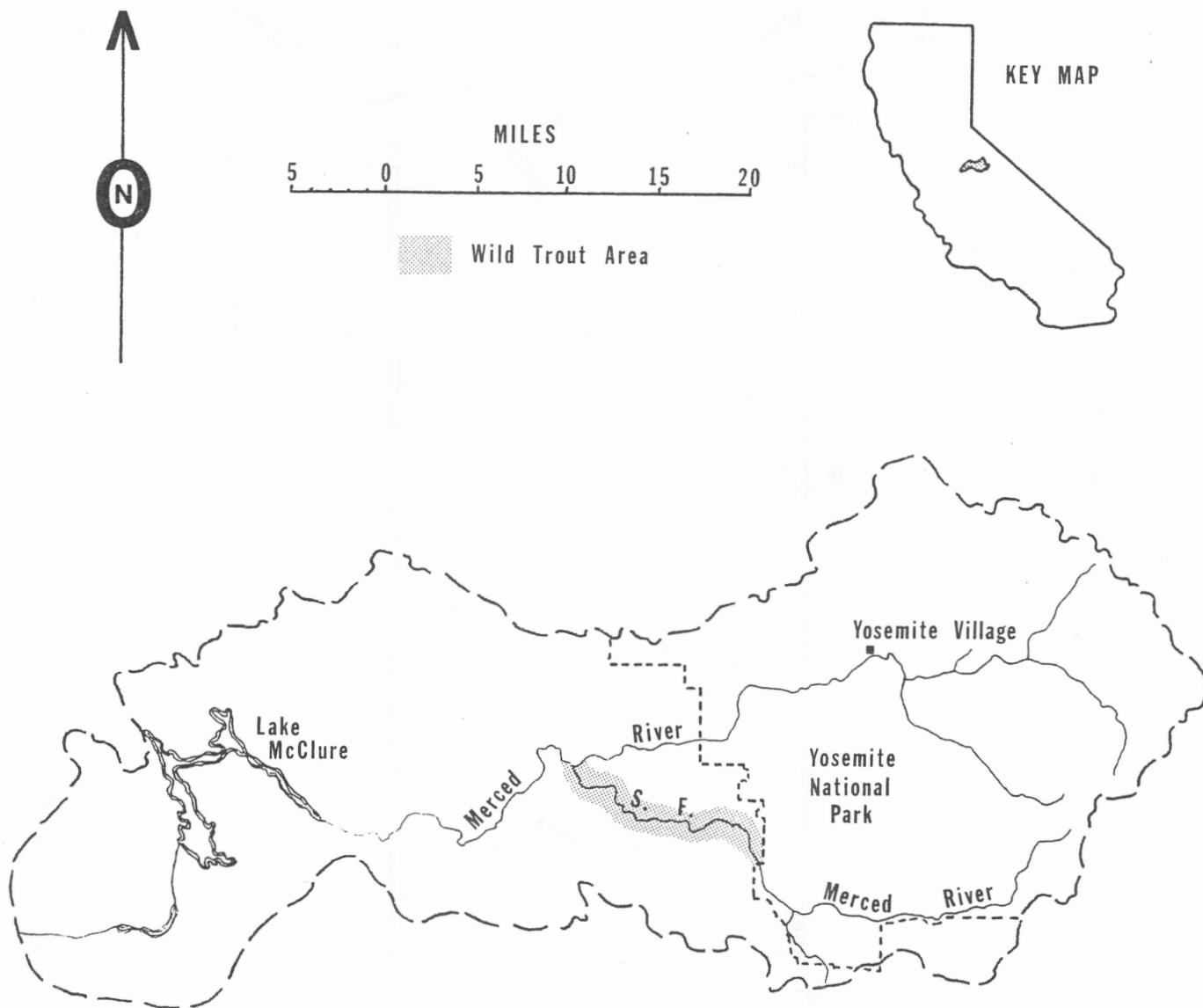


FIGURE 1 GENERAL LOCATION OF SOUTH FORK MERCED RIVER.

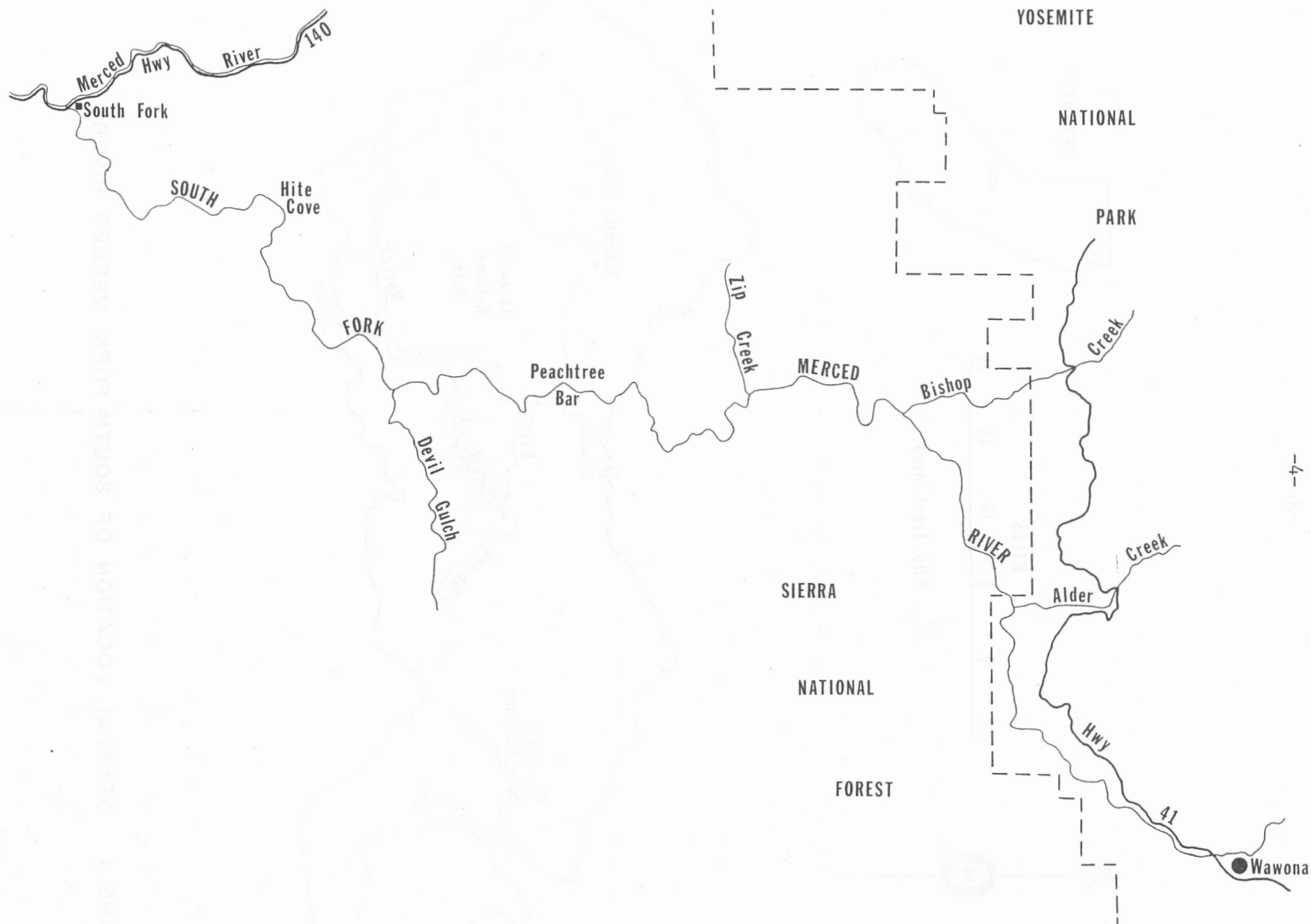


FIGURE 2 SOUTH FORK MERCED RIVER DRAINAGE.

National Forest-Yosemite National Park boundary (3,440 ft elevation) (Figure 3). It is situated in a steep-walled canyon interspersed with heavily forested flats. The streambed is characterized by deep, clear pools and boulder strewn runs (40- to 70-ft wide).

Soils in the canyon are of granitic and sedimentary origin. They are shallow, very low in productivity (Figure 4), generally sloping, and subject to heavy erosion. Vegetation in the canyon, as a result of the poor soil and dry, warm climate, is of the chaparral type (Figure 5) - primarily brush and grass. Tree species present include digger pine, blue oak, and live oak.

In the uppermost reach of the wild trout area, soil productivity is higher (Figure 4), and the climate is cool and moist. Vegetation consists of pines and other conifers (Figure 5).

The climate of most of the wild trout area is hot and dry in the summer and mildly cool in the winter. Precipitation falls mainly as rain in the canyon area, and snow above the 3,000 ft elevation. More than half of the precipitation occurs in January, February, and March, while less than 3% falls in the summer.

Flow during the winter is largely derived from rain falling in the lower drainage (between October and January, nearly 64% of the flow from the South Fork originates below Wawona). Flow during the spring and early summer is largely derived from a melting snowpack in the upper drainage. About 55% of the total annual flow originates in the 100 sq mile watershed situated above Wawona. Flows in the lower river range from 1,300 cfs in the spring to less than 20 cfs in the late summer (Figure 6).

Access

Four trails and one four-wheel-drive road enter the wild trout section (Figure 7). The South Fork Trail and Hite Cove Road lead to the Hite Cove

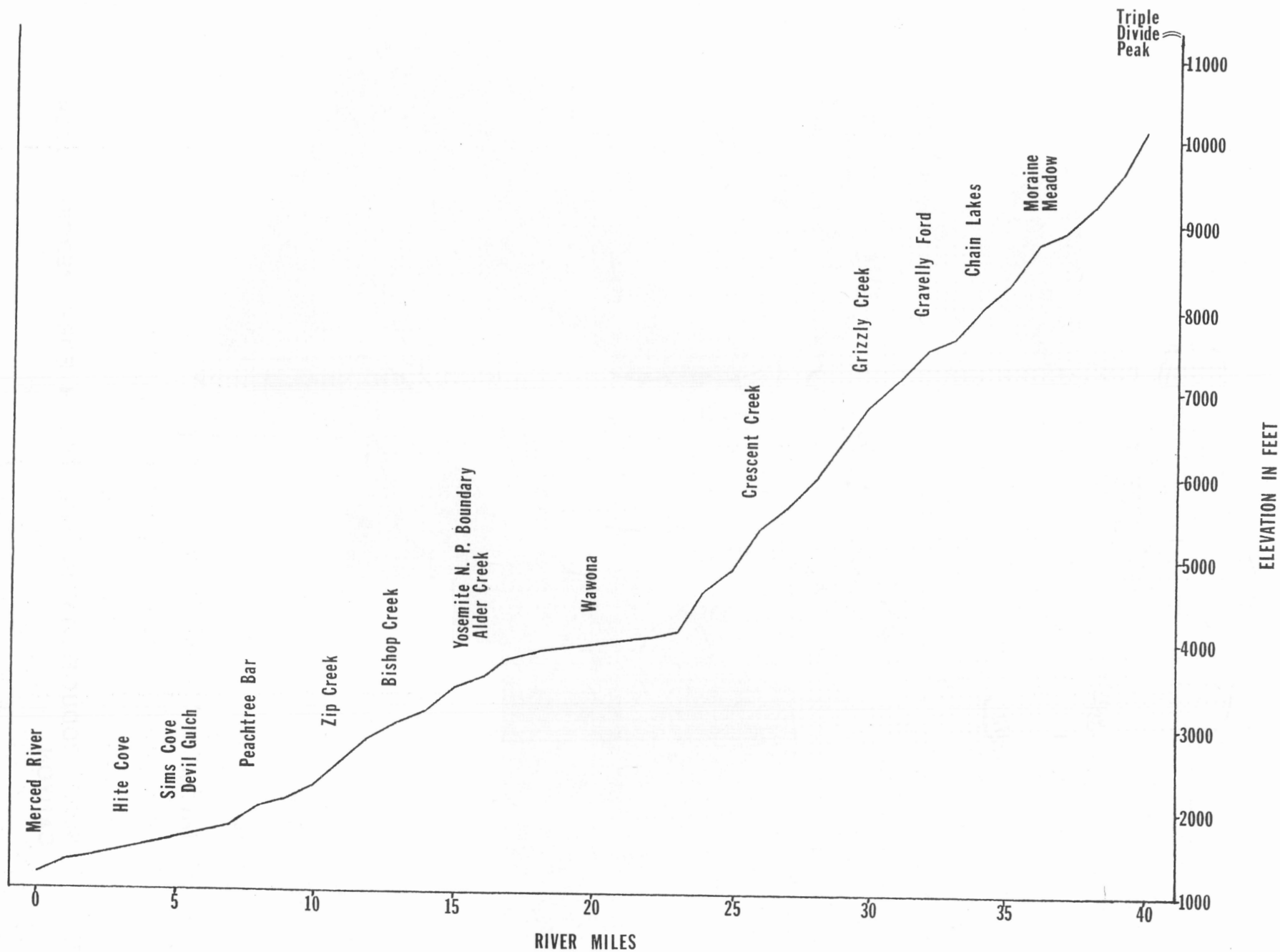


FIGURE 3 LONGITUDINAL STREAM PROFILE - SOUTH FORK MERCED RIVER

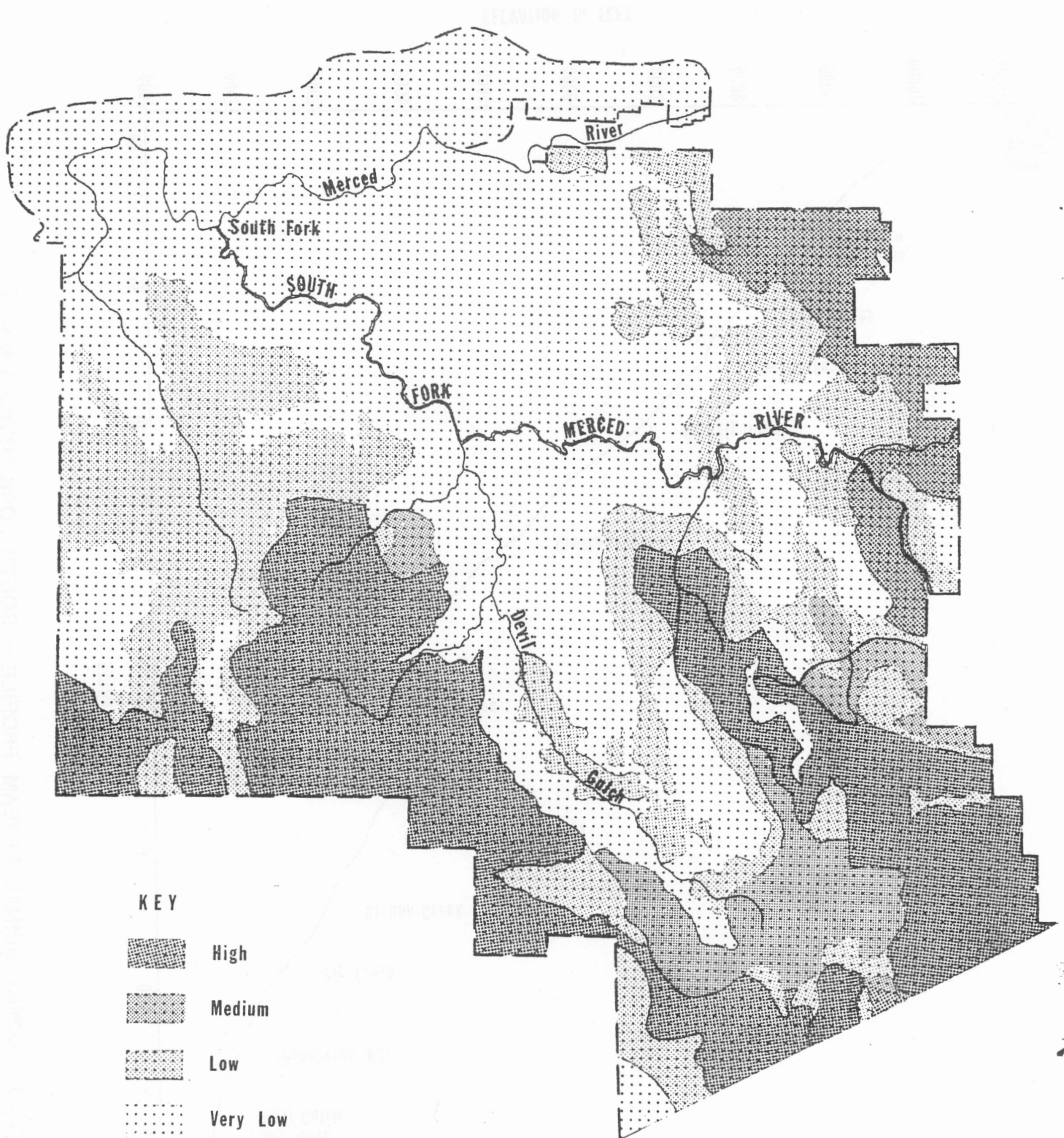


FIGURE 4 SOIL PRODUCTIVITY IN THE SOUTH FORK MERCED RIVER CANYON.

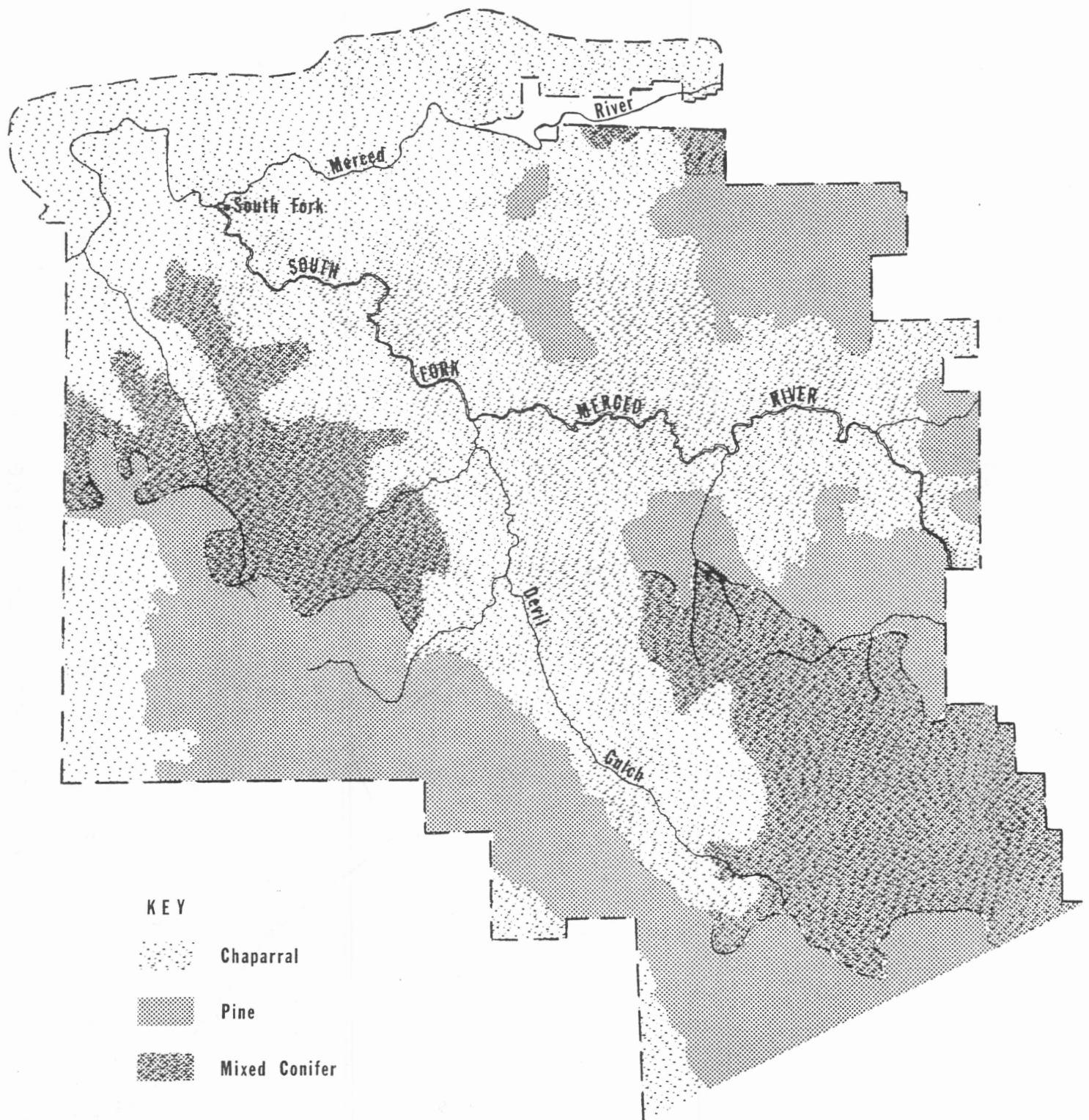


FIGURE 5 VEGETATION TYPES IN THE SOUTH FORK MERCED RIVER CANYON.

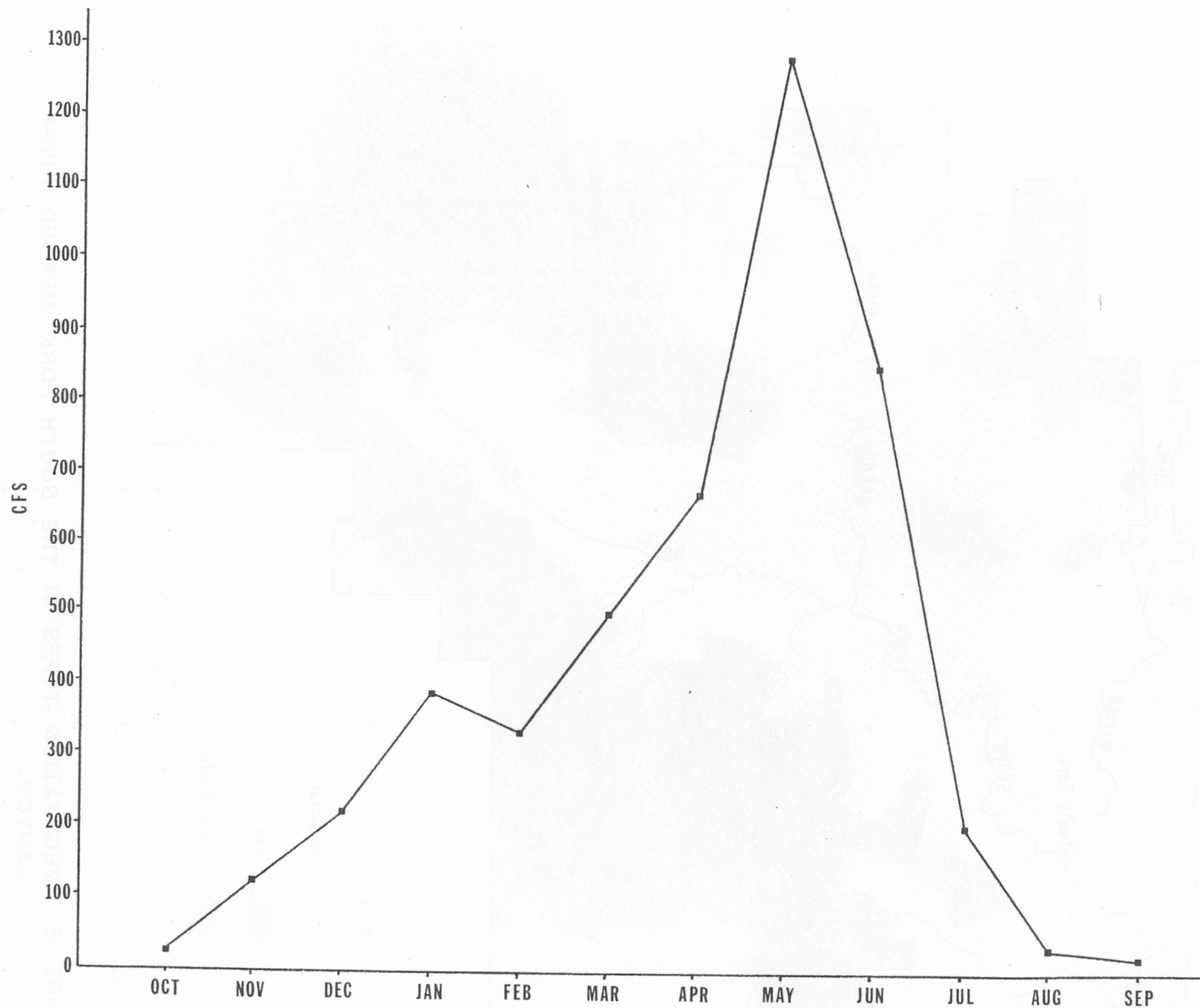


FIGURE 6 MEAN MONTHLY FLOW IN THE SOUTH FORK MERCED RIVER MEASURED NEAR EL PORTAL. [OCT. 1965 - SEPT. 1975]

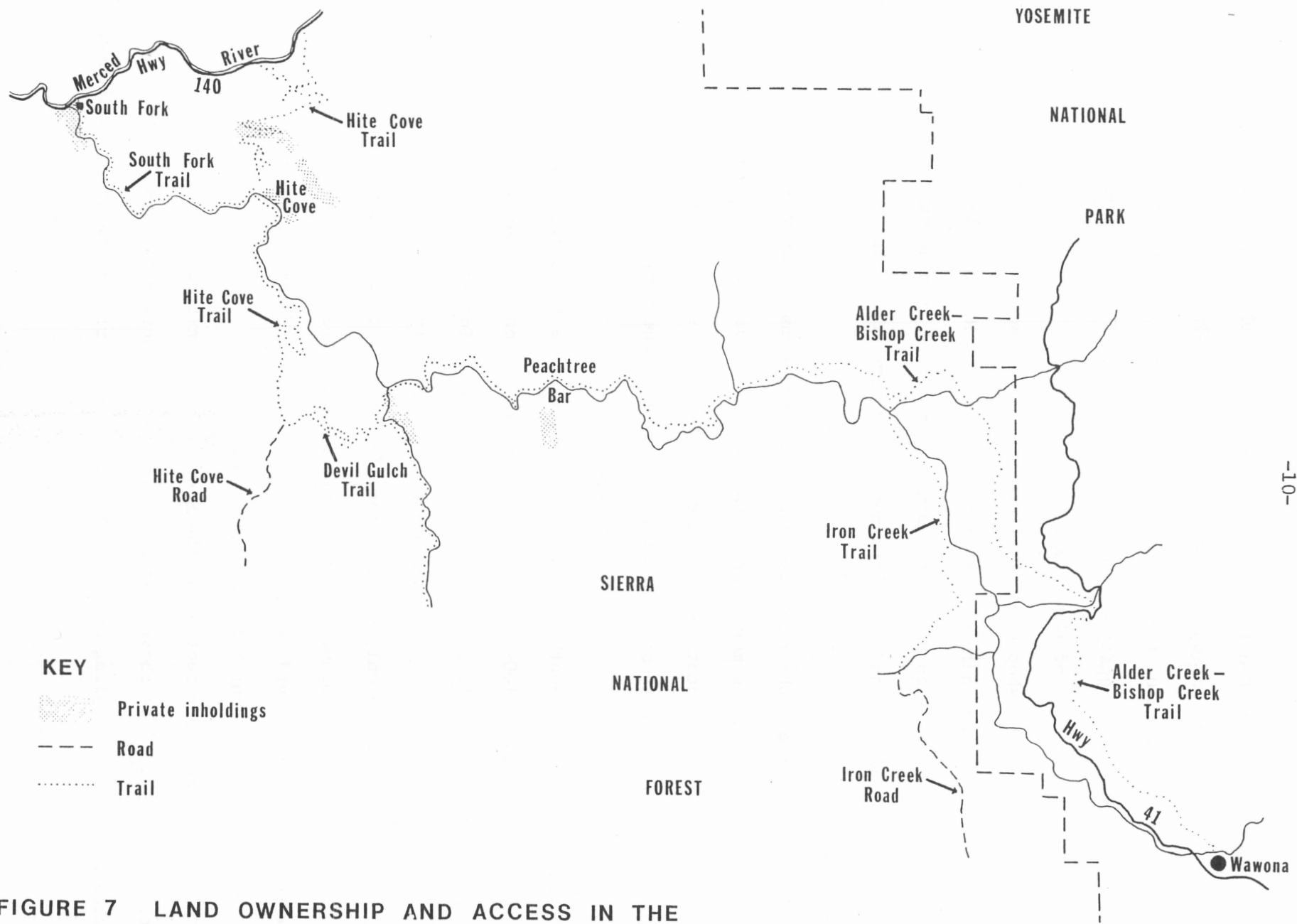


FIGURE 7 LAND OWNERSHIP AND ACCESS IN THE SOUTH FORK MERCED RIVER DRAINAGE.

area of the canyon from the lower river. The Devil's Gulch Trail, an offshoot of Hite Cove Road, extends up the canyon to Bishop Creek.

In the upper reach of the canyon, Iron Creek Trail extends from the end of Iron Creek Road (a logging access road leading from Wawona and Fish Camp) to the Bishop Creek area of the river.

The Alder Creek-Bishop Creek Trail is the least used access route into the canyon. It begins where a park road (extension of Highway 41) crosses Alder Creek, about 5 miles north of Wawona. This trail is used primarily by anglers who walk to the South Fork near Bishop Creek and fish back upstream to Wawona.

A trail parallels the river between Bishop Creek and Peachtree Bar. In many places this trail is more than a quarter mile above the river. Much of the river between Peachtree Bar and Bishop Creek is seldom used by anglers because of the difficulty of reaching the river from the trail.

Land Ownership

Nearly all of the South Fork Merced River drainage is publicly owned (Figure 7). The upper 100+ sq miles are situated in Yosemite National Park and most of the lower 141 sq miles is Sierra National Forest.

Description of the Fishery

Rainbow trout, the only resident game fish native to the South Fork, and introduced brown trout occur throughout the wild trout section. Western suckers have been observed as far upstream as Wawona. Hardhead, squawfish, and smallmouth bass occur below Peachtree Bar.

In 1964, the lower section of the South Fork (downstream from a natural barrier located 2 miles above Peachtree Bar) was chemically treated. Prior to treatment, fish sampling above the barrier yielded rainbow trout to 14 inches,

brown trout to 12 inches, and suckers to 14 inches. Sampling immediately below the barrier and in several downstream tributaries yielded rainbow trout to 11.5 inches, squawfish to 16 inches, hardhead to 14 inches, and suckers to 16 inches. The lower section of the South Fork was dominated by suckers, squawfish, hardhead, and smallmouth bass. Rainbow and brown trout were present in limited numbers. Rainbow trout and smallmouth bass were restocked following the treatment.

In 1975, 23 rainbow and 3 brown trout were caught, tagged, and released between Bishop Creek and Peachtree Bar. The tagged fish ranged from 7.5- to 11.0-inches long. Only two tags were returned, both from fish caught near Bishop Creek.

Angler use is light throughout the wild trout section owing to rugged terrain and poor access. Heaviest angling pressure appears to be along the South Fork Trail, in the Bishop Creek area, and at Hite Cove. The most remote section of the river, between Zip Creek and Peachtree Bar receives very little use. Eighteen-inch long rainbow trout and even larger brown trout have reportedly been caught in this remote stretch of stream.

MANAGEMENT PROGRAM

Management Goals

The goals of wild trout management for the South Fork Merced River are:

1. To protect the aquatic environment of the South Fork Merced River and its tributaries.
2. To perpetuate a naturally sustained, balanced^{3/} population of rainbow trout.
3. To provide a quality backcountry angling experience characterized by a naturally scenic streamside environment.

^{3/} Including optimum numbers of adult trout (7 inches and greater) which would maintain an adequate spawning stock and provide sufficient numbers of larger fish or maintenance of quality angling. (Specific numbers to be identified with the implementation of this plan.)

South Fork Merced River management goals are based upon the following assumptions:

1. The demand for wild trout angling opportunities will continue and perhaps increase.
2. The wild trout angler will continue to be more interested in the pleasure of fishing and the challenge of catching "hard to catch" trout in attractive surroundings than in either angling convenience or the potential for creeling many trout.
3. The Department of Fish and Game will continue to manage the South Fork Merced River for wild trout and hatchery trout will not be planted.

Management Direction

1. Determine the dynamics of the South Fork Merced River fishery and make angling regulation changes, if needed, to achieve goals of this plan (page 14).
2. Monitor fishery as described on page 13 of this plan.
3. Prohibit suction dredging in the South Fork Merced River wild trout area (page 19).
4. Conduct annual surveillance of the watershed to determine if management goals are being achieved (page 23).
5. Assure that all agreements entered into pursuant to Sections 1601-1603 of the Fish and Game Code are consistent with the implementation of this plan, and closely monitor agreements to assure that the provisions are being met.
6. Encourage Sierra National Forest to maintain the roadless status of the existing inventoried roadless areas within the wild trout area of the drainage (page 14).

7. Work with Sierra National Forest at the earliest possible stage of planning regarding:
 - a. All timber sales in the drainage (page 20).
 - b. All mining operations in the drainage (page 17).
 - c. All road construction plans in the drainage (page 14).
8. Determine the probable impact of the Merced Irrigation District water development project proposed for the lower reaches of the South Fork Merced River (page 21).

Fishery Management

The South Fork Merced River is open to angling all year. The limit is five trout except from the last Saturday in April to November 15 (general trout season) when the limit is 10 trout, but not more than 10 lb and one fish.

The effect of angling upon the fishery of the South Fork under the existing regulation is unknown. A survey and tagging program is scheduled to start in 1980 and repeated every 5 years to determine the status of the fishery and to determine if new management programs and/or regulations are required (Table 1).

Environmental Problems and Land Use

Nearly all land use within the South Fork Merced Canyon is administered by the U. S. Forest Service. The Sierra National Forest is presently preparing a land management plan which will allocate land use in this area.

Road Development

Two inventoried roadless areas (IRA) encompass most of the drainage (Figure 8), the Ferguson Ridge IRA (5,700 acres) and the Devil Gulch IRA (27,100 acres). An IRA is a unit of National Forest land essentially unroaded or undeveloped and not less than 5,000 acres in size that was included in the 1972 Roadless Area Review Evaluation (RARE) and that is presently being managed to preserve the

TABLE 1. Fishery Management Activities for South Fork Merced River

I. Obtain baseline data.

A. Define dynamics of the fishery (1980, 1981, and 1982)^{a/}

1. Establish three transects in the Bishop Creek area.
2. Sample using standard electrofishing techniques to obtain:
 - a. population estimate (mark and recapture or diminishing return)
 - i. per surface area
 - ii. per mile
 - b. land/weight relationship
 - c. age/growth relationship
 - d. size distribution
 - e. age class distribution
 - f. species composition, both game and nongame
3. Tag at least 100 rainbow trout (>6 inches long).

II. Monitor fishery.

- A. Repeat tagging and transect evaluation every 5 years (beginning in 1987).
-

^{a/} To be carried out for at least 2 consecutive years; 3 consecutive years if the first 2 years' results differ substantially.

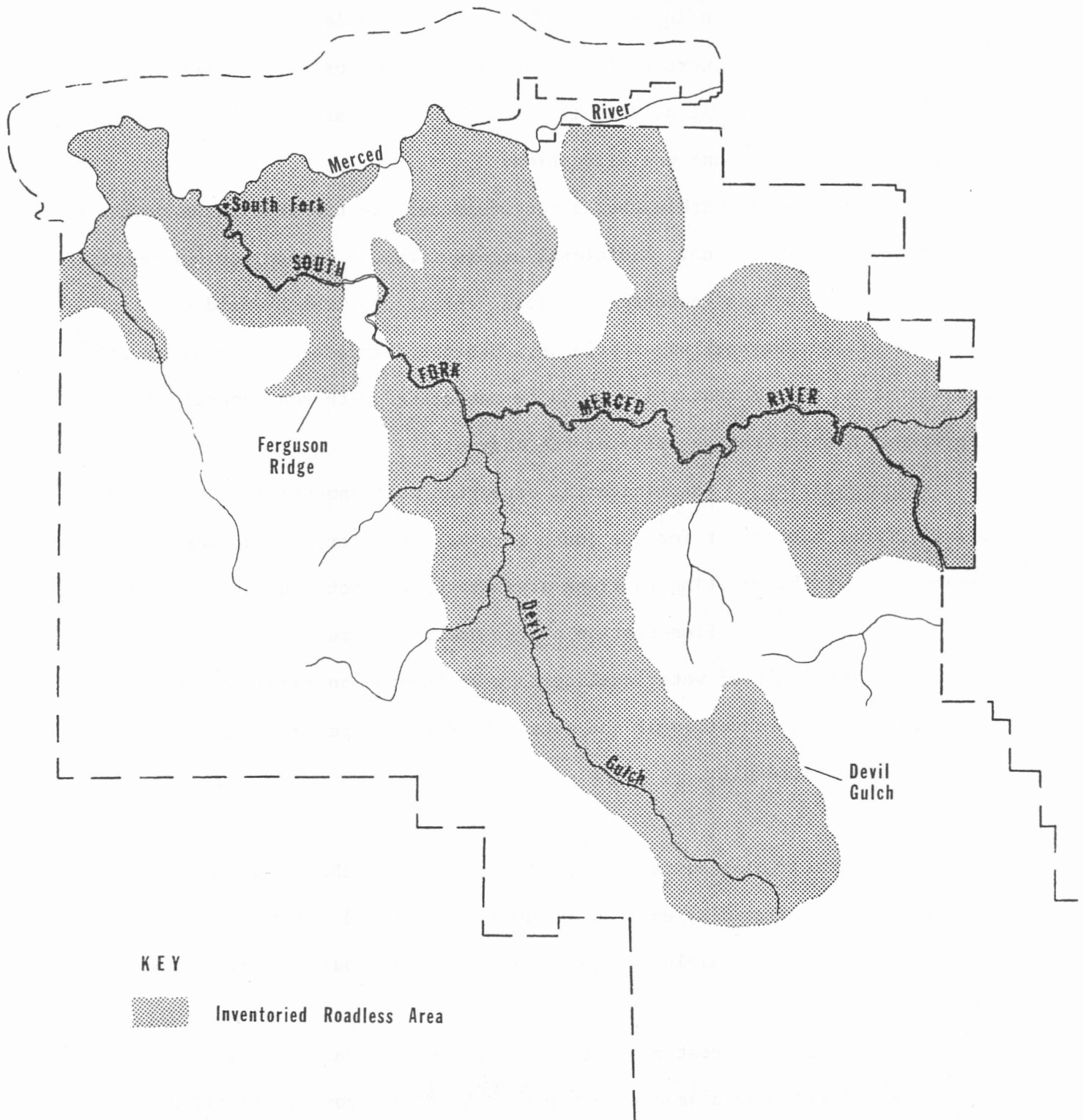


FIGURE 8 INVENTORIED ROADLESS AREAS IN THE SOUTH FORK MERCED RIVER CANYON.

wilderness character pending final land use determinations. All such areas throughout the country were recently reevaluated for possible reclassification per RARE II. As a result of RARE II, the South Fork canyon will continue to be studied for final land use allocation.

Road development within the canyon would degrade the wilderness character of the angling experience. Additional access into the canyon would promote increased use, such as increased off-road vehicle use, which would conflict with the wild trout angling experience. Habitat degradation by erosion and sedimentation is a threat which would be associated with road construction on the steep, highly erosive walls of the canyon.

Recommendations. The management direction most compatible with the goals of wild trout management for the South Fork Merced River canyon would be the maintenance of the existing roadless area status for both the Ferguson Ridge and Devil Gulch IRAs. Preservation of the natural character of the streamside environs, protection of water quality from sedimentation incurred from road construction, and reduction of the potential for incompatible activities in the canyon would result.

Mining

Substantial mining activity once occurred within the South Fork Canyon. An extensive mining community existed at Peachtree Bar and signs of abandoned mining operations are still visible throughout the canyon. Today, mining occurs on a relatively small scale.

Sierra National Forest describes the present mineral potential of the South Fork Merced River canyon area as proven; containing reported mineralization and favorable geologic conditions (Figure 9). It is assumed that such areas will undergo mineral exploration and production whenever it appears feasible to do so.

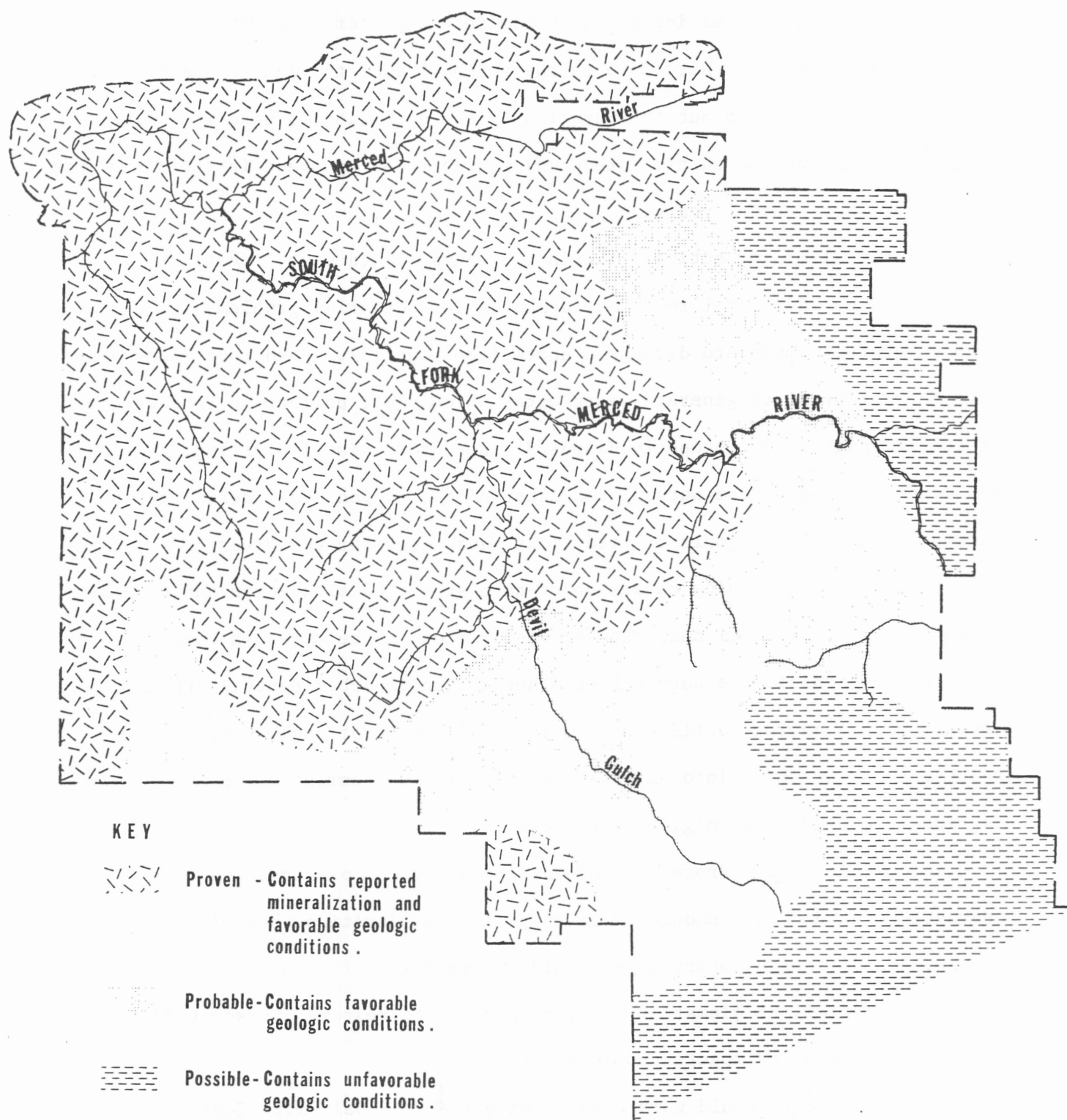


FIGURE 9 MINERAL RESOURCE POTENTIAL IN THE SOUTH FORK MERCED RIVER CANYON.

Lode or hard rock mining activity has recently increased with the reactivation of a mine located above Hite Cove on the north side of the canyon. A road into the mine has been built but the duration of the operation is unknown. Placer mining (by panning and suction dredging) has not been apparent in the South Fork during the past several years.

Additional mining activity within the canyon would most probably be accompanied by additional road development. The potential problems associated with road development are discussed above (see page 14). Hard rock mines also have the potential to generate waste water which could pollute surface waters of the drainage if not properly disposed. Resultant visual scarring, erosion, and deterioration of the natural character of the canyon would definitely be incompatible with the goals of wild trout management for the river.

Suction dredge mining causes short-term streambed alteration and turbidity which disrupt the normal nutrient and energy flow in the stream's ecosystem and tends to inhibit the survival of otherwise undisturbed benthic organisms. The noise and lodging facilities associated with some of these operations represent an intrusion into an otherwise natural environment which severely degrades the wild trout angling experience.

Recommendations. Protection of water quality and preservation of the natural character of the canyon should be given prime consideration when mining programs are developed. Mining operations should be prohibited from areas of high erosion potential. Reclamation of mineral sites to restore surface productivity and reduce aesthetic impacts should be stressed.

The Department should work closely with the Regional Water Quality Control Board, Central Valley Region, to identify mining associated threats to water quality, and develop requirements which will eliminate those threats.

Suction dredge operations should be prohibited within the South Fork Merced River canyon.

Timber Management

The steep-sided canyon walls are mainly bare and rocky or vegetated with chaparral type vegetation. The timber that does exist in the canyon is confined to benches and draws in the upper extremities of the wild trout section and along north facing ridges of the canyon (Figure 5).

Sierra National Forest has identified most of the canyon as being unproductive (Figure 10). The heavier timbered areas of the wild trout watershed, mainly the Iron Creek drainage have been identified as having intensive timber management suitability (Figure 10) and are presently being logged. The Forest Service places restrictions on these operations to protect water quality, which include the establishment of buffer zones along streams.

Recommendations. The Forest Service should be encouraged to continue to place restrictions on timber harvest operations in the Iron Creek drainage to protect water quality. These would include buffer zones along the streams to maintain shade producing vegetation and protect the streamside environment. Timber harvesting will not occur in the "unproductive" area of the drainage (Figure 10).

Water Development

Only minor water development has occurred in the South Fork Merced River. Approximately 0.5 cfs are diverted from the river near Wawona for domestic use and golf course irrigation. Up to 60 cfs is infrequently diverted into the Fresno River Basin via Big Creek ditch.

Further water development would not be allowed in Yosemite per National Park policy. Water development is possible, however, below the park boundary.

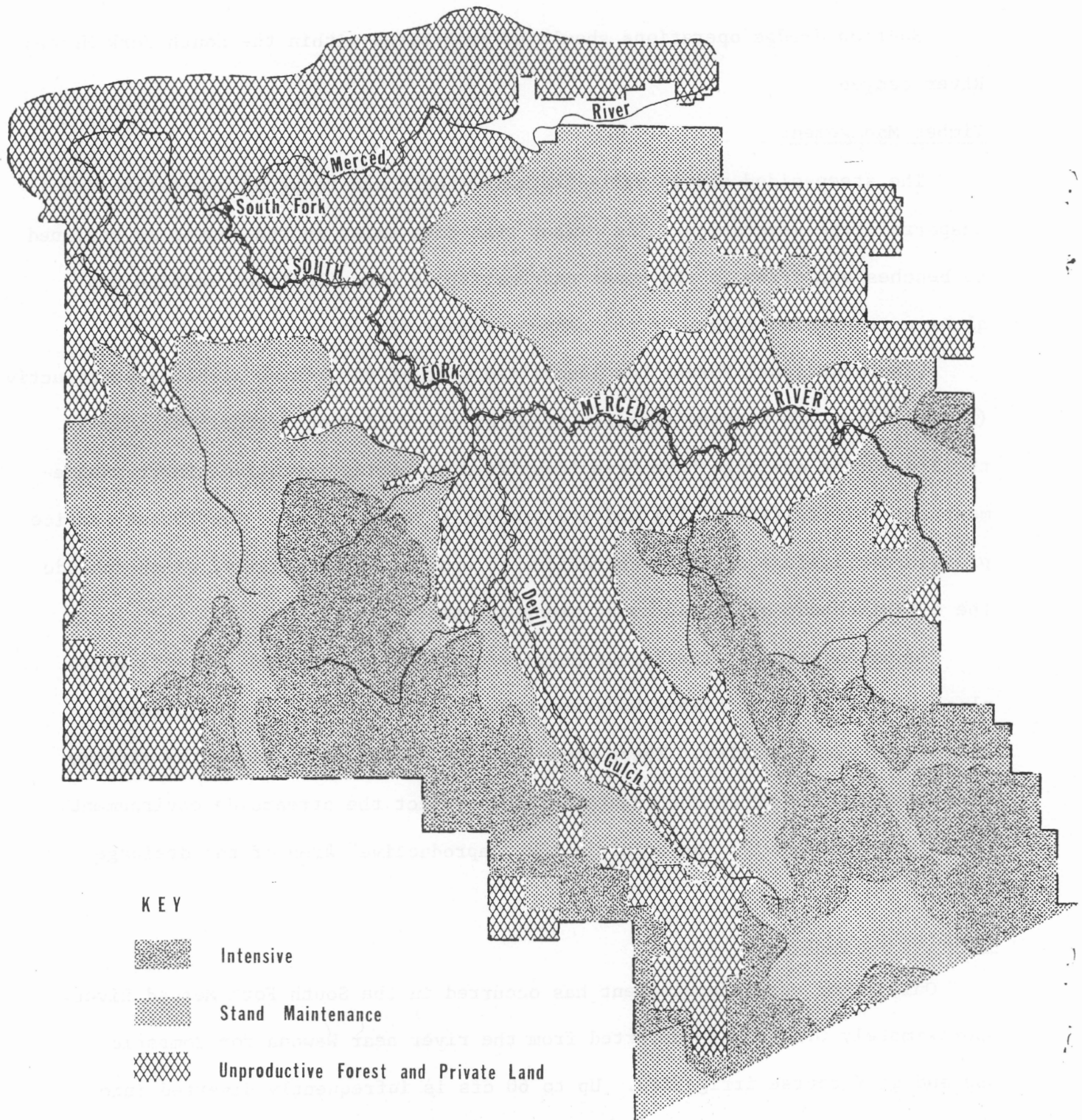


FIGURE 10 TIMBER MANAGEMENT SUITABILITY IN THE SOUTH FORK MERCED RIVER CANYON AS DESIGNATED BY SIERRA NATIONAL FOREST.

Hydroelectric power development has been investigated on the South Fork by the Merced Irrigation District (MID). A potential project would involve a 470 ft high dam located 1/2 mile below Bishop Creek, with storage capacity of 70,000 acre-ft. Water would be diverted via penstocks to a powerhouse located on the mainstem Merced River.

Construction of a hydroelectric power reservoir as described above could degrade the wild trout resource of the entire wild trout area: the flow regime of most of the wild trout area could be altered; several miles of river could be inundated; nongame fish proliferation and trout stream habitat degradation and destruction could occur; and the backcountry character of the upper river (Bishop Creek area) could be severely altered.

Recommendations. The Department of Fish and Game should initiate an investigation into the probable impacts of the MID project. The feasibility of the project should be obtained from MID to determine the investigation time schedule necessary to collect sufficient data to effectively evaluate the project.

The instream flow assessment methodology developed by the U. S. Fish and Wildlife Service should be used to determine existing habitat quality and quantity. This study could be incorporated with the transect study proposed in the Fishery Management section of this plan.

The actual loss of habitat due to inundation, and flow regime alteration (including temperature regime) should be identified along with the potential for nongame fish proliferation both above and below the project site. The methodology identified above should then allow determination of the extent of the project's impact upon the wild trout population.

California Fish and Game Commission policy dictates that projects or portions of projects which will degrade the wild trout resource of a designated

wild trout water or are in any way in conflict with the State's wild trout policy, should be opposed by the Department. If the findings of the investigations indicate that the project would be in conflict with the objectives of the wild trout program, the project should be altered or eliminated.

MONITORING PROGRAM

A monitoring program should include periodic assessment of key qualities of the stream and its environment, and the monitoring of actions which can potentially affect the planning area. Monitoring of these two elements will allow the Department to remain informed of planning, regulating, and permitting activities and to the condition of the stream's environment and fishery.

The Department of Fish and Game should review, on an informational basis, relative plans and permits of local, federal, and other state agencies. This could be accomplished by informal understandings with each agency within already established frameworks. These review and contact arrangements will provide constant and immediate feedback to the agencies who have regulatory authority within the planning area. By working closely and repeatedly with the various agencies, the Department should be able to directly help these agencies interpret and apply the intent of the management plan through careful use of their planning and approval authorities. If initiated at the earliest stage of planning, allowing the Department time to comment prior to a decision being reached, the process will have its maximum beneficial effect. This process will allow a continuing evaluation of the Management Plan and the extent to which it anticipates and recommends solutions for potential conflicts.

By providing for a flight surveillance, it would be possible for the Department to make general assessments of development activity, including mining, forestry, and road construction. Aerial photography can provide a historical record of those changes, constituting an irrefutable visual image of the past.

Monitoring of the fishery can be achieved following the program proposed in the Fishery Management Section of this plan.

Recommendations

Personnel of the Department of Fish and Game (Region 4) should remain in frequent communication with the USFS; Regional Water Quality Control Board, Central Valley Region; and other agencies that may be actively involved in the planning area.

Aerial surveillance of the drainage should be conducted on an annual basis and black and white aerial photographs be taken of the entire basin every 5 years, at a scale of about 1:15,000.

The fishery monitoring program discussed above should be initiated in 1983 and repeated every 5 years thereafter.

PROGRAM IMPLEMENTATION SCHEDULE

<u>Task</u>	<u>Department section responsible</u>	<u>Implementation date</u>
A. Road Development		
1. Work with Sierra National Forest to maintain a roadless condition in the S. F. Merced River canyon.	Region 4	Immediately
2. Inform Sierra National Forest of the Department's desire to review road construction projects during the earliest stages of planning.	Region 4	Immediately
3. Review and comment upon road construction projects.	Region 4	Continuously
B. Timber Management		
1. Inform Sierra National Forest of the Department's desire to review all timber sales at their earliest planning stage.	Region 4	Immediately
2. Review and comment upon all timber harvest activities.	Region 4	Continuously

<u>Task</u>	<u>Department section responsible</u>	<u>Implementation date</u>
C. Mining Operations		
1. Change suction dredge regulations to prohibit dredging in the South Fork Merced River.	Region 4	1978
2. Alert the Regional Water Quality Control Board - Central Valley Region, of any new mining activity within the canyon.	Region 4	As needed
3. Work with Sierra National Forest personnel and RWQCB staff to develop programs which would preclude mining associated erosion, water pollution, or aesthetic degradation.	Region 4	As needed
D. Water Development		
1. Define the extent and probable impact potentially associated with the proposed Merced Irrigation District water project.	Region 4	1979 ^{4/}
E. Fishery Management		
1. Initiate survey of fishery in the Bishop Creek area of the river.	Region 4	Summer 1980
2. Monitor fishery	Region 5	Every 5 years beginning in 1987
F. Monitoring		
1. Aerial surveillance	Region 4	Annually
2. Aerial photographs	Region 4	Every 5 years beginning in 1979

^{4/} May be extended if project does not appear imminent (within next 5 years).

Anonymous. 1977. Land management plan - Part 1 - Sierra National Forest.

U.S.D.A. - Forest Service, Calif. Region. 63 p.

_____. 1977. North Fork American River waterway management plan. Calif.
Dept. Fish Game. 109 p.