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WILD AND SCENIC RIVER RECOMMENDATION DOLORES RIVER, COLORADO

SUBMITTED AS AN ACCOMPANYING PART OF THE

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

ON ENVIRONMENTAL PROTECTION ON MAY 23, 1977
(H. DOC. NO. 95-160), PURSUANT TO SECTION 4(a)
OF THE WILD AND SCENIC RIVERS ACT,
AS AMENDED



MAY 23, 1977.—Referred to the Committee on Interior and Insular Affairs

MAY 25, 1977—Ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1977

90-690 O

P99/D-424

Dolores River

Wild and Scenic River Study Report

Colorado Department of Natural Resources

U.S. Department of Agriculture - Forest Service

U.S. Department of The Interior - Bureau of Outdoor Recreation

December 1975 (Revised March 1976)



LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

May 6, 1977

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

I am pleased to give you a report recommending the designation of the Dolores River and its immediate environs as an addition to the National Wild and Scenic Rivers System.

The entire Dolores River in Colorado, with the exception of three short segments, was designated for study in the Wild and Scenic Rivers Act of 1968, as amended. Our study of the Dolores indicates the river and its immediate environs fully meet the criteria for a wild, scenic or recreational river as stated in section 2(b) of the Act (82 Stat. 906, 16 U.S.C. 1273). We recommend that 105 miles of the Dolores River from 1.3 miles below the authorized McPhee Dam downstream to one river mile above the Colorado Highway 90 bridge near the community of Bedrock be designated for inclusion in the National Wild and Scenic Rivers System. The Secretary of the Interior concurs with this recommendation.

The Dolores River study was a joint effort by the Departments of Agriculture and of the Interior and the State of Colorado. The Dolores River Study Report has been reviewed by other Federal and State agencies as provided by section 4(b) of the Wild and Scenic Rivers Act. Copies of the review comments are appended to the report. Generally, the reviewers support our recommendation that the Dolores River should be added to the National Wild and Scenic Rivers System. The Governor of Colorado, in his comments on the study report, supported our recommendation for the Dolores River. He also recommended that the West Dolores River be included in the designation.

In the study of the river, the Federal study team members found inclusion of the West Dolores segment unwarranted. Although, the West Dolores River generally meets the minimum criteria for inclusion in the National System, only the upper nine miles contain outstandingly remarkable scenic and other values. This, and the fact that there is extensive private land with many houses, mines, fences and water diversions along the lower reaches of the stream, formed the basis for the findings of the Federal members of the study team. The West Dolores River is more suitable to a cooperative Federal-State protection effort which could be initiated by the State of Colorado.

The Federal Energy Administration and the Department of Commerce in their comments on the study report, both pointed out that the minerals from the area, especially coal and uranium, could make a significant contribution to the Nation's energy supplies. Both recommended that a mineral survey of the area be completed prior to any action to designate the river. We recognized the mineral potential of the area in our study of the river, and we believe that our proposal for the river is generally compatible with other resource use and development. Under our proposal the costs of extracting the minerals may increase somewhat because of the need for maintaining the quality of the river environment. However, where Federal lands and minerals are involved, the same basic environmental safeguards would apply whether or not the river is designated as a component of the National System. Therefore, the potential for mineral development and use should not be affected in a major way by our proposed designation. In addition, section 2 of our proposed draft bill provides for delineation of the appropriate area of mineral withdrawal in the year following enactment based on the management plan for the river.

The responses received at public meetings indicate support both for and opposition to wild and scenic river designation for the Dolores River. Local landowners have expressed concern about the effects that designation may have on privately owned lands and resource developments. Those expressing support for designation of the river, generally want the entire river designated. We believe the proposal for the river, as outlined in the study report, is compatible with most of the positions presented at the public meetings.

The Dolores River flows through a mixture of private and public lands. The area encompassed within a visual corridor along the 105-mile segment is approximately 56,400 acres. Of this, 27 percent is within the San Juan National Forest, 64 percent is on lands administered by the Bureau of Land Management, and 9 percent, or about 5,180 acres, is privately owned. We are recommending that administration of the river area be divided between the Department of Agriculture and the Department of the Interior.

Estimated costs for implementing the proposal are $220,999 for land acquisition, $453,000 for development and $90,000 annually for operation, maintenance and administration. It is anticipated that necessary land acquisition would be funded through the Land and Water Conservation Fund. A small increase in Federal employment is anticipated which would primarily consist of seasonal workers employed for maintenance and protection of the river area.

The Dolores River is a free-flowing stream located in a largely primitive environment. Although seasonal in nature, the river provides outstanding white-water boating opportunities and viewing of outstanding scenery and

geologic formations. I believe this combination of unique natural values is an irreplaceable resource, and the best use of the river is as a component of the National Wild and Scenic Rivers System. Therefore, I recommend submission of legislation to incorporate 105 miles of the Dolores River into the National System.

A draft of legislation which would implement this proposal is enclosed. Also enclosed is an environmental statement for the proposal which has been prepared in accordance with the National Environmental Policy Act of 1969 (83 Stat. 583).

Sincerely,

John C. White

John C. White
Deputy Secretary

Enclosures

A B I L L

To designate a segment of the Dolores River in the State of Colorado as a component of the National Wild and Scenic Rivers System, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3(a) of the Wild and Scenic Rivers Act (82 Stat. 907, 16 U.S.C. 1274(a)), as amended, is further amended by adding at the end thereof the following new paragraph:

"( ) DOLORES, COLORADO. The segment from 1.3 miles below the McPhee Damsite downstream, 105 miles to a point 1.0 river miles above the Colorado Highway 90 bridge near the community of Bedrock; to be administered by the agencies of the Department of Agriculture and the Department of the Interior, as agreed upon by the Secretaries of said Departments or as directed by the President: Provided, That after consultation with the State and local governments and the interested public, the Secretaries 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: Provided further, That for the purpose of this river there are authorized to be appropriated not more than $220,000 for the acquisition of lands or interests in lands."

SEC. 2. The provisions of section 9(a)(iii) of the Wild and Scenic Rivers Act shall apply to the river segment designated as a component of the National Wild and Scenic Rivers System pursuant to section 1 of

this Act: Provided however, That boundaries of the area withdrawn from appropriation under the mining laws and from operation of the mineral leasing laws may be modified as part of the management plan developed pursuant to section 3(b) of the Wild and Scenic Rivers Act. In no case shall the area withdrawn exceed an average distance of one-quarter mile from the river bank.

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SUMMARY OF FINDINGS AND RECOMMENDATIONS

On January 3, 1975 President Ford signed Public Law 93-621 amending the Wild and Scenic Rivers Act (P.L. 90-542). This amendment authorized study of the Dolores River along with 28 other streams. However, unlike the other rivers, the Dolores was singled out for accelerated study, and the report is to be submitted by January 3, 1976. P.L. 93-621 also defined the segments of the Dolores River to be studied. These are:

- - 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.

The exclusion of six miles in the last described segment and the major differences in the characteristics of the River and its corridor below the San Miguel confluence resulted in division of the Dolores into four major segments for study purposes. Map 1 shows the River setting and the segments studied.

Findings

1. Two study segments--the Dolores River main stem, from the source to Rico and from the San Miguel confluence to Gateway--are ineligible for inclusion in the National System due to a lack of outstanding values and substantial alterations in the natural environment, including paralleling State highways and other intrusions.

2. Two segments of the River, the West Dolores and the main stem between Section 2, Township 38 North, Range 16 West, NMPM, below McPhee Dam and one mile above Highway 90, are eligible for inclusion in the National System.

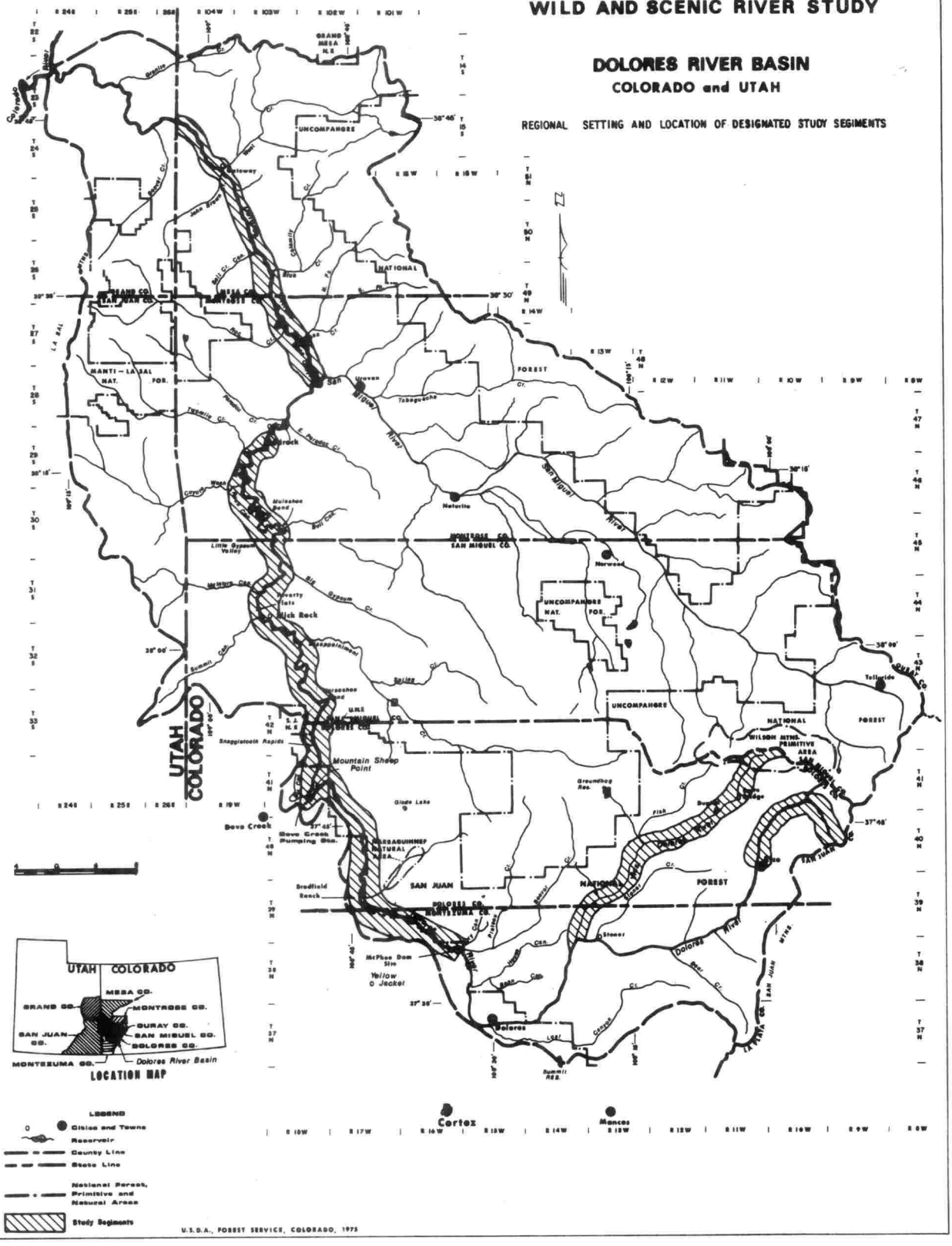
MAP I

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN

COLORADO and UTAH

REGIONAL SETTING AND LOCATION OF DESIGNATED STUDY SEGMENTS



U.S.D.A., FOREST SERVICE, COLORADO, 1975

3. The main stem from below McPhee Dam to 1 mile above Highway 90 possesses outstanding scenic, geologic, historic, and cultural values. The West Dolores River possesses outstanding scenic and geologic values. The Colorado Department of Natural Resources also believes that the West Dolores has outstanding fish and wildlife values.

4. Although the West Dolores River generally meets the minimum criteria for inclusion in the National System, the Federal Study Team believes it is the nine-mile portion of the West Dolores above Dunton that contains the outstandingly remarkable scenic and geologic values (Table IV-1). That portion of the stream is entirely National Forest land that is being considered for addition to the National Wilderness Preservation System.

   Below Dunton, the West Dolores is an attractive stream typical of high mountain valleys throughout the Rocky Mountains. The segment below Dunton has extensive intermingling of private lands with many houses, barns, mines, fences, and water diversions. Because of the short length of the outstandingly remarkable section and the potentially difficult and costly administration of the lower segment, the Federal agencies do not recommend inclusion of the West Dolores River in the National System.

5. The Colorado Department of Natural Resources finds that the entire West Dolores fully meets the criteria for inclusion in the National Wild and Scenic Rivers System. The West Dolores traverses three of the five western life zones represented in the Dolores River Basin and possesses outstanding scenic, geologic, and fish and wildlife values. The West Dolores provides a variety of recreational activity commensurate with the natural variety inherent in the three life zones. The fact that the upper 9 miles are being considered for addition to the National Wilderness System is immaterial. If the costs of including and thereafter maintaining the West Dolores as a recreational component of the National System are excessive for the preservation of a unique national heritage, then it appears that the provisions of the National Wild and Scenic Rivers Act have no meaning.

6. The 33-mile long Slick Rock Canyon possesses a high mineral potential and a variable-width, sheer-walled canyon. The Wild and Scenic Rivers Act calls for mining withdrawal of an area one-quarter mile wide on either side of the river. However, boundaries conforming to the topography would protect the canyon while allowing maximum utilization of the minerals outside the canyon. Therefore, any legislation designating the Dolores River should contain a provision to allow modification of the withdrawn area specifications outlined in Section 9(a)(iii) of the Wild and Scenic Rivers Act, with the modification to be determined during the management planning period.

7. The 8-mile reach of the Dolores River between Gateway and the Utah State line (lower portion of Segment 4) is eligible for inclusion but is too short to be included by itself.

8. Wild and Scenic River designation for portions of the Dolores River would be compatible with the authorized Dolores Project (McPhee Dam and Reservoir). Although there will be a slight reduction in the total number of river boating days, the reservoir can be regulated so boating quality is increased and opportunities can be predicted, scheduled, and grouped together at desirable flow levels. In addition, sufficient reservoir water has been allocated to maintain a continuous yearlong streamflow that will enhance many fish and wildlife and scenic values below McPhee Dam.

The recommendations expressed below are based on the premise that the Dolores Project will be constructed. Its construction and operation will enhance most wild and scenic values of the Dolores River and insure that a live streamflow will be maintained below McPhee Dam.

Recommendations

1. The 105 miles of the Dolores River between the west boundary of Section 2, T 38 N, R 16 W, NMPM, to 1 river mile above the Colorado Highway 90 bridge at Bedrock should be designated a component of the National System of Wild and Scenic Rivers under the management of the Forest Service and Bureau of Land Management, with classification of subsegments as follows:

   (a) West boundary of Section 2, T 38 N, R 16 W, NMPM (1.3 miles below McPhee Damsite to the Bridge at Bradfield Ranch) (11 miles)----------Recreational

   (b) Bridge at Bradfield Ranch to Disappointment Creek (41 miles)----------Scenic

   (c) Disappointment Creek to the Little Gypsum Valley Bridge at the San Miguel/Montrose County line (20 miles)----------Recreational

   (d) Little Gypsum Valley Bridge to 1 mile above the Colorado Highway 90 Bridge near Bedrock (33 miles)----------Wild

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2. Draft legislation which would include the Dolores River in the National Wild and Scenic Rivers System should include a provision to modify the area withdrawn from mineral development. The provision should consist of the following or language similar:

> Notwithstanding the provisions of Section 9(a)(iii) of the Wild and Scenic Rivers Act, the detailed boundaries of the area to be withdrawn from appropriation under the mining laws and from operation of the mineral leasing laws, shall be established as part of the management plan developed pursuant to Section 3(b) of the Wild and Scenic Rivers Act.

A provision such as this will permit the location of logical boundaries for the area to be withdrawn.

3. The 8-mile portion of the river between Gateway and the Utah State Line should be included in the National System at such time as the river in Utah is included. Appropriate classification of this 8 miles will be determined if and when the Utah study is made.

In addition to the above consensus recommendations, the Colorado Department of Natural Resources recommends that:

4. The 35-mile West Dolores River be included in the National Wild and Scenic Rivers System, classified as a Recreational River, under the management of the Forest Service in cooperation with the State of Colorado.

Map 2 shows the classification recommendations.

Estimated Costs of the Proposed Action 1/

1. For the addition of the 105-mile segment only, the costs are estimated to be:

Recreation development	$453,000	
Land acquisition in fee		2/
Easements	220,000	
Annual operation and maintenance	50,000	
Annual plan administration	40,000	

2. For the addition of the 35-mile West Dolores, as recommended by the Colorado Department of Natural Resources, the costs are estimated to be:

Recreation development	$327,000
Land acquisition in fee	None
Easements	103,000
Annual operation and maintenance	20,000
Annual plan administration	45,000

1/ Estimated costs for examination and validation (but not acquisition) of mining claims are not included in this table, although this information is included in Chapter VI of the report. These costs are estimated to be:

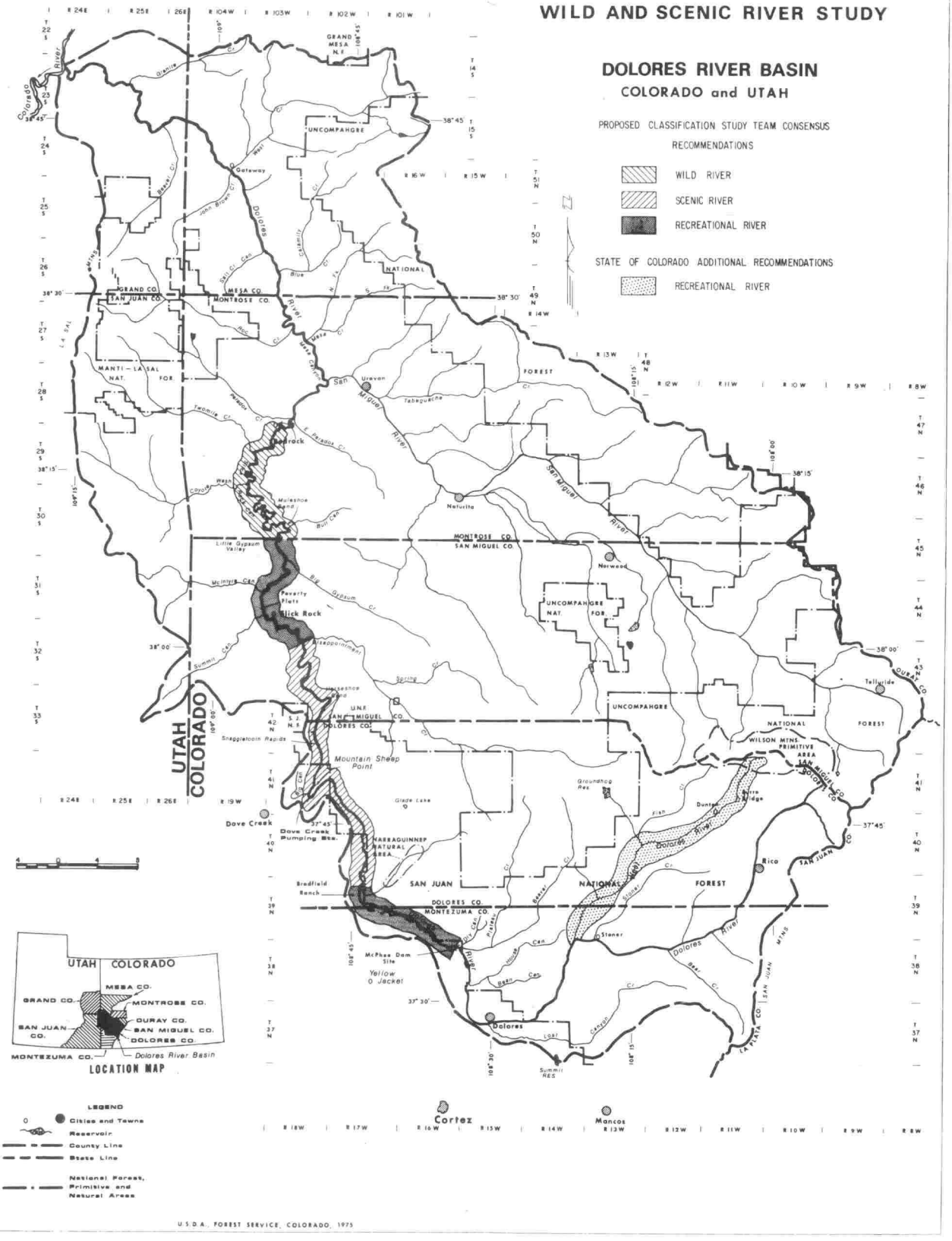
On lands presently under Bureau of Land Management jurisdiction (about 4,000 claims)	$2,000,000
On lands presently under Forest Service jurisdiction (about 1,000 claims)	$ 500,000

2/ No acquisition anticipated with construction of the Dolores Project as planned. If recreation acquisition below the Reservoir is eliminated from final plans, a minimum of 10 acres will be needed at a cost to this proposal of about $10,000.

MAP 2

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN
COLORADO and UTAH



U.S.D.A. FOREST SERVICE, COLORADO, 1975

CHAPTER I

INTRODUCTION

Background

The Wild and Scenic Rivers Act, P. L. 90-542, became law on October 2, 1968. It preserves "certain selected rivers" that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values ... in their free-flowing condition ... for the benefit and enjoyment of present and future generations."

The Act defines three possible classifications for eligible rivers: wild, scenic, and recreational. It deals with such matters as land acquisition, right and use of occupancy, water resource developments, mining, and administration. The Act named eight rivers as initial components of the National Wild and Scenic Rivers System. Twenty-seven others were listed as potential additions, and a procedure was framed for assessing their eligibility.

Since its original passage, the Act has been amended three times. Two more rivers have been added to the National System through Congressional action, and two others were added as State-administered components. Twenty-nine (29) have been added to the list of potential candidates, and procedures for evaluating the latter have been refined.

The most recent of these amendments, P.L. 93-621, became law on January 3, 1975. It listed the 29 new "study rivers," 12 of them in Colorado. Among these was - "(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 to the Colorado-Utah border, excluding the segment from one mile above Highway 90 to the confluence of the San Miguel River." Thus, of the 293 miles of total length of the Dolores, 194 miles were studied as potential inclusion in the National Wild and Scenic River System. Because of the 6-mile exclusion between the San Miguel confluence and a mile above Highway 90, the 194-mile study portion was viewed as four distinct segments.

This amendment specified that the Dolores wild and scenic river study and the report must be completed within one year. The purpose of this provision was to speed up identification of any possible conflicts that might exist between the proposed Dolores Project and wild and scenic rivers designation and to avoid delay on the Project.

The following map shows the regional setting of the Dolores River and the locations of the study segments. The full text of the Wild and Scenic Rivers Act, as now amended, appears in Appendix A of this report.

The Study

In February 1975, a joint Federal-State team (hereinafter referred to as the "study team") was formed to carry out the Dolores River study. Three agencies shared leadership responsibilities: the Forest Service, the Bureau of Outdoor Recreation, and the Colorado Department of Natural Resources (represented by the Colorado Water Conservation Board).

One of the study team's first tasks was to determine its philosophy toward the Dolores Project. Because of language in the 1968 Act, which authorized the Project; because of the continued Congressional funding required to advance the Project to its present status; and because of the intent of the 1975 amendment to the Wild and Scenic Rivers Act which authorized this study, the study team concluded that it was appropriate to consider the Dolores Project--which includes McPhee Dam--as "in place" and evaluate the two segments below its site accordingly. 1/

The study effort proceeded in four basic phases:

Study Data. Because of limited time to complete this study, the study team used existing data sources to full advantage. A substantial amount of information concerning the Dolores River basin was included in various reports available to the study team. In addition, data was provided by a broad range of federal and state agencies, regional and local organizations, citizen groups, and knowledgeable individuals. (See Appendix B for a list of these sources.)

1/ In his remarks introducing the bill for the Wild and Scenic River Study of the Dolores and 13 other Colorado rivers on August 1, 1973, former U. S. Senator Peter H. Dominick stated, "It is my feeling that the Dolores Project, which will include the building of the McPhee Dam, can be reconciled with the inclusion of the Dolores River under the Wild and Scenic Rivers Act. I have included a provision in this bill to insure that the two endeavors are achieved in a manner compatible with each other."

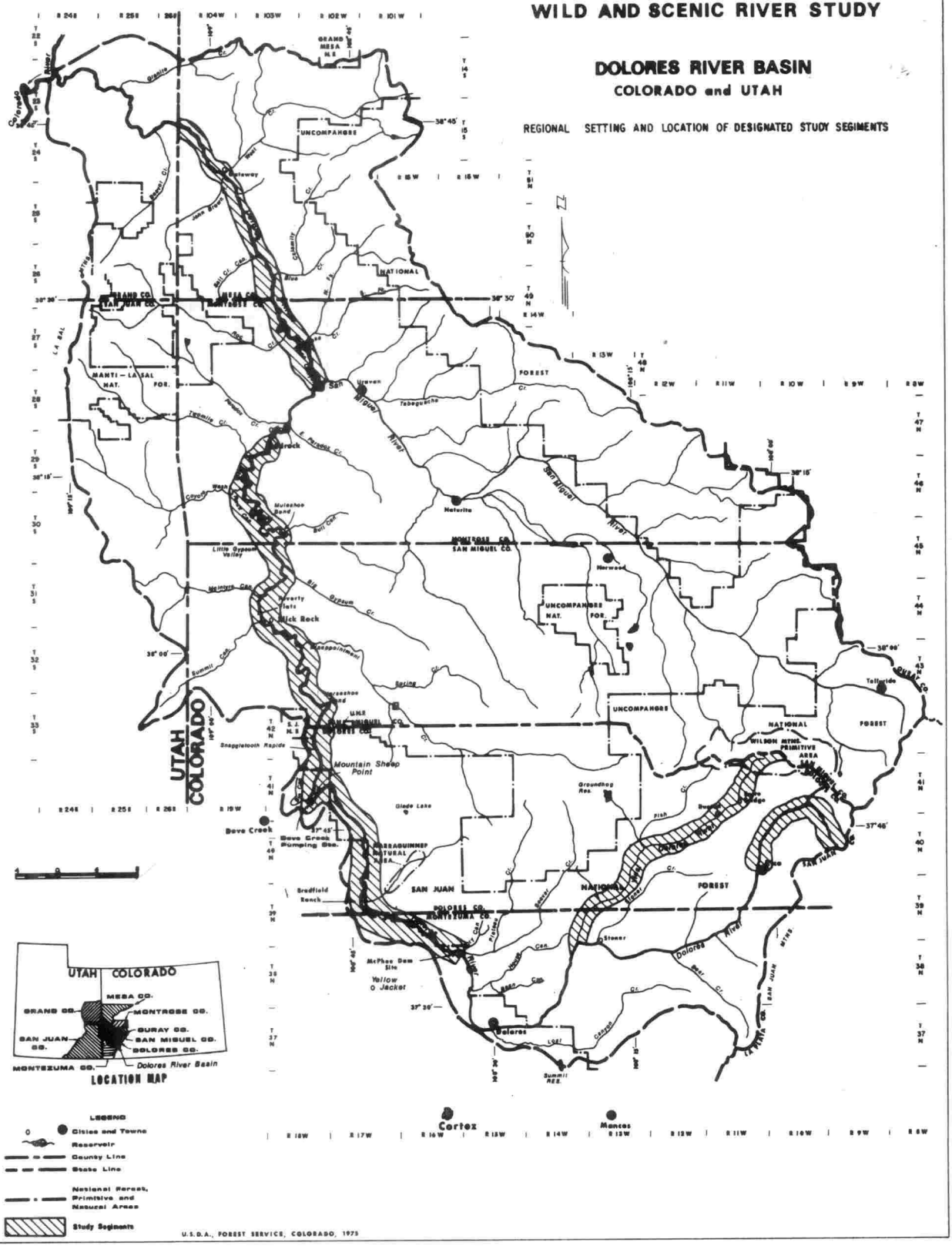
MAP I

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN

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REGIONAL SETTING AND LOCATION OF DESIGNATED STUDY SEGMENTS



U.S.D.A., FOREST SERVICE, COLORADO, 1975

However, the study required development of much new data. Segments of the Dolores River were examined on foot, from horseback, by raft, by motor vehicle, and from the air. A steering committee, open to all interested parties, was created to advise and assist the study team. Two series of public input meetings and workshops were held - a total of seven sessions in four Colorado communities: Cortez, Norwood, Grand Junction, and Denver. Over 400 letters and statements were received from various citizens and organizations. These are available for inspection at the Forest Service and Bureau of Outdoor Recreation Regional Offices in Denver.

The basic information gathered on the Dolores River and its basin is presented in Chapters II and III.

Suitability. Next, the four Dolores River segments were evaluated to determine their suitability for inclusion in the National Wild and Scenic Rivers System. Direction for this phase was found in the Wild and Scenic Rivers Act and supplemented in "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." The latter document was issued jointly by the Secretaries of Agriculture and Interior in February 1970. These guidelines are included in Appendix A.

A four-step process for determining suitability was used:

1) the four segments were evaluated in terms of eligibility for inclusion in the national system;

2) those segments considered eligible were divided into classifiable units on the basis of length and similar characteristics;

3) the most protective classification (wild, scenic, or recreational) for which each unit qualifies was determined; and

4) all inputs from the public - including information obtained at the public meetings, in letters and workshop responses, and from the University of Colorado Wilderness Study Group - were carefully evaluated. This information was utilized by the study team to review its suitability determinations and to check for errors and oversights.

The results of this process are presented in Chapter IV.

Alternatives. An additional study requirement was imposed by the recent adoption of "Principles and Standards for Planning Water and Related Land Resources," which was published in the Federal Register,

Vol. 38, No. 184, Part III (September 10, 1973). These "Principles and Standards" prescribe some complex economic and environmental evaluations. Basically, they require formulation of alternative plans based on a national economic development objective and an environmental quality objective. A recommended plan is supposed to have net economic benefits, except when the deficiency in net benefits results from benefits foregone or additional costs incurred to serve the environmental quality objective. In other words, a plan with no net economic benefit can be recommended if it has overriding long-term environmental benefits. This process also requires assessment of the effects that the various plans have on regional development and social well-being. An outline of this procedure is included in Appendix E, and the results are presented in Chapter V.

Public Response. The public responded vigorously to the Dolores Wild and Scenic River study and, for the most part, reaction was polarized by two dissimilar philosophies. On one hand, citizens living in the river area value and desire the Dolores Project and view wild and scenic river designation as a direct and serious threat to McPhee Dam, center piece of the Dolores Project. These individuals also expressed concern about the effects that designation may have on privately owned lands and resource developments (especially agriculture and water use) and thought there was already enough federal control of the river. On the other hand, conservationists and white water enthusiasts, usually living in areas remote from the river, supported maximum wild and scenic river designation; some even suggested that the study be done on the entire river, including those segments excluded in P.L. 93-621.

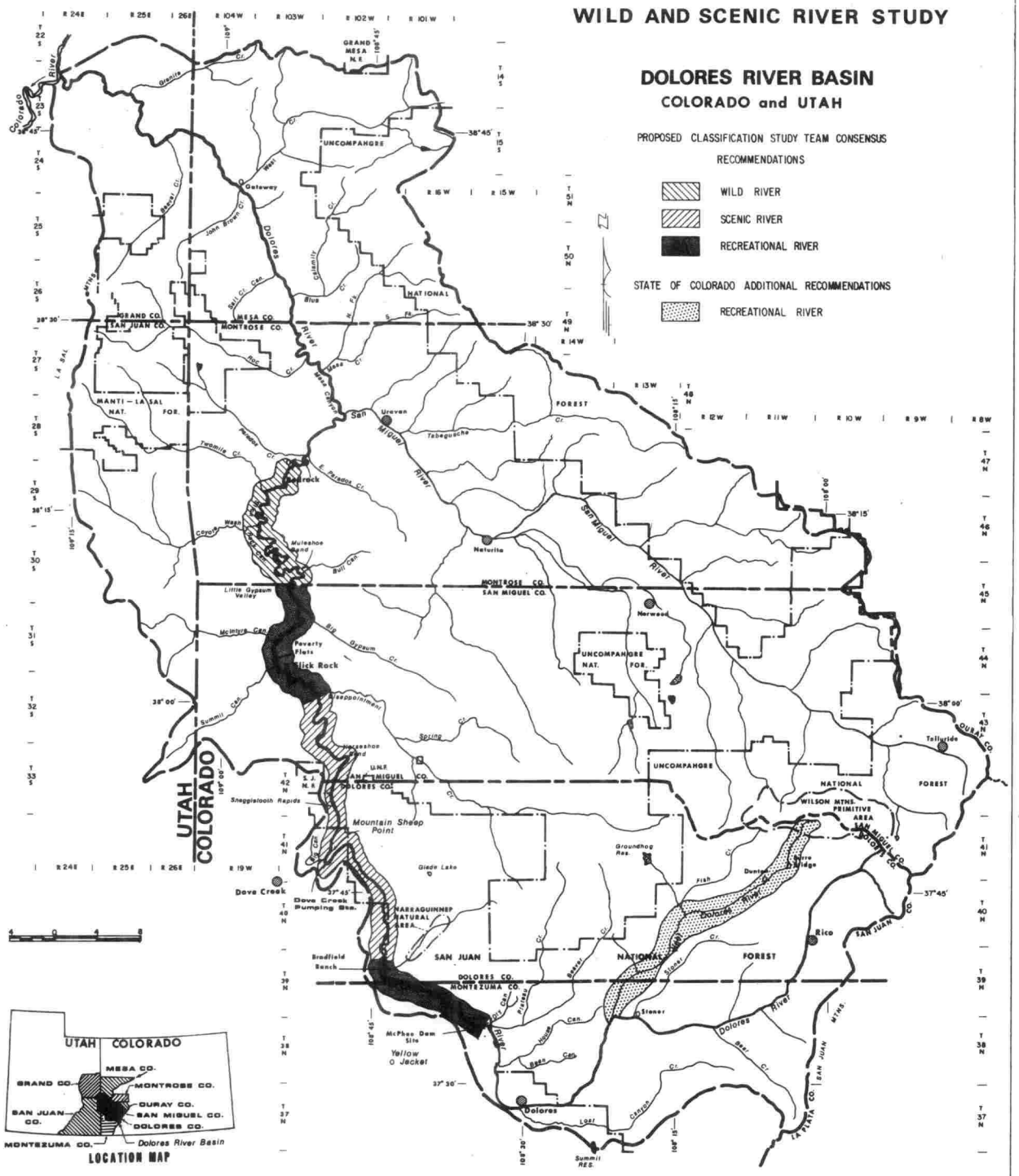
Conclusions and Recommendations. The final step was evaluation of data, public response, and selection criteria. The findings and recommendations presented at the beginning of the report and in Chapter VI are the results of this evaluation.

MAP 2

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN

COLORADO and UTAH



U.S.D.A., FOREST SERVICE, COLORADO, 1975

CHAPTER II

DOLORES RIVER BASIN DESCRIPTION

Preface

The following description of the Dolores River basin presents a broad picture of the natural and human environments of a potential Wild and Scenic River. Its purpose is to sketch a general view of the larger province for which the Dolores is a primary geographic and economic lifeline. In some cases, this information was used only indirectly in the Study Team's subsequent evaluations; it nonetheless serves as a basic framework for viewing the river.

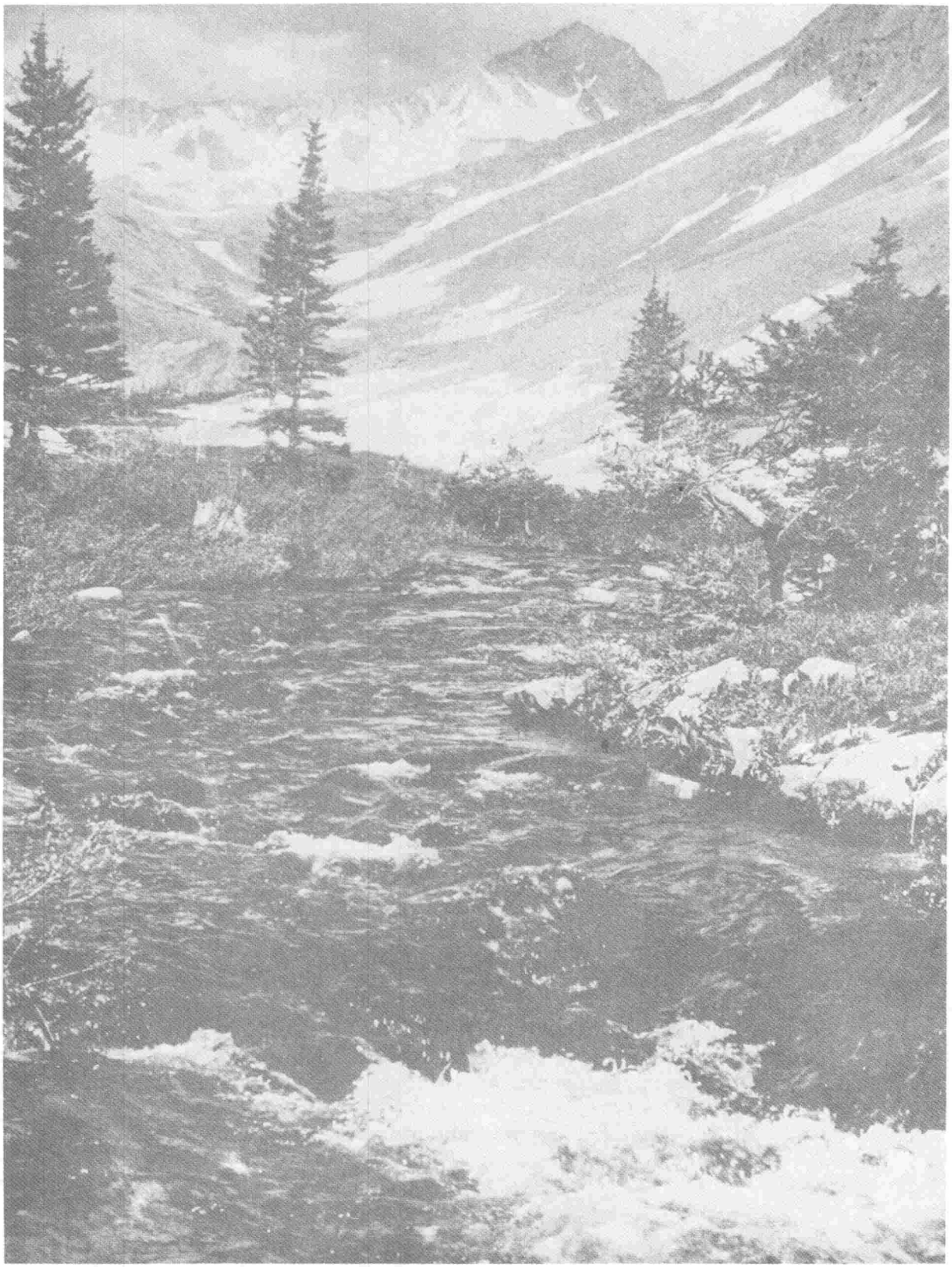
In choosing the hydrologic basin parameter, rather than political boundaries (such as counties), the intent is to show the Dolores as part of a living system. In this typically Western province, every ecosystem and every human activity is somehow shaped by the presence or absence of water. About 44 percent of its annual flow can be diverted south at the town of Dolores by the Montezuma Valley Irrigation Company to irrigate crops in the adjoining San Juan River Basin. With the Dolores Project in place the flow volume, as measured at the McPhee Dam Site, would be reduced 70 percent. This reduction would be 39 percent non-project diversion and 31 percent project (including evaporation from McPhee Reservoir) diversion. Though the river has erratic flows ranging from floods to nearly dry, the Dolores remains a central and vital artery for the basin it drains.

Location, Size

The Dolores River is a major tributary to the Colorado River, draining a northwest-southeast trending basin which includes 4,093 square miles in southwestern Colorado and 522 in east-central Utah. This basin is approximately 100 miles long and varies from 30 to 70 miles in width.

Physiography

Like many river basins on the Western Slope of the central and southern Rockies, this is an extremely diverse physiographic area. Along its southeastern rim, the rugged peaks of the San Juan Range - born of a long, complex and violent geologic sequence - lift to heights above 14,200 feet. This is typical mountainous terrain with many high



The West Dolores River at timberline immediately below Navajo Lake. In the background is Gladstone Peak (13,913') in the Wilson Mountains Primitive Area. July 1973. Note the snowfields.

summits, knife-edged ridges, cirques and U-shaped valleys. Both the Dolores and the West Dolores rise in broad bowls above timberline (11,500 feet), drop quickly from the high country, and join at an elevation of 7,400 feet. Soon after, the angular mountain landforms give way to a sequence of rolling, rumpled foothills.

Further west lie the table lands of the Colorado Plateau, by far the largest physiographic region of the Dolores River basin. Over all, the relief of this region is less dramatic than that of the mountains, but it is broken by deep canyons and high mesas. The Uncompahgre Plateau - a broad, arched uplift - forms the northeastern margin of the lower basin; to the southwest, Utah's La Sal Range - a tight cluster of volcanic peaks - border and partially drain into the Dolores. This river and its tributaries - some perennial, some seasonal - carve their desert canyons through the relatively flat lands between these two, higher geographic areas.

Peak elevation in the basin is 14,256 feet, the summit of Mount Wilson in the San Miguel Range (a westward spur of the San Juans); low point is 4,095 feet where the Dolores flows into the Colorado River near Cisco, Utah.

Climate

Predictably, climatic extremes in the Dolores River basin parallel its physiographic diversity. In the high country of the San Juans, and also in Utah's La Sal Range, a wet, alpine climate prevails. Annual precipitation ranges between 40 and 50 inches, most of it coming as snow between November and April. The summers here may be as brief as six weeks in July and August. At the town of Rico - elevation 8,827 feet in the southwestern San Juans - mean annual temperature is 39°F, and the growing season is 90 days. At the other end of the scale, much of the lower basin is high, semi-desert, with a yearly precipitation of only 7-9 inches. At Gateway the mean annual temperature is 54°, and the growing season extends for 194 days. Throughout the basin, January is usually the coldest month and July distinctly the warmest.

Soils

The soils of the Dolores River basin are as varied as its physiography and climate and are closely related to both. The division between mountain and desert types is almost equal - 51 percent of the former, 49 percent of the latter.

Among the more prominent characteristics of the eight types surveyed in the basin is their propensity for erosion, both gully and sheet. Over 70 percent of the region is overlain by soils that are easily washed away. The most prevalent of these types is the shallow soil complex of

the lower elevation canyons which, along with rock outcrops, occupies 32.5 percent of the basin. Only the three high mountain soil types experience little erosion. Sediment yield from the desert soil types in some areas is as high as three acre feet per square mile per year, but from the mountain types it is largely insignificant where good vegetative cover is maintained.

The desert soils tend to be shallow, in many cases 20 inches or less, somewhat saline and low in organic content. Save for those of the alpine tundra, the mountain types are deeper; all high country soils are neutral to acid and are moderate to high in organic content.

Table II-1 shows the distribution of soil types in the Dolores River basin and also includes physiographic and climatic data to give the reader an overview of these three elements of the region. The location, extent, and relationships of the soils types are displayed in the General Soils Map.

Vegetation

This basin is a region of ecological diversity; large areas of the five major Western life zones are present. Above timberline in the high San Juans and also in the La Sals is the alpine life zone with its diminutive plants and brief growing season. Below, a sequence of coniferous communities occur: spruce-fir, 11,500 feet down to 9,000 feet, predominantly in the subalpine zone; Douglas-fir - white fir, 9,500 feet down to 8,000 feet, predominantly in the montane zone; and ponderosa pine, 8,500 down to 6,500 feet, in the montane and foothills zones. Across the mid-range of these zones, where wildfire has occurred, the aspen community is common.

Below these forested areas is the Upper Sonoran growth of the high desert, by far the most extensive zone in the basin. Most of this is pinon-juniper woodland, oakbrush, or sage, with salt desert shrub at the lower elevations. Modest portions of each have been cleared for either dry or irrigated cropland - now cultivated primarily for dry beans and winter wheat, or hay and pasture, respectively. An Upper Sonoran browse-grass-shrub mixture (sometimes called chapparal) is also common and is an important vegetative community for wildlife, especially as winter range for deer and elk. Major vegetation types are shown on the Map of Cropland and Vegetative Cover.

Appendix H of this report lists several plant genera which have been determined by the Smithsonian Institute to be endangered or threatened. It remains to be determined whether those listed occur within the Dolores River Basin and the wild and scenic study area.

Table II-1--Composition and characteristics of soil mapping units of the Dolores River Basin in Colorado and Utah

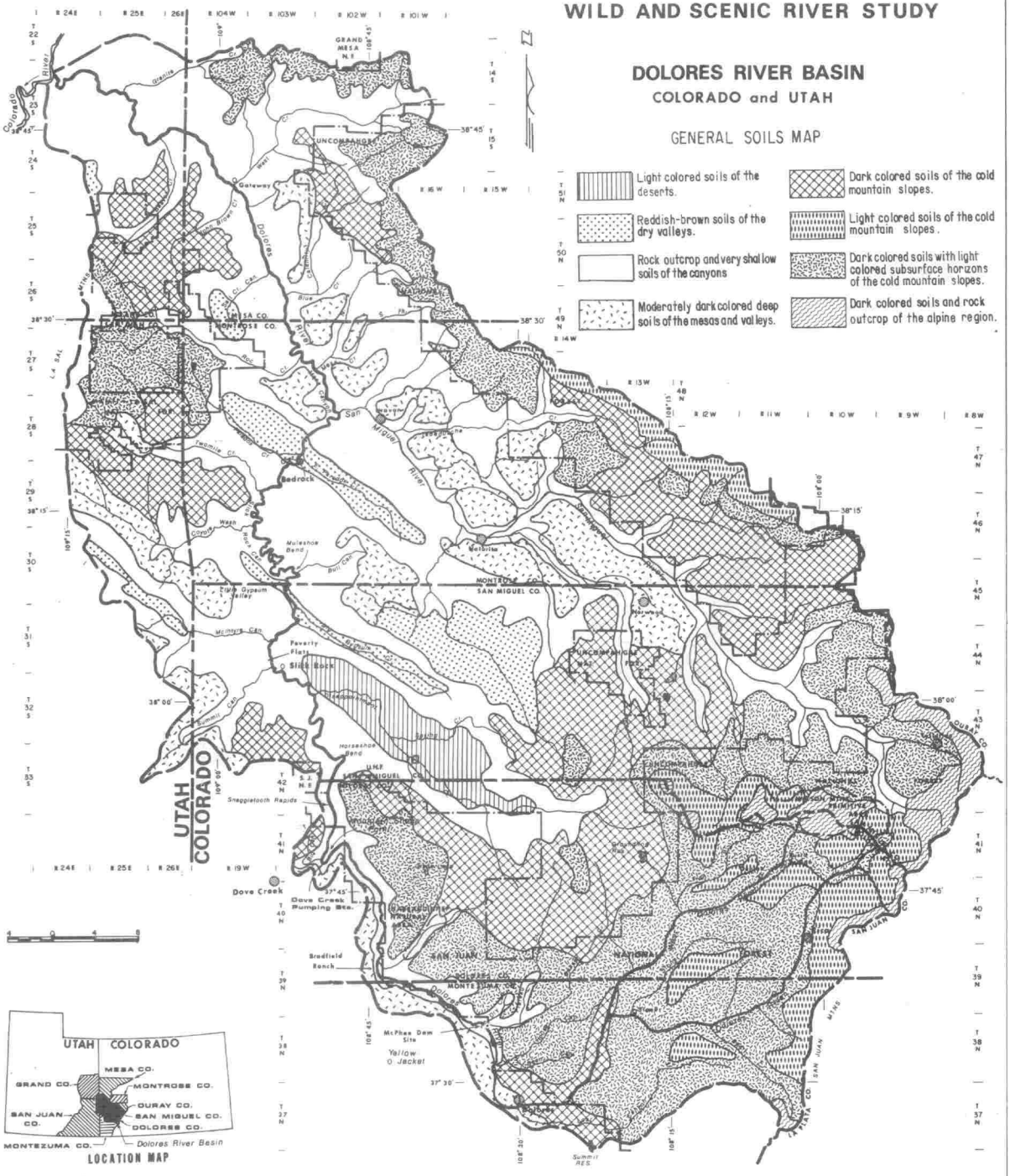
Composition 1966 Great Group, Subgroup or Land Type	Dominant elevation (feet)	Mean annual precipitation (inches)	Mean annual temperature (F°)	Frost free period (days)	Dominant parent materials	Dominant slope (percent)	Estimated sediment yield (Ac. ft./ sq. mi./ yr.)	Erosion problems	Major land uses
Light-colored soils of the deserts	5,000-6,000	7-12	45-50	115-145	Shale and alluvium	1-25	1.0-3.0	Moderate to severe sheet and gully erosion	Winter range
Reddish-brown soils of the very dry valleys.	5,000-7,000	7-12	45-50	115-145	Sandstone and shale alluvium	2-15	0.5-3.0	Moderate to severe sheet and gully erosion	Winter range, irrigated cropland
Rock outcrops and very shallow soils of the canyons	4,200-9,000	7-18	42-52	100-160	Sandstone with some shale and alluvium	25-100	<0.2-1.0	Moderate sheet erosion, many gullies, damage severe locally	Range, wildlife
Moderately dark-colored deep soils of the mesas and valleys	5,700-7,200	12-15	45-49	110-125	Eolian, residual and alluvium from sandstone and shale	3-20	0.2-1.0	Moderate sheet and gully erosion	Range, dry land and irrigated cropland, wildlife
Dark-colored soils of the cold mountain slopes	6,800-9,500	15-20	40-45	75-115	Sandstone shale and outwash	3-35	0.2-1.0	Moderate sheet erosion, gullies locally	Range, wildlife, irrigated cropland
Light-colored soils of the cold mountain slopes	8,500 11,500	20-40	25-42	Usually frost every month	Mixed sandstone shale volcanics rocks	10-60	< 0.2	Geological, slight gully erosion	Timber, range, wildlife, watershed
Dark-colored soils with light colored subsurface horizons of the cold mountain slopes	7,400-11,000	20-40	25-40	Usually frost every month	Mixed shale sandstone outwash, and alluvium	15-65	< 0.2	Geological, slight sheet and gully erosion	Range, timber, recreation, watershed
Dark-colored soils and rock outcrop of the alpine region	10,500-14,250	25-45	25-30	Usually frost every month	Granite, sedimentary talus	10-80	< 0.2	Geological	Wildlife, range, watershed

WILD AND SCENIC RIVER STUDY

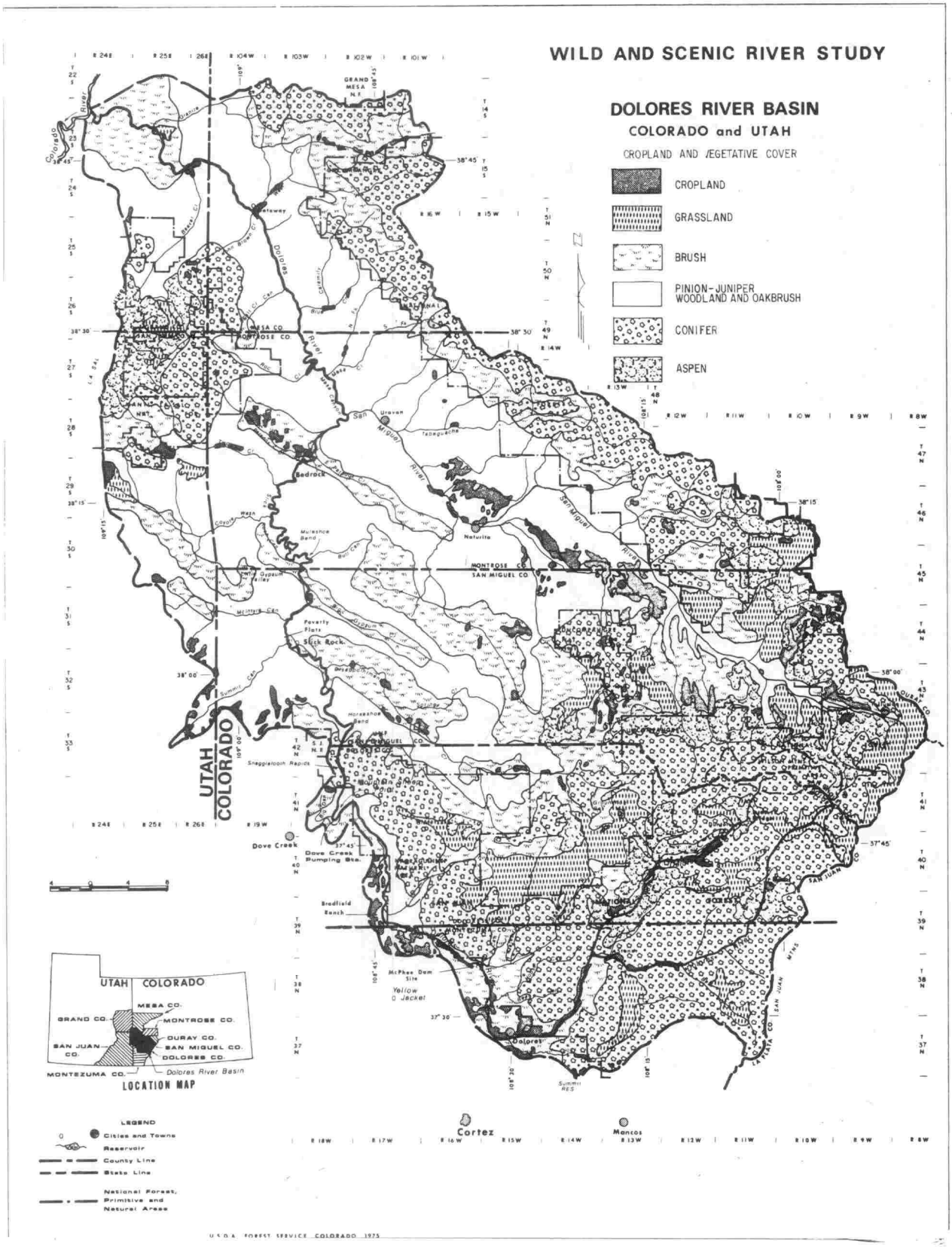
DOLORES RIVER BASIN

COLORADO and UTAH

GENERAL SOILS MAP



U.S.D.A. FOREST SERVICE COLORADO 1975


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO and UTAH
CROPLAND AND VEGETATIVE COVER
CROPLAND
GRASSLAND
BRUSH
PINION-JUNIPER WOODLAND AND OAKBRUSH
CONIFER
ASPEN
UTAH
COLORADO
Dove Creek
Cortez
Mancos
Dolores
Naturita
Bedrock
Slick Rock
Gateway
Uravan
LOCATION MAP
UTAH
COLORADO
MESA CO.
GRAND CO.
MONTROSE CO.
DURAY CO.
SAN JUAN CO.
SAN MIGUEL CO.
DOLORES CO.
MONTEZUMA CO.
Dolores River Basin
LEGEND
Cities and Towns
Reservoir
County Line
State Line
National Forest, Primitive and Natural Areas
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Imposing groves of ponderosa pines line the stream terrace in the upper portion of Dolores Canyon. May 1975.

Fish and Wildlife

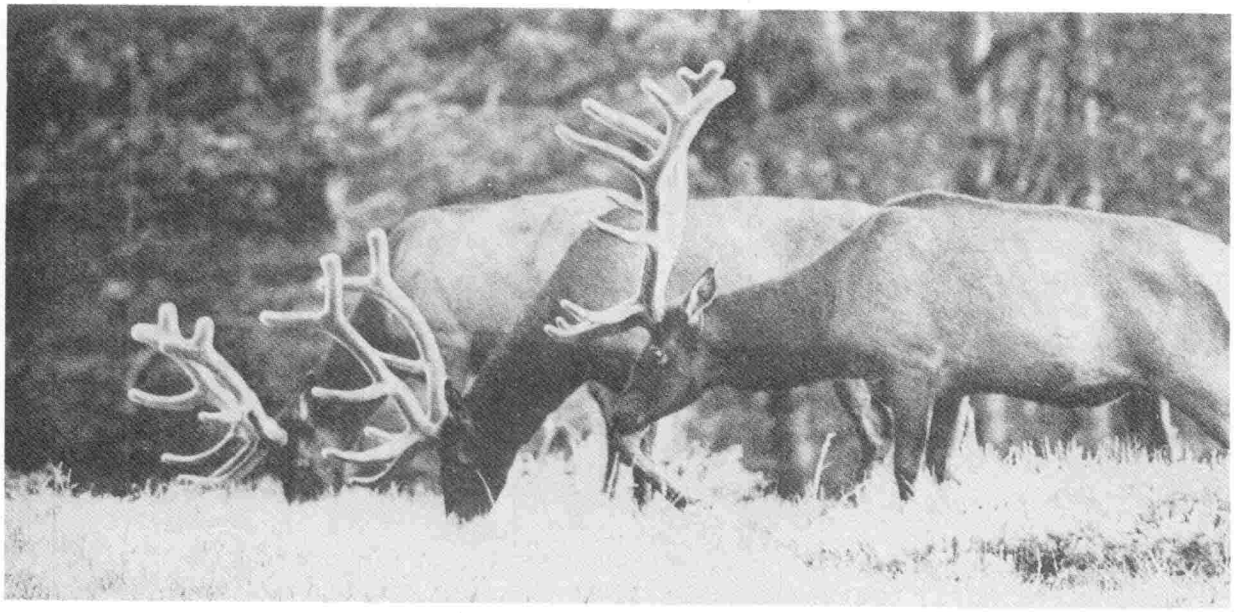
Because the Dolores River basin includes five life zones, there is a variety of wildlife including the Rocky Mountain bighorn sheep, the pika and the water pipit, all of the high country; and the collared lizard, roadrunner and ringtail cat, all of the high desert.

In the clear streams of the mountains are four species of trout: cutthroat, rainbow, brown, and brook. In the Dolores River near its confluence with the Colorado there are green sunfish, channel catfish and sand shiners (among others). Fish and aquatic life are diminished in the middle reaches of the river. This diversity of fish and wildlife is typical of major drainage basins of the central and southern Rocky Mountains.

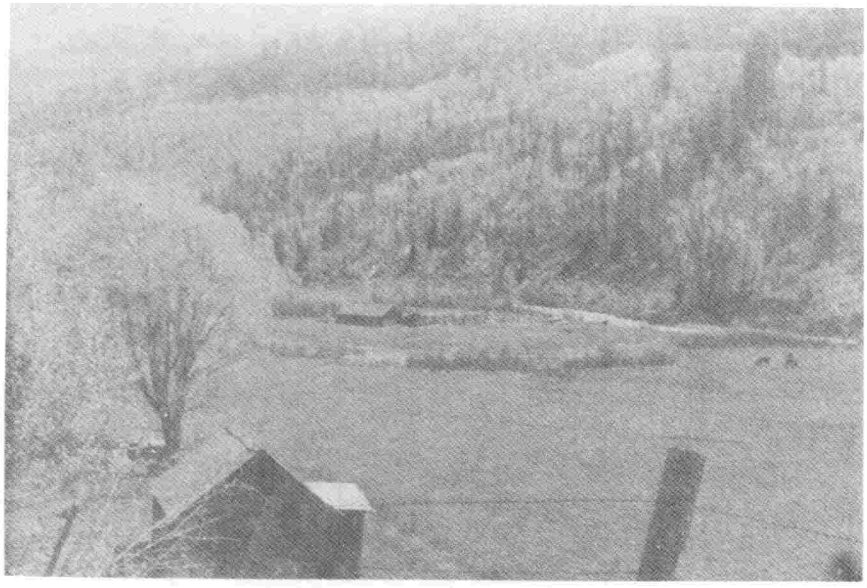
Among the more common animal species in the basin are: mule deer, elk, black bear, mountain lion, coyote, bobcat. A herd of 54 pronghorn antelope were transplanted to the Disappointment Creek area in 1970, and their numbers have remained stable. Bighorn sheep appear to exist only as remnant populations; a small herd (no more than 10 to 15 animals) was reported several times in the 1960's and early 1970's in the Wilson Mountains Primitive Area near the headwaters of the West Dolores, but this species is now apparently extinct in the lower basin.

Upland game bird populations are moderate, and over 20 species of waterfowl and shorebirds have been inventoried as "common" in the basin. Fourteen different raptor species have been observed in the region, including the prairie falcon, golden eagle, ferruginous hawk and the bald eagle. Habitat suitable for the endangered peregrine falcon is present and, while the bird has not actually been observed, it is assumed to be present as a migrant. A total of 67 resident and migratory passerines (mostly songbirds) have been identified. The endangered butterfly, nokomis fritillary, is known to be present in the Basin.

The fish and aquatic life present at higher elevations indicates that water quality is excellent, but it deteriorates with decreasing elevations and increasingly erosive soils. Salinity and suspended sediments are the prime factors in this decline. Man-related depletions increase the concentration of dissolved solids in the Dolores River, but natural sources are far more significant. A salt anticline in the Paradox Valley contributes about one-third of the salinity leaving the basin.



Bull elk on intermediate range, ponderosa pine-grassland habitat type. Spring 1975.



Cattle graze summer pasture along the West Dolores.

Water Resources

During the period 1943-1960, had there been no man-made diversions, the water flow of the Dolores would have averaged 716,400 acre feet annually where the river joins the Colorado River. Man-related in-basin depletions averaged 56,700 acre feet, while water exported averaged 115,700 feet. Actual discharge, after all man-related depletions (primarily for irrigation) averaged 544,000 acre feet annually; the Colorado portion of the basin contributed 96 percent of this, Utah the remainder. Most of this water yield comes from melting winter snowpack - much of it from the San Juan Mountains.

With the Dolores Project, out-of-basin exports would average 238,700 acre feet annually. This value does not include the average annual evaporation loss from McPhee Reservoir of 5,400 acre feet. Therefore, the total reduction in volume is 244,100 acre feet annually. The average annual discharge of the Dolores River at its confluence with the Colorado River would be reduced to 415,600 acre feet annually. A total of 25,000 acre feet of the reduction due to project diversions would be returned to the Colorado River as return flows to the San Juan River.

Lesser amounts come from the Uncompahgre Plateau and the La Sal Range; contributions from groundwater are slight. Peak run-off occurs in May; about 72 percent of the annual yield occurs during the three-month period from April to June. Total yearly flow from the Basin amounts to 5.35 percent of the combined flow of the Colorado and Paria Rivers at Lee's Ferry, Arizona.

Geology and Minerals

The geology of the basin is diverse, and in its mountainous areas also highly complex. The San Juan Mountains are the product of six distinct mountain building epochs. The most recent occurred in Tertiary times during a period of intense volcanic activity. Folding and faulting occurred before and during the last period, making the geologic history of the San Juans extremely difficult to unravel. On the Colorado Plateau area of the lower Dolores River Basin, the story is simpler; this is a region of relatively undisturbed sedimentary strata: nearly 15,000 feet of sandstones, siltstones, mudstones and shales. A sequence of anticlines and synclines tilt and fold these strata intermittently in the central part of the basin.

Historic mineral production within the Basin focuses in the San Juans. The first major gold strike came in 1875 in Marshall Basin above the town of Telluride on the upper San Miguel River. Base minerals mining continues in this general area today. Gold was discovered along the Dolores near the present site of Rico in 1866, but the site didn't boom until 1879 when lead carbonates rich in silver were discovered on a hillside above the river. Lead, copper and zinc are frequently mined in

conjunction with them. Sulphuric acid is produced from pyrite mined in the basin. Like Telluride, Rico is a currently active mining center; two nearby but lesser camps of the late 19th century, Ophir and Dunton, are now quiet. Because of increasing demand for the above metals, prospecting has been stepped up in a number of locations in this upper, mountainous reach of the Dolores River basin. In Navajo Basin, site of the headwaters of the West Dolores, there is a possible copper deposit. Calico Peak, on the divide between the West Dolores and the Dolores, is being investigated as a possible source of alunite (aluminum ore which may become economically recoverable in the future). The West Dolores basin contains both old and new mining claims, but there is little mining activity at present.

In 1898, two French chemists visited southwestern Colorado, investigated several uranium deposits in the basin, and consequently the world's first uranium concentrating plant was built at Slick Rock in the lower basin. Since the late 1950's, this commodity (and vanadium which is often found in association with it) has been the most actively mined of any in the basin, and in 1966, the two accounted for over 80 percent of the region's mineral production. In 1966, 27 percent of the Nation's vanadium and 3 percent of its uranium came from the Dolores River basin. Most of the uranium lies in the Uravan mineral belt which rings the southern and eastern fringes of the La Sal Mountains and includes substantial reaches of the lower Dolores River corridor. Most of the proven deposits are found in the Salt Wash Member of the Jurassic Morrison Formation which is on the canyon rims and mesa tops.

The Chinle formation, which is exposed in some reaches of the canyon bottoms, may also contain uranium ore deposits.

Other mineral production in the basin is presently limited, though in many cases estimated reserves are high. About 60,000 tons of coal is mined here annually, and there is an estimated reserve of three million tons, grade A bituminous. Presently there are two small productive oil and gas fields and nine active units within the basin. Gas has been discovered on two of these units. About two-thirds of the basin has good potential for oil and gas; speculative recoverable reserves include 75 million barrels of oil and 3 billion cubic feet of natural gas. Sodium, potassium salts, and gypsum are also present under large areas of the basin, but have yet to be significantly exploited because of difficulties in extraction and/or processing. Sand, stone, and gravel are mined to meet local demand. The following four maps show the general location of the basin's mineral resources.

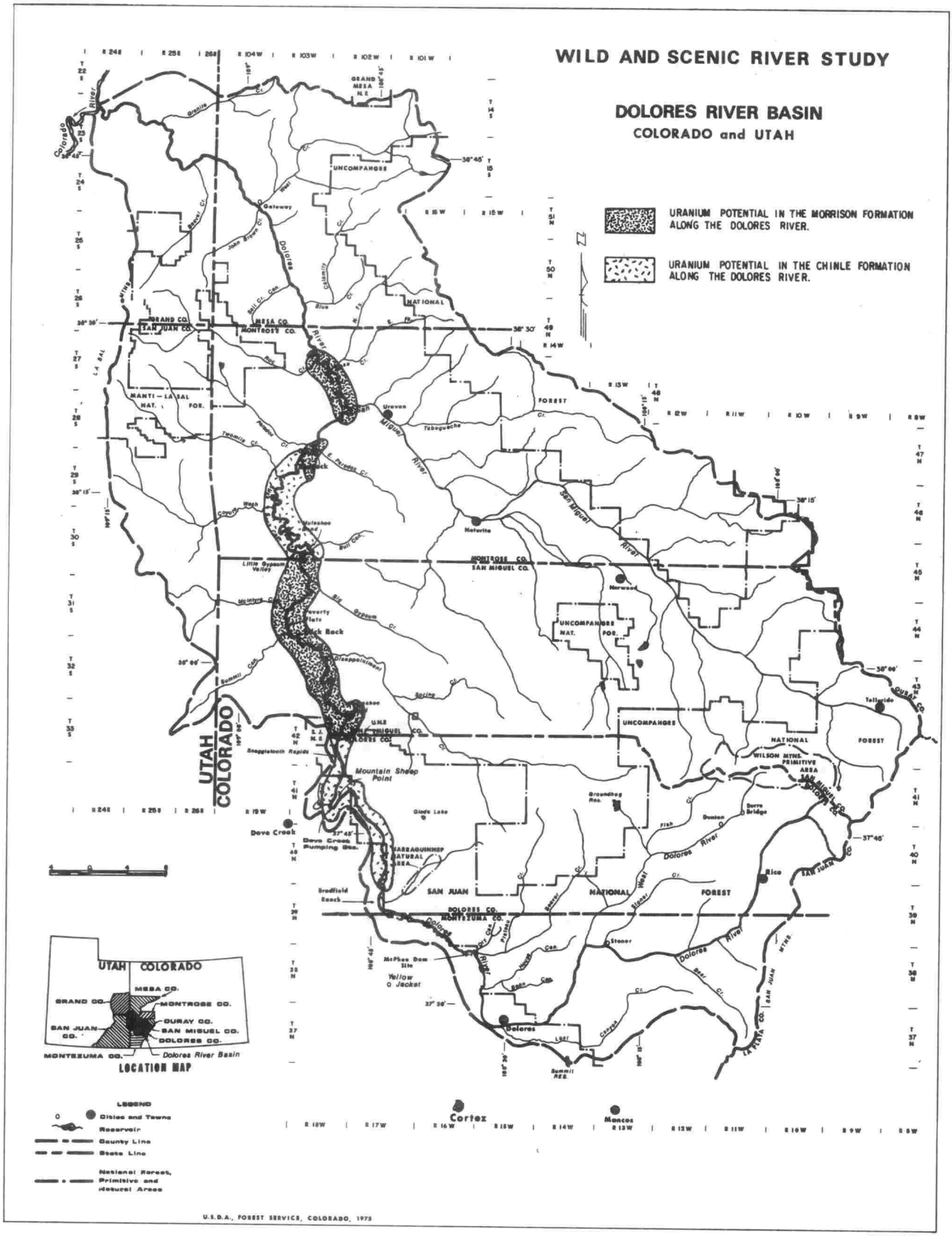
Population and Way of Life

Primarily because the basin is a land of rugged relief, harsh climate and little water, it is sparsely populated. In 1970, only 9,328 people lived here, and the average density was but 2.3 people per square mile (compared with 21 per square mile in Colorado and 57 in the U. S.). Growth has been slow; between 1920 and 1970, population in the basin increased by only 16 percent (compared with 137 percent in Colorado and 91 percent in the U. S.). In 1970, Uravan, on the San Miguel River just above its confluence with the Dolores, was the basin's largest town with an estimated population of 1,000. The same year, Rico and Dolores, the two principal communities on the river, numbered 275 and 820 people respectively. Telluride on the upper San Miguel is the only basin town to experience rapid growth in the 1970's; in the last five years its population increased approximately 115 percent to 1,200, mainly because of the new Telluride Ski Area and related resort development. Projections derived from the Office of Business Economics - Economic Research Service (OBERS) data for the entire basin show modest growth over the next five decades as follows:

Year	Population
1980	9,724
1990	10,309
2000	10,992
2010	11,903
2020	12,944

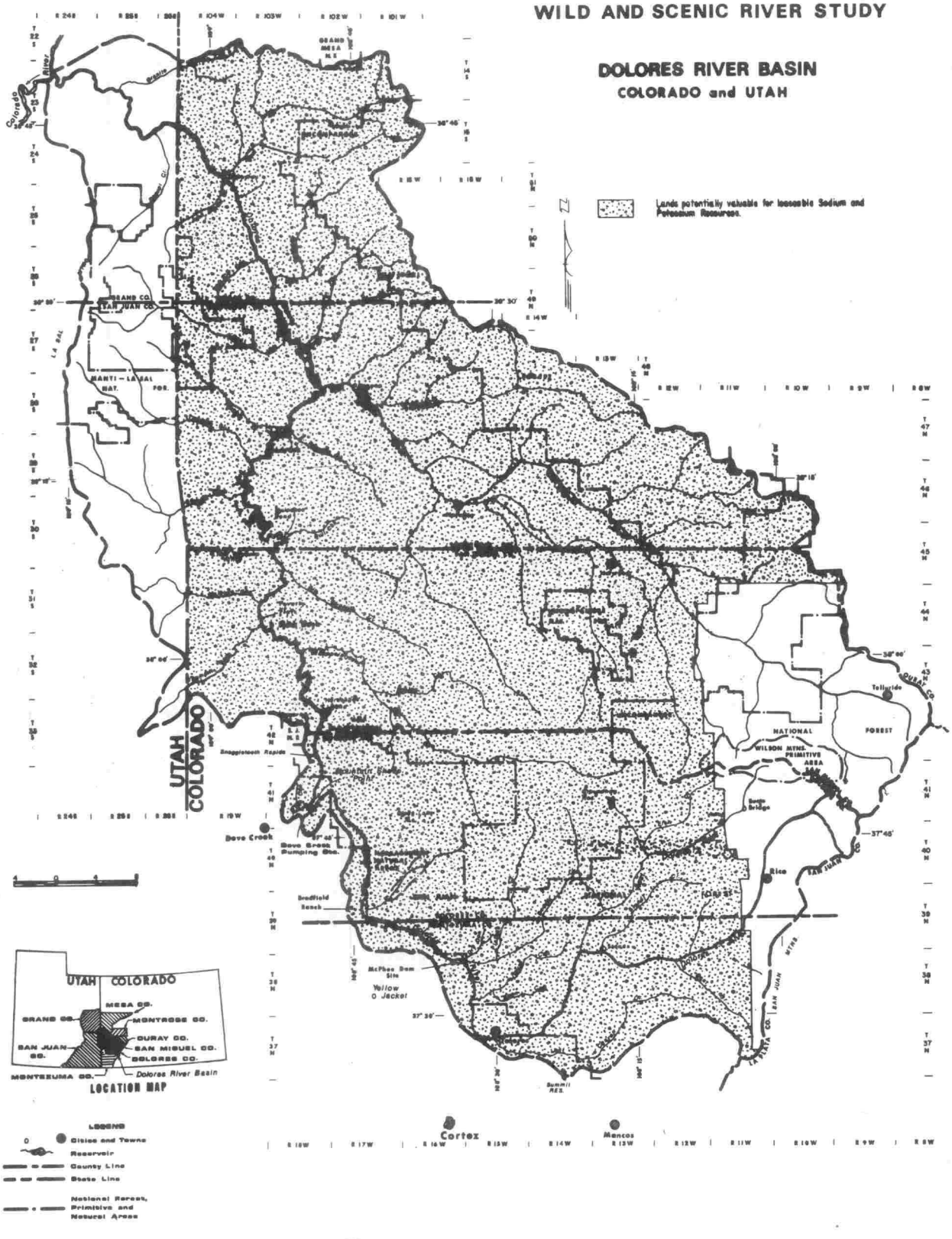
Save for Telluride, which is taking on some urban social and cultural attributes, the basin is rural in life-style. A distinctively "small town" ambience prevails in the seven other towns of significance in the basin: Dolores, Naturita, Norwood, Nucla, Rico, Gateway, and Uravan. In each of these, mining, agriculture (ranching or farming), and secondary services are the major employers. In 1970, over 50 percent of the basin's population lived in these eight small communities.

Table II-2 gives a socio-economic profile of the basin. While many of the figures for this local area are below those for Colorado and the Nation, these should not be taken as an indication of sub-standard conditions; comparison with other rural areas of the West shows them to be generally typical.


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO and UTAH
URANIUM POTENTIAL IN THE MORRISON FORMATION ALONG THE DOLORES RIVER.
URANIUM POTENTIAL IN THE CHINLE FORMATION ALONG THE DOLORES RIVER.
UTAH
COLORADO
Dove Creek
Cortez
Mancos
Dolores
Rico
Telluride
Norwood
Naturita
Uravan
Gateway
Mountain Sheep Point
Yellow Jacket
McPhee Dam Site
Bradfield Ranch
Dove Creek Pumping Sta.
Groundhog Res.
Glade Lake
Summit Res.
Stoner
Dunton
Burro Bridge
Fish Creek
Snaggletooth Rapids
Poverty Flats
Black Rock
Little Gypsum Valley
Big Gypsum Cr.
Disappointment
Spring Cr.
Tabeguache
Roubideau
Escalante
Coyote Wash
Summit Can.
Roc Creek
Beaver Cr.
John Brown Cr.
Granite
Gravel Cr.
Ruin Cr.
Bull Cr. Can.
Blue
N. Fk.
S. Fk.
Columbine
Rock Cr.
Twomile Cr.
Paradox Cr.
Bull Can.
Spring Cr.
Fish Cr.
Stoner Cr.
West Cr.
Yucca Can.
Bean Can.
Basin Cr.
Coyote
Lost
Fisher
Colorado River
Dolores River
San Miguel River
Gunnison River
Uncompahgre River
Gunnison Tunnel
Uncompahgre Nat. For.
Manti-La Sal Nat. For.
Uncompahgre Plateau
San Juan Nat. For.
Wilson Mtns. Primitive Area
Naraguinnep Natural Area
Mesa Co.
Montrose Co.
Ouray Co.
San Miguel Co.
Dolores Co.
San Juan Co.
Montezuma Co.
Grand Co.
Dolores River Basin
LOCATION MAP
LEGEND
Cities and Towns
Reservoir
County Line
State Line
National Forest, Primitive and Recreat Areas
U.S.D.A., FOREST SERVICE, COLORADO, 1975

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN
COLORADO and UTAH



LOCATION MAP

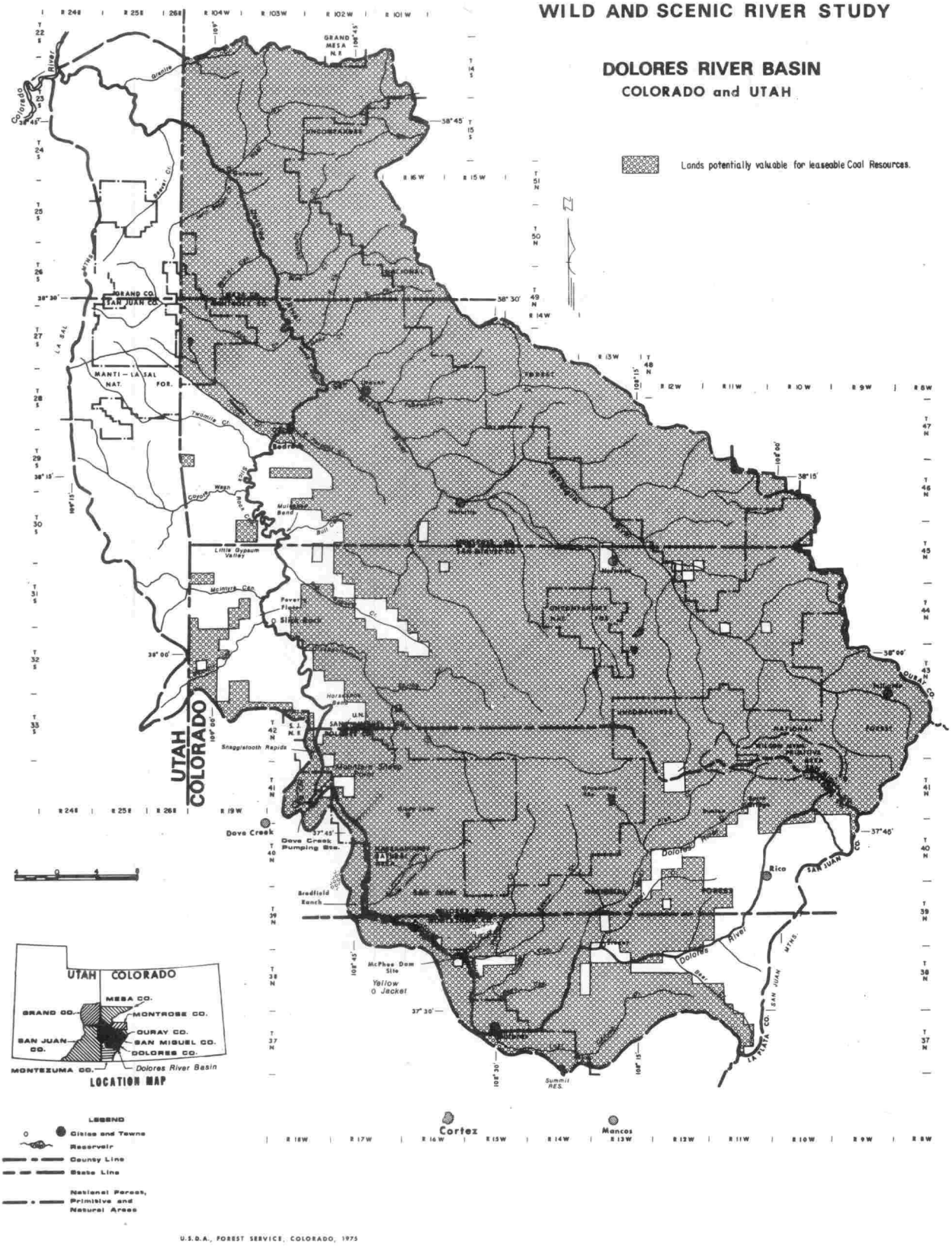
LEGEND

- Cities and Towns
- Reservoir
- County Line
- State Line
- National Forest, Primitive and Natural Areas

U.S.D.A., FOREST SERVICE, COLORADO, 1975

WILD AND SCENIC RIVER STUDY

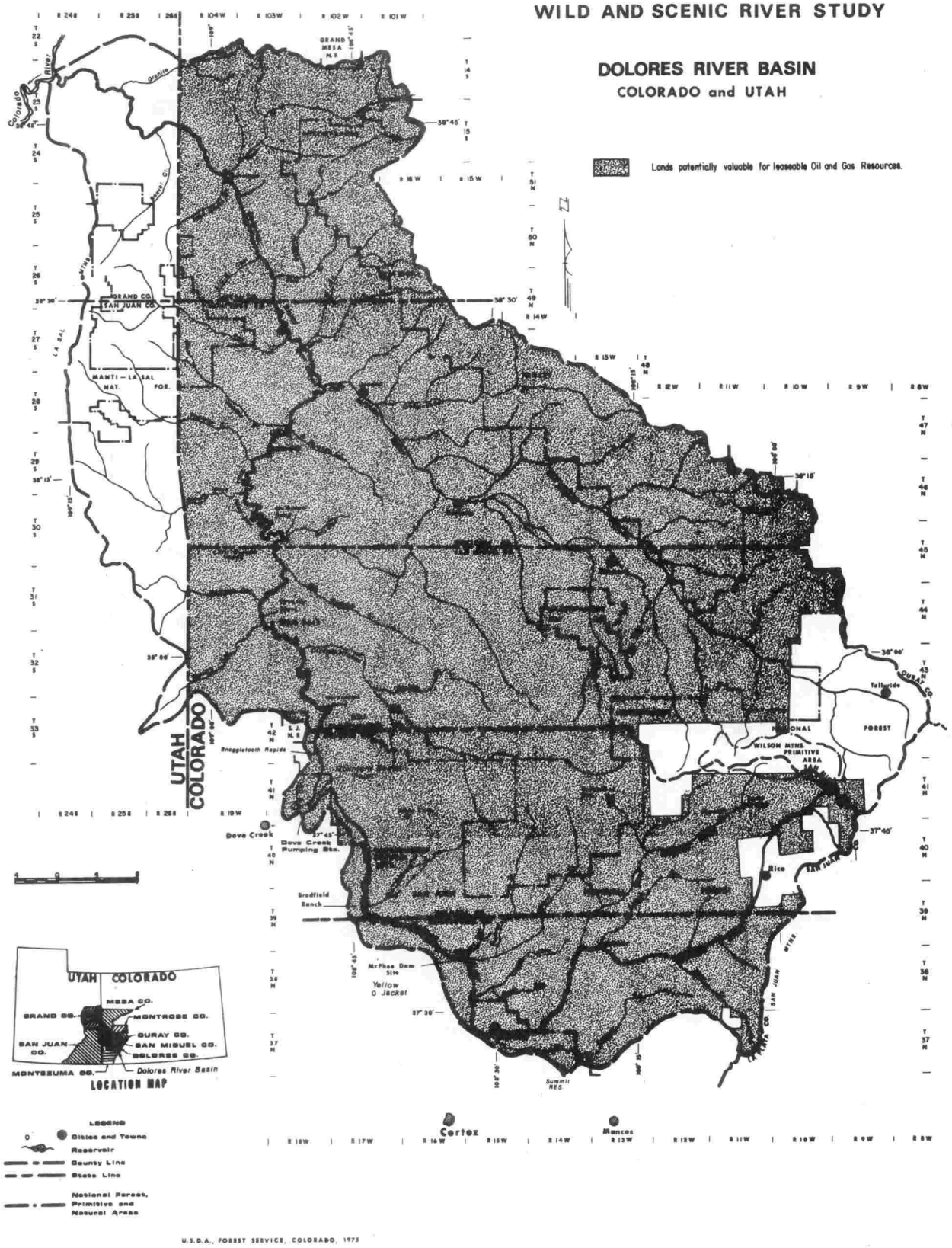
DOLORES RIVER BASIN
COLORADO and UTAH



U.S.D.A., FOREST SERVICE, COLORADO, 1975

WILD AND SCENIC RIVER STUDY

DOLORES RIVER BASIN
COLORADO and UTAH



U.S.D.A., FOREST SERVICE, COLORADO, 1973

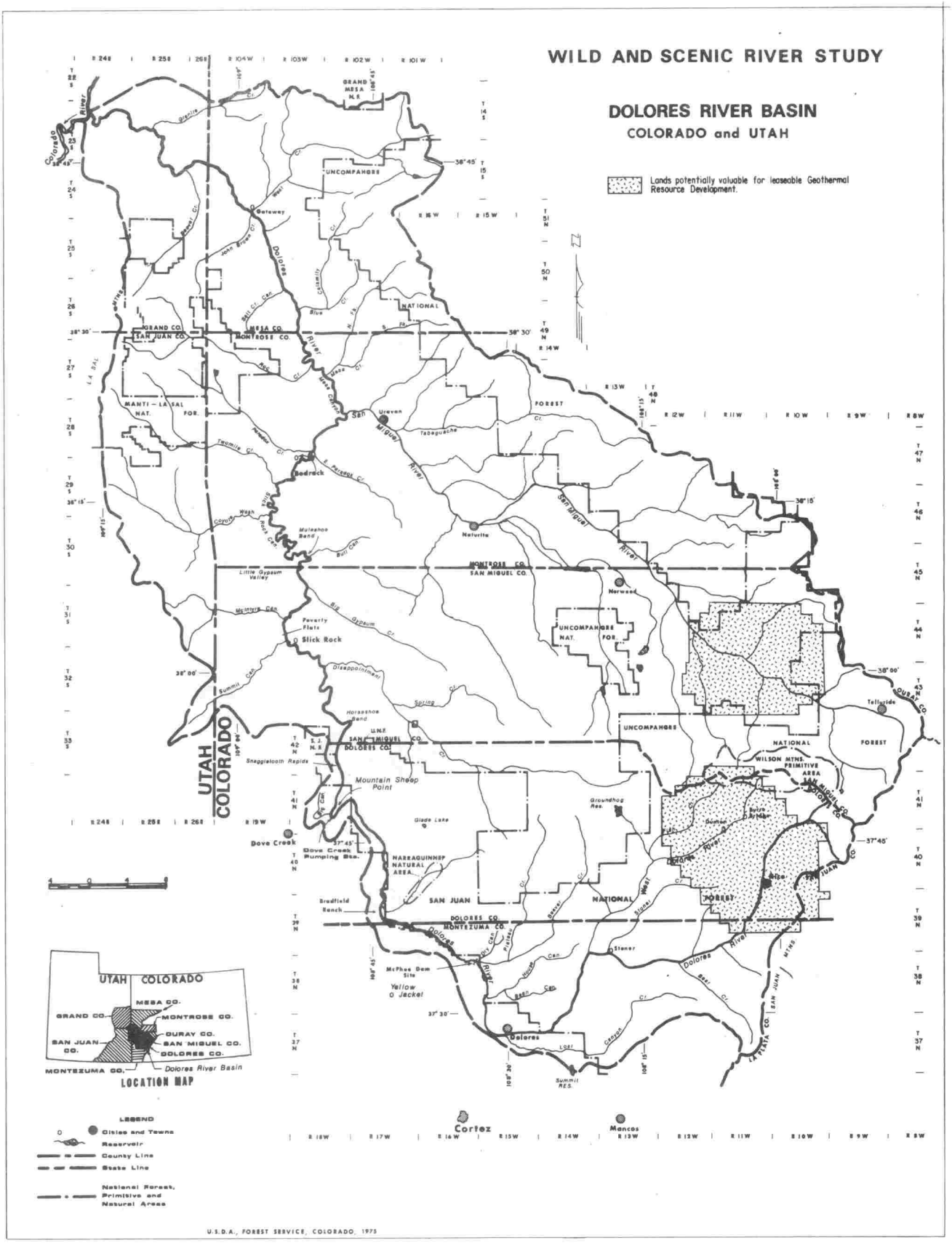

WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO and UTAH
Lands potentially valuable for leaseable Geothermal Resource Development.
UTAH
COLORADO
Dove Creek
Mountain Sheep Point
Snaggletooth Rapids
Glade Lake
Dove Creek Pumping Sta.
NARRAGUINNEP NATURAL AREA
Bradfield Ranch
McPhee Dam Site
Yellow Jacket
Dolores
Summit RES.
Slick Rock
Poverty Flats
Little Gypsum Valley
Big Gypsum Cr.
Disappointment
Horseshoe Bend
Mulehorn Bend
Bull Can
Rock Cr.
Coyote Wash
Summit Can.
Bedrock
Uravan
San Miguel River
Naturita
Norwood
Telluride
Ophir
Rico
Stoner
Groundhog Res.
Burro Mtn.
Sunshine
Dolores River
Beaver Cr.
Stoner Cr.
Boggy Draw
Plateau Can.
Dry Can.
Hovey Can.
Bear Cr.
Lost Canyon
Gateway
Paradox Cr.
Tabeguache
Roatcap Cr.
Tuesday Cr.
Granite Cr.
Jarvis Cr.
John Brown Cr.
Ball Cr. Can.
Blue Cr.
Cimarron Cr.
Hwy 141
Hwy 90
Colorado River
GRAND MESA N.F.
UNCOMPAHGRE
UNCOMPAHGRE NAT. FOR.
MANTI - LA SAL NAT. FOR.
NATIONAL FOREST
SAN JUAN NATIONAL FOREST
WILSON MTNS. PRIMITIVE AREA
GRAND CO.
MESA CO.
SAN JUAN CO.
MONTROSE CO.
SAN MIGUEL CO.
OURAY CO.
DOLORES CO.
MONTEZUMA CO.
Dolores River Basin
LOCATION MAP
LEGEND
Cities and Towns
Reservoir
County Line
State Line
National Forest, Primitive and Natural Areas
Cortez
Mancos
U.S.D.A., FOREST SERVICE, COLORADO, 1975

Table II-2.--The Dolores River Basin, a Socio-Economic Profile and Comparisons

	Basin	Colorado	U.S.
Per capita income (1970)	$2,351	$3,106	$3,119
Median family income (1970)	$7,341	$9,552	$9,586
Unemployment (1972)	5.6%	4.2%	4.4%
Population below low-level income (1972)	17.6%	11.9%	13.3%
Median age (1970)	28.1	26.3	29.4
Median school years completed (1970)	12.0	12.4	12.1
Completed college (1970)	7.6%	14.9%	10.7%

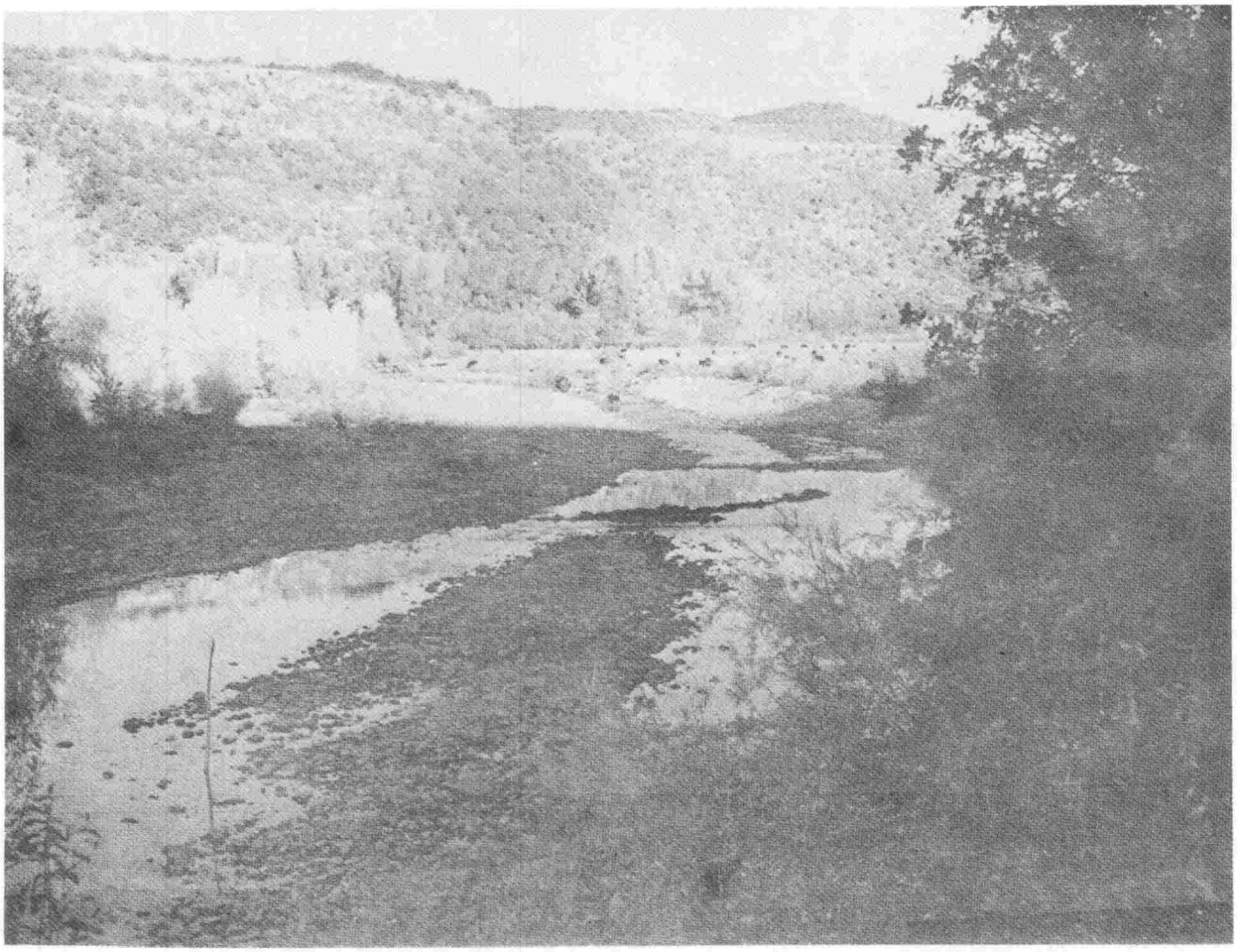
Sources: U. S. Bureau of Census, U. S. Department of Commerce

Economy

The present economy of the Dolores River basin is highly resource oriented. Primary industries such as mining, agriculture and forestry are obviously dependent on the regional resources and collectively employ 54 percent of the local work force. In addition, many of the basin's secondary and tertiary service-type industries are significantly (though often only seasonally) tied to its natural endowments and the recreationists these attract.

Approximately 20 percent of the work force is engaged in mining, another 18 percent in agriculture, and 3 percent in wood industries. Manufacturing accounts for only 2 percent of the work force, producing primary metals, food and related products and chemicals. Retail trade occupies about 20 percent of the total work force and has shown constant growth in the last decade.

Tables II-3 and II-4 show the production values of the mining and agricultural industries in the Dolores River basin in 1964-1966. These tables are structured similarly to allow a comparison of the region's two major economic activities.



The livestock industry is a mainstay of the Basin economy. Here cattle graze and water in the Dolores River near McPhee Dam site. October 1974. Bureau of Reclamation Photo.



Cattle in alpine meadows above the West Dolores.

Table II-3.--Agricultural Production Values, by Commodity, Dolores River Basin, Colorado and Utah, 1964.

Commodity	Estimated Value in $1,000
Field Crops	358
Vegetables	.4
Fruits, Nuts	8.3
Dairy Products	76.8
Poultry, Related Products	39.5
Livestock, Related Products	4,496
Forest Products, Horticultural Specialties	11.4
Total	4,612.5

Sources: U. S. Bureau of the Census, Census of Agriculture
Colorado Crop and Livestock Reporting Service

(from Type 4 Study, p. IV-26)

Table II-4.--Mineral Production Values, by Resource, Dolores River Basin, Colorado and Utah, 1966.

Mineral	Estimated Value in $1,000
Copper	1,652
Gold	651
Lead	3,004
Silver	802
Zinc	4,402
Uranium	18,596
Vanadium	16,282
Coal	427
Oil	NA
Gas	NA
Sand, Gravel	433
Stone	106
Total	46,365

Source: Colorado Bureau of Mines

Transportation

The combination of rugged terrain and small population have kept the Dolores River basin relatively isolated from the main flow of national highway, rail and air traffic. With the demise of the Rio Grande Southern Railroad in the 1950's, rail transport in the region ceased to exist; today the nearest tracks are about 60 miles north of Bedrock where the Denver and Rio Grande Western RR passes through Grand Junction en route to Salt Lake City. Commercial air traffic is limited to Grand Junction, Montrose and Cortez, all outside the basin; the one commercial carrier into Cortez has petitioned the Federal Aviation Administration to discontinue this service, and route flights into Durango 46 miles to the east. Private aircraft may land in the basin at small airports (open to the public) at Norwood, Nucla, Uravan and Gateway. No scheduled bus lines serve any of the towns in the basin, though service is provided to several of the cities on its fringe.

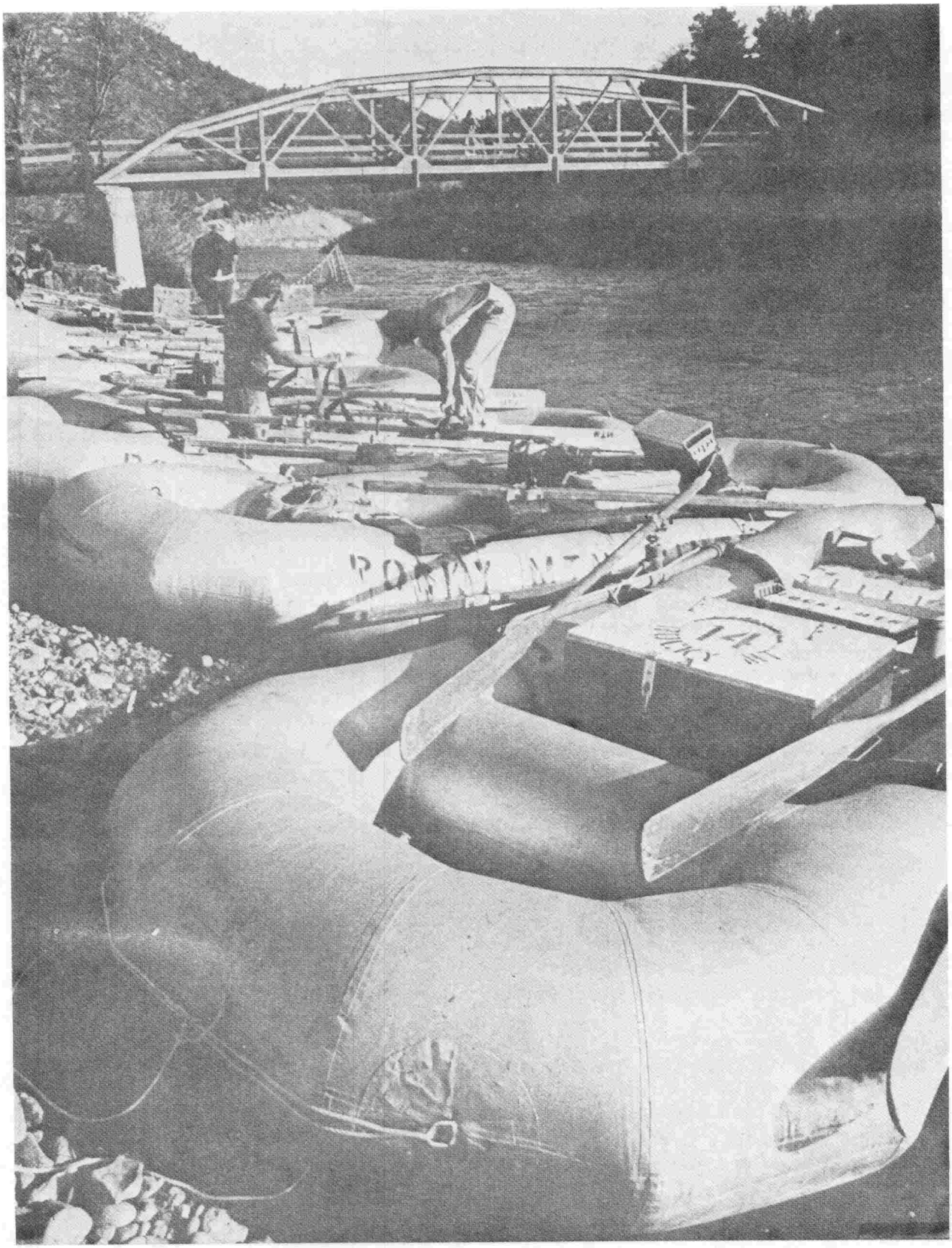
Six paved state highways, Colorado 90, 97, 141, 145 and 147 and Utah 46, wind through the basin, skirting natural barriers and generally following major drainages. These two-lane routes form the major transportation network in the area and total 309 miles in length. About 250 miles of improved gravel road and several hundred miles of rougher road round out the system and reach to some of the more remote areas.

Land Use and Ownership

Throughout the West in general and the Dolores River basin in particular, historic settlement patterns have led to fairly predictable land ownership patterns today. Since 1862, the choice productive agricultural lands, especially those with water and an ample growing season, have been homesteaded and thereby taken out of public domain. Today in the basin, all cropland is privately owned, as are over 500,000 acres of grazing and forest land. Patented mining claims, the largest concentrations being around Telluride and Rico, make up the remaining private lands - an aggregate of 25 percent of the basin.

From 1905 onward, large portions of unclaimed public domain in the basin - especially productive timber land and associated areas (most of these at medium to high elevations) - became National Forests. These now comprise 39 percent of the basin. Since 1946, administration of the "land no one wanted" has been managed by the Bureau of Land Management; these national resource lands now make up 35 percent of the basin. The State of Colorado lands amount to only one percent of the area.

About 94 percent of the basin is used for some form of agricultural production - 68 percent of it for grazing, 24 percent of it nongrazeable timber, and 2 percent cropland. Plans developed by the San Juan and



The Bradfield Ranch is a favorite launching point for whitewater boaters. The bridge in the background is for a graveled road that runs between the town of Dolores and Cahone. May 1975.

Grand Mesa-Uncompahgre National Forests have designated 740,000 acres (or 25 percent of the basin) as commercial forest land.

At present, there are two reserved areas in the basin. The 27,300-acre Wilson Mountains Primitive Area was established on the San Juan and Uncompahgre National Forests in 1932; portions of this and contiguous areas are now under consideration for inclusion in the National Wilderness Preservation System. In addition, the 2,800-acre Narraguinnep Natural Area in the San Juan National Forest has been set aside to preserve an exemplary ponderosa pine ecosystem. Landownership is shown on the following Land Status Map.

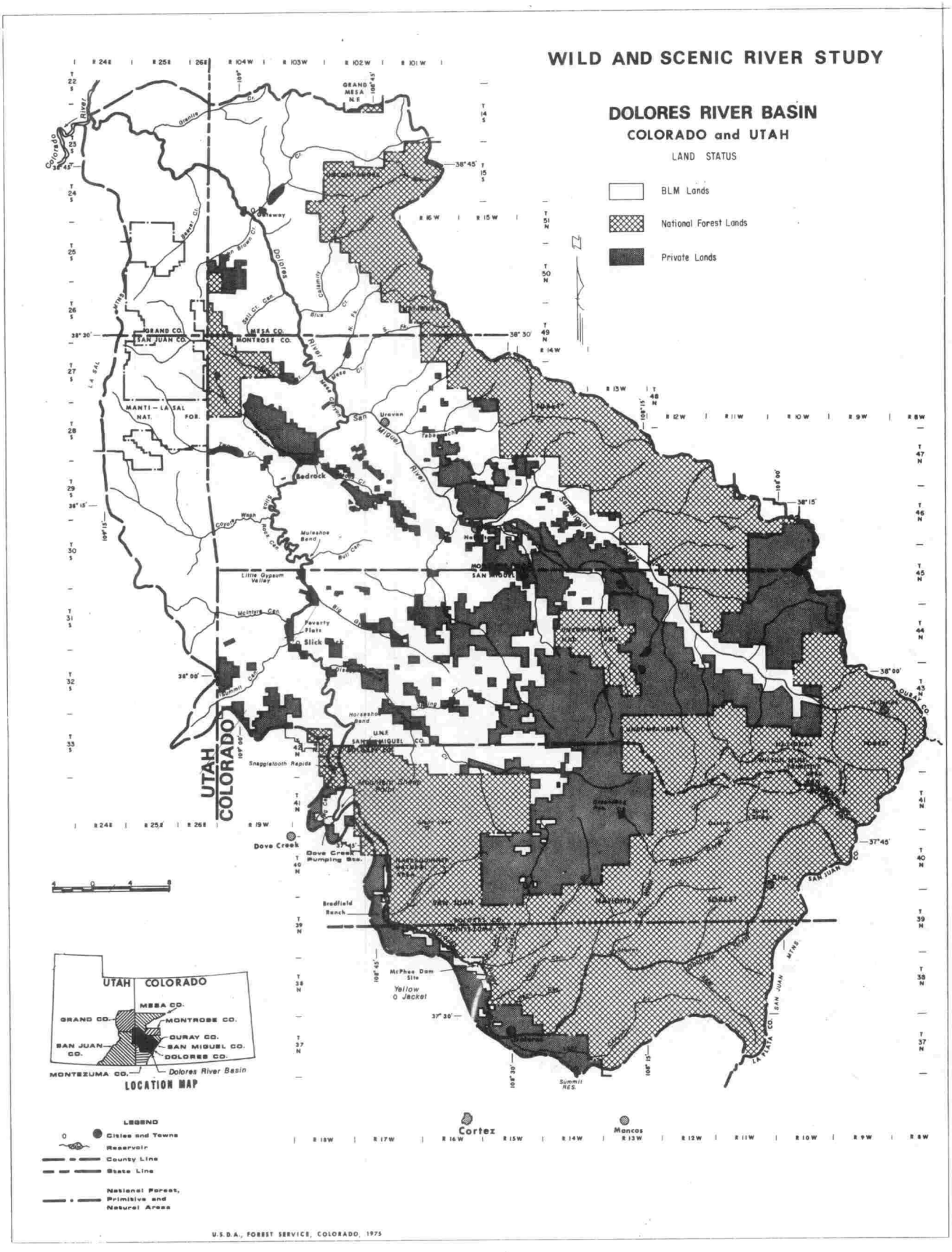
Recreation and Scenery

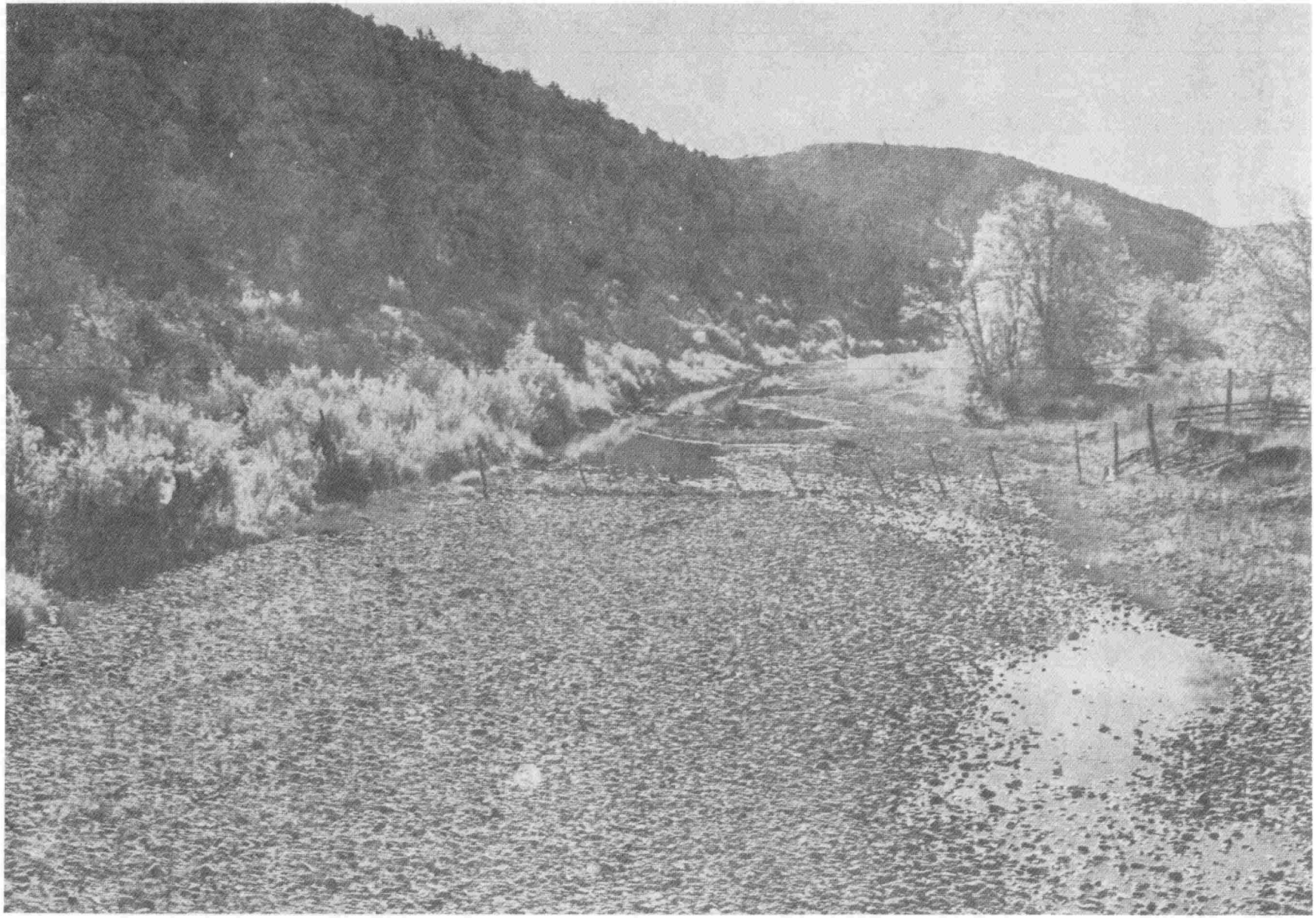
Recreational opportunities in the Dolores River basin are diverse. There is a high proportion of public federal land in the basin (both Forest Service and BLM) encompassing a wide variety of landscapes. In addition, a number of state, local government and private facilities and areas are available - some developed, some not. Nearly three-quarters of the public camping units in the basin are found along the West Dolores and Upper Dolores Rivers within the San Juan National Forest.

The recreational use on the West Dolores and Upper Dolores occurs in the late spring, summer and early fall. Cold-water fishing is the most popular water-based activity; mountain streams, lakes, and reservoirs in the area are often heavily fished, and most of these are stocked with trout by the Colorado Division of Wildlife. Eight privately owned irrigation reservoirs in the basin are normally open to the public without charge, and six of them allow power boating. The Wilson Mountains Primitive Area and the San Juans around Telluride are moderately popular backpacking areas, and Telluride is a terminus for two well-used, high country four-wheel-drive routes (Imogene and Black Bear Passes). Float-boaters use the Dolores and San Miguel Rivers. Auto sightseeing and photography are especially popular in the Telluride-Lizard Head Pass area.

When completed, the McPhee Reservoir will substantially increase the basin's recreational opportunities. Planned developments around and downstream of this 4,470-acre lake include trails, overlooks, swimming, and boating sites and a substantial number of camping and picnicking units.

In the fall, deer and elk hunting are the primary recreational pursuits in the basin. Colorado Division of Wildlife figures show that 7,154 deer and 1,390 elk were harvested from the region's three principal game management units in 1973. The same year, the Dolores Unit, which includes a large portion of the upper and central basin, was among the


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO and UTAH
LAND STATUS
BLM Lands
National Forest Lands
Private Lands
UTAH
COLORADO
Dove Creek
Cortez
Moncos
Bedrock
Slick Rock
Gateway
Uravan
MANTI — LA SAL NAT. FOR.
GRAND CO.
SAN JUAN CO.
MESA CO.
MONTROSE CO.
OURAY CO.
SAN MIGUEL CO.
DOLORES CO.
MONTEZUMA CO.
Dolores River Basin
LOCATION MAP
LEGEND
Cities and Towns
Reservoir
County Line
State Line
National Forest, Primitive and Natural Areas
U.S.D.A., FOREST SERVICE, COLORADO, 1975



A view upriver from the Bradfield Ranch. Bureau of Reclamation photo. October 1974.

most popular hunting areas in all Colorado - ranking second in numbers of deer hunters and third in elk hunters.

Winter recreation is limited almost exclusively to skiing and snowmobiling in the higher elevation areas of the Dolores River basin. The new Telluride Ski Area, first opened in 1972, is projected as a major winter sports area. During the 1974-1975 season there were 62,500 skier visits here with a peak day of 1,051 skiers. Projected build-up would expand the area's capacity to 9,000 skiers per day. Two smaller ski slopes in the basin are normally operated on a weekends-only basis: the Stoner Ski Area 15 miles northwest of Dolores and the Dallas Divide Area 15 miles northwest of Placerville. The latter area did not open in 1974-1975. A small potential winter sports site is located near Dunton in the West Dolores Corridor.

Table II-5 gives a recreational participation profile of the basin in 1974.

The San Juan Mountain Range and the canyons of the Dolores River are the renowned outstanding scenic resources of the basin. The jagged San Juans have been nicknamed the "Colorado Alps." While not so well known, the spectacular forested canyon of the Dolores River has been referred to as the "Grand Canyon of the Dolores," and the enchanting desert Slick Rock Canyon has been compared to the Glen Canyon of the Colorado which has been inundated by Lake Powell. Pastoral landscapes with imposing mountain or desert backdrops are found throughout the basin. Landscapes rated as characteristic scenery within the basin context would be considered magnificent in other regions of the United States. But there are also extensive desert basins without physiographic or vegetative variety.

Cultural, Historic and Archaeologic Resources

The cultural, historic and archaeologic resources of the Dolores River basin fall into two distinct categories: those relating to prehistoric and historic Indian occupations, and those relating to 19th century white settlement of the area.

The Dolores River basin is almost archaeologically unknown. Preliminary surveys of the McPhee Dam area and the river corridor downstream for about 30 miles, and of the river corridor from Slick Rock to Bedrock have turned up a number of sites, most of them apparently related to the Pueblo I Period (750 to 950 A.D.) of the Anasazi culture which reached its height at Mesa Verde only 17 miles south of the town of Dolores. In addition, four sites in the proposed McPhee Reservoir site produced much earlier projectile points similar to a type dated around 7,000 B.C.

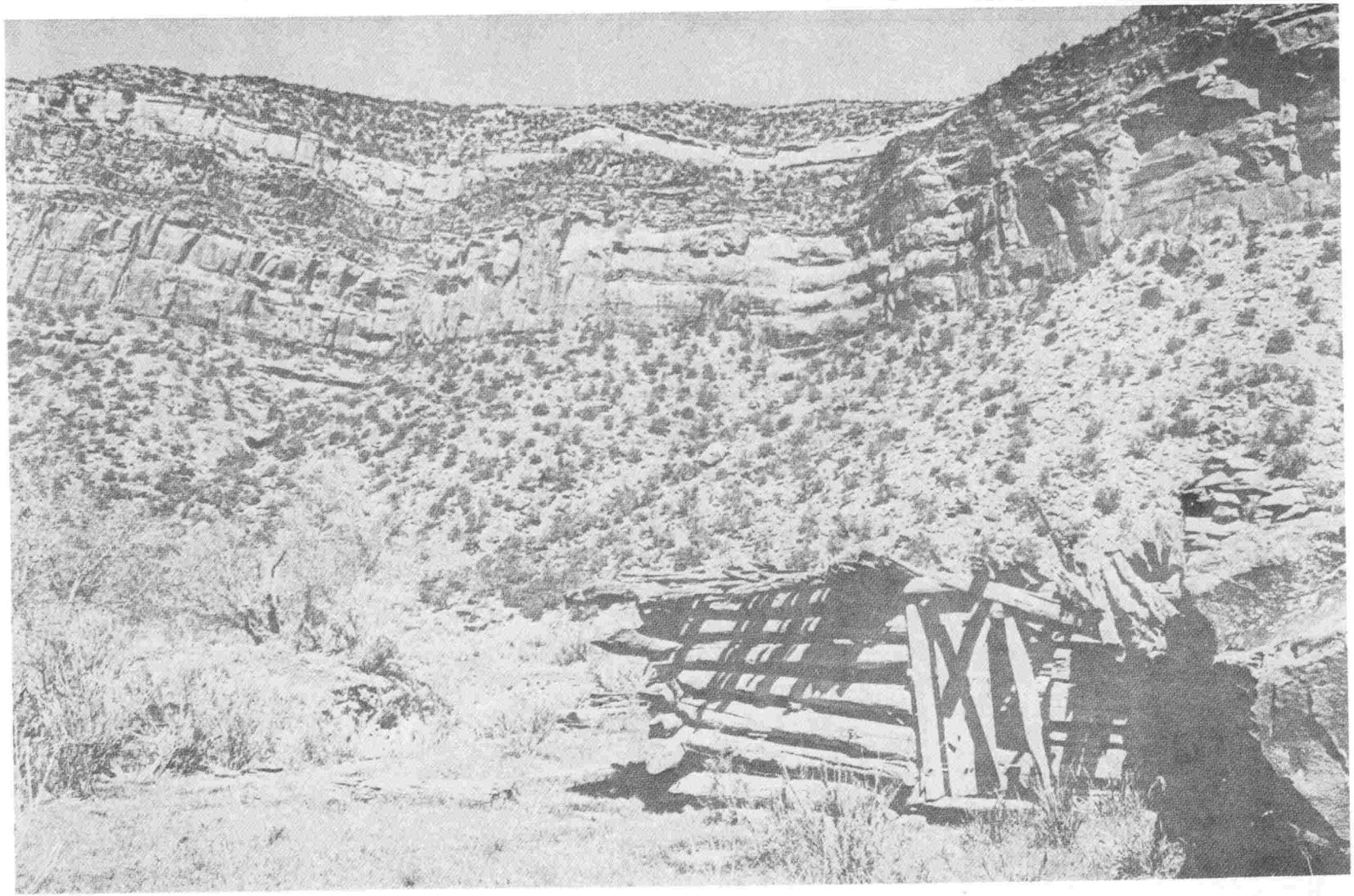
Table II-5.--Participation in Activity Days for Selected Recreational Pursuits in the Dolores River Basin 1974. 1/

Activity	Colorado Resident Participation	Non-Resident Participation	Total Participation
Camping	201,400	320,600	522,000
Off-road Vehicles	178,400	52,600	231,000
Hiking and Mountain Climbing	180,700	470,900	651,600
Horseback Riding	112,000	71,000	183,000
Boating	4,600	21,400	26,000
Swimming	93,800	19,100	112,900
Playing Outdoor Games	180,700	18,300	199,000
Sightseeing	306,500	452,900	759,400
Picnicking	96,100	371,500	467,600
Skiing 2/	49,100	20,600	69,700
Big Game Hunting 3/	31,300	35,200	66,500
Small Game Hunting 3/	11,300	200	11,500
Fishing 3/	96,200	28,200	124,400
TOTALS	1,542,100	1,882,500	3,424,600

1/ Except as noted below, data are derived from calculated recreation participation in 1974 Interim Colorado Comprehensive Outdoor Recreation Plan.

2/ Data provided by Forest Service, U.S.D.A., based on estimates of actual use at three basin ski areas noted in text. Resident and non-resident use allocations are Study Team estimates.

3/ Data provided by Colorado Division of Wildlife, based on estimates of actual use.



This abandoned homestead in Dolores Canyon is one of several sites of more recent historical interest along the Dolores. May 1975.

Along Tabeguache Creek near Uravan on the east-central rim of the basin, caves containing stratified deposits have been investigated; fire pits, grinding stones and projectile points were found, but their provenance is uncertain. Petroglyph panels have been found at several sites in the Gateway area in the lower basin.

From these preliminary surveys, professionals have concluded that further extensive reconnaissance and excavation are warranted.

There are a number of sites in the basin at which relics of early-day mining and homesteading are preserved. At present Telluride is a designated Historic District, and the old Rico City Hall is on the National Register of Historic Places. These are but two highlights of the 19th century mining era whose remains are scattered throughout the San Juans in the upper end of the basin, and more sporadically in its lower reaches.

Remnants of early-day farming and ranching are less prominent and largely uninventoried. Narraguinnep Fort, 18 miles northwest of Dolores town, was built in 1885 to protect stockmen from marauding Ute Indians. The Fort, the Ecalate archaeological sites near the town of Dolores, McPhee (an old sawmill townsite about five miles from Dolores), and the site of Big Bend (an early, major settlement on the Dolores) may qualify for nomination to the National Register of Historic Places.

In 1776 the Escalante-Dominguez expedition crossed the Dolores River in several places, and is being commemorated with an interpretative sign program at various points in the basin.

CHAPTER III

DOLORES RIVER CORRIDOR DESCRIPTION

Preface

The following description of the Dolores River and its corridor presents a closeup view of a potential Wild and Scenic River Area (about 1/4-mile wide from either bank) and the lands associated with it in a visual corridor 1/2 to 2 miles wide. Included is information on the various resources within the corridor, their uses, and existing or potential conflicts in those uses. These are the basic data used by the Study Team in its subsequent evaluations.

The four segments designated for study by P.L. 93-621 are (1) the main stem from its source downstream to the town of Rico, (2) the West Dolores River from its source downstream to its confluence with the main stem, (3) the main stem from a point 1.3 miles below the site of McPhee Dam to 1 mile above State Highway 90, and (4) the main stem from its confluence with the San Miguel River to the Colorado-Utah State Line.

A. Review of the four segments follows:

Segment I - Main Stem From Its Source to Rico (15 Miles)

This mountainous reach of the river breaks into three distinct subsegments:

1) Headwaters Area (2 Miles) - The Dolores River rises at an elevation of over 11,600 feet in Tin Can Basin in the Western San Juans. Here a number of alpine rivulets drop from Sliderock Ridge and join to form the river's first definable channel, which slowly enlarges for 2 miles. The Basin is a historic mining area. Several primitive roads climb to its south side; another crosses it to the river then parallels it for 2 miles before dead-ending.

2) Subalpine Area (4 Miles) - Here the Dolores is 10 to 15 feet wide as it meanders through an area of open parks surrounded by heavy stands of spruce and fir. A National Forest trail follows the river.

3) Highway Area (9 Miles) - Six miles from its source, the Dolores meets another trail, the abandoned Rio Grande Southern Railroad grade, and Colorado State Highway 145, all of which parallel it for the next 9 miles to Rico. There is also scattered evidence

of mining along this stretch, which above Snow Spur Creek flows between high, steep banks and below becomes a meandering stream with low banks and occasional riffles. At several points, highway fill slopes have spilled into the river and altered its course, but there are no impoundments.

Width of the Dolores along this reach varies from 20 feet at its upper end to 35 feet at the highway bridge just north of Rico. The Main Stem Dolores map shows the location and extent of the visual corridor of this segment.

Segment II - The West Dolores (35 Miles)

This is also a mountain portion of the river system which traverses four life zones. It can be broken into three subsegments:

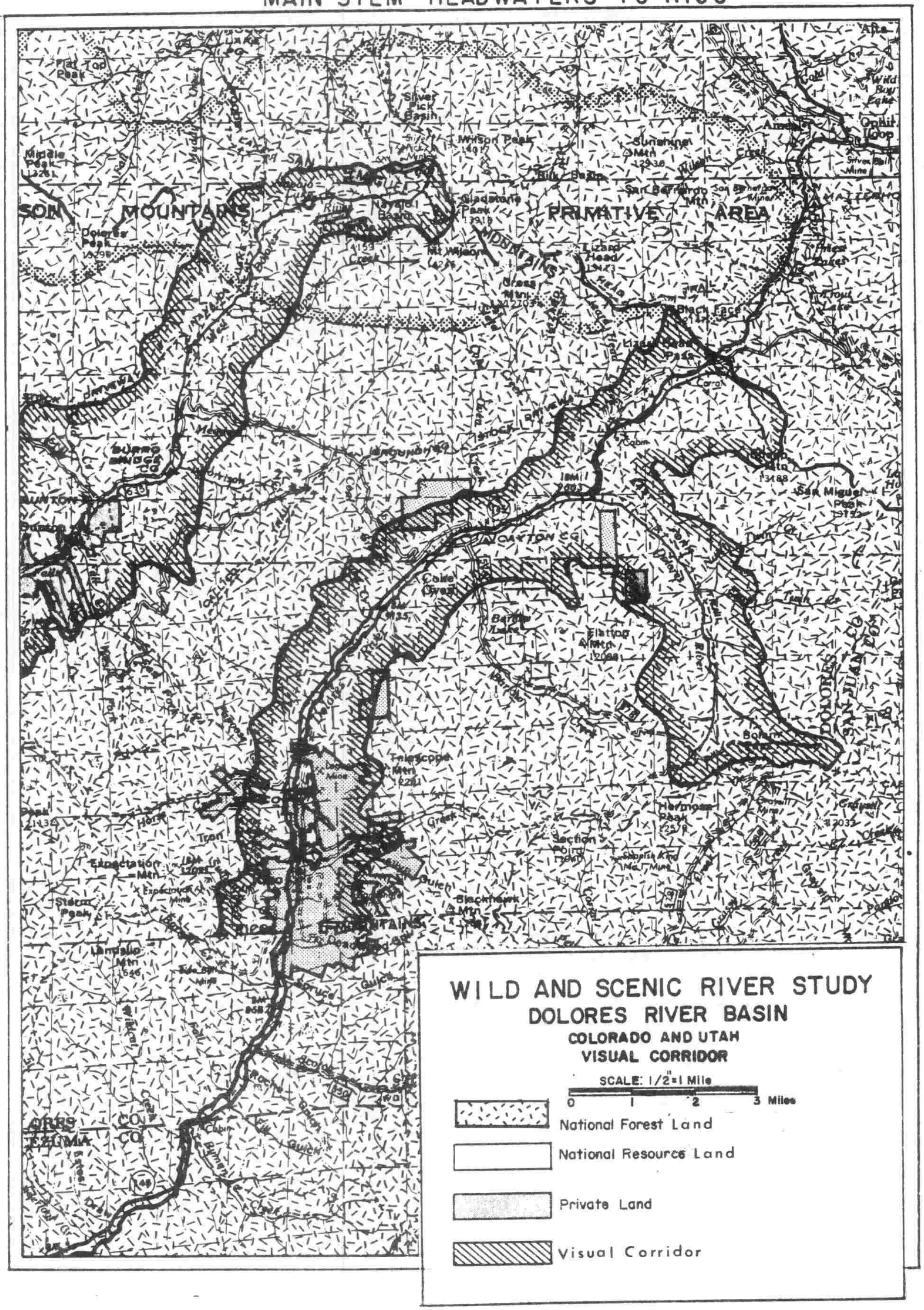
1) Headwaters Area (2 Miles) - The West Dolores rises among the snowfields high in the eastern end of Navajo Basin in the Wilson Mountains Primitive Area, at an elevation near 12,300 feet. The setting is extremely rugged - El Diente (14,159 feet), Mount Wilson (14,246 feet), Gladstone Peak (13,913 feet), and a high, nameless ridge (13,498 feet) ring the Basin with steep sidewalls and high summits. Toward the west end of this elongated alpine bowl, the river flows through 10-acre Navajo Lake before dropping from the tundra zone into a rolling subalpine forest.

   National Forest trails, the remains of several small 19th Century mines, and barely visible contemporary prospecting are the only visual signs of man's activity here.

2) Subalpine Area (6 Miles) - Below Navajo Basin, the West Dolores drops over a small waterfall and then tumbles through a rolling area of conifers and numerous grassy peaks. At the upper end of this stretch, the river is 5 to 10 feet wide, banks are 10 to 30 feet high, and there is no flood plain or valley bottom. Below Kilpacker Creek, the terrain east of the West Dolores becomes steeper and aspens more common. The Navajo Lake Trail (National Forest) follows the river, and there is an old cabin about midway between Kilpacker Creek and Navajo Lake.

3) Lower Area (27 Miles) - Burro Bridge begins the third distinct reach of the West Dolores, all of it paralleled by a graveled Forest Service Road (No. 535). From the old mining settlement of Dunton onward, the river flows through a glaciated, U-shaped valley a mile to a mile and one-quarter in width. At Dunton, the West Dolores is 10 to 20 feet across, and at the confluence with the Main Stem Dolores River is 60 feet. This is a meandering stretch of the river with occasional riffles; streambanks are low.

MAIN STEM - HEADWATERS TO RICO



Dwellings, barns, and ranch buildings, three National Forest campgrounds, fences, two picnic grounds, and croplands are all visible from the lower West Dolores; State Highway 145 crosses it a quarter-mile from its confluence with the main stem. All told, nine road bridges cross the river; approximately 10.5 of its 35 miles flow through private land. Maps 1 and 2 show the location and extent of the visual corridor of this segment.

Segment III - Main Stem from McPhee Damsite to Bedrock (105 Miles)

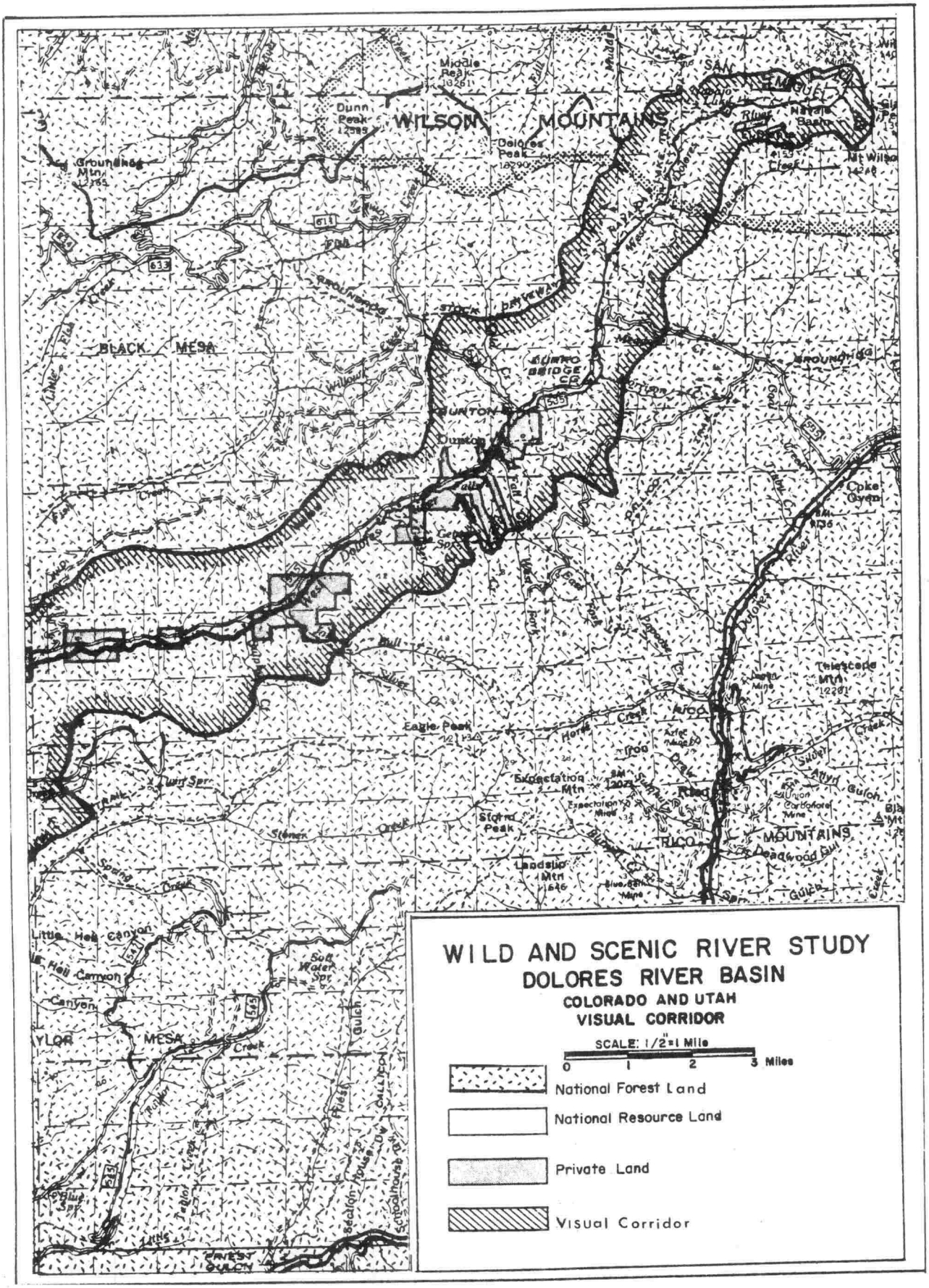
This is a long, diverse stretch of the Dolores, beginning in the low foothills of the San Juans and ending on the high desert of the Colorado Plateau. The natural flow of the Dolores River is characterized by relatively high flows during snowmelt and low flows during the remainder of the year. Natural low flows are diminished by irrigation diversions of the Montezuma Valley Irrigation Company. The Dolores Project will have the further effects of reducing high flows and increasing low flows to provide year-round flows for fish and wildlife purposes.

On the basis of natural features, access, and physical characteristics, this segment can be divided into four distinct parts:

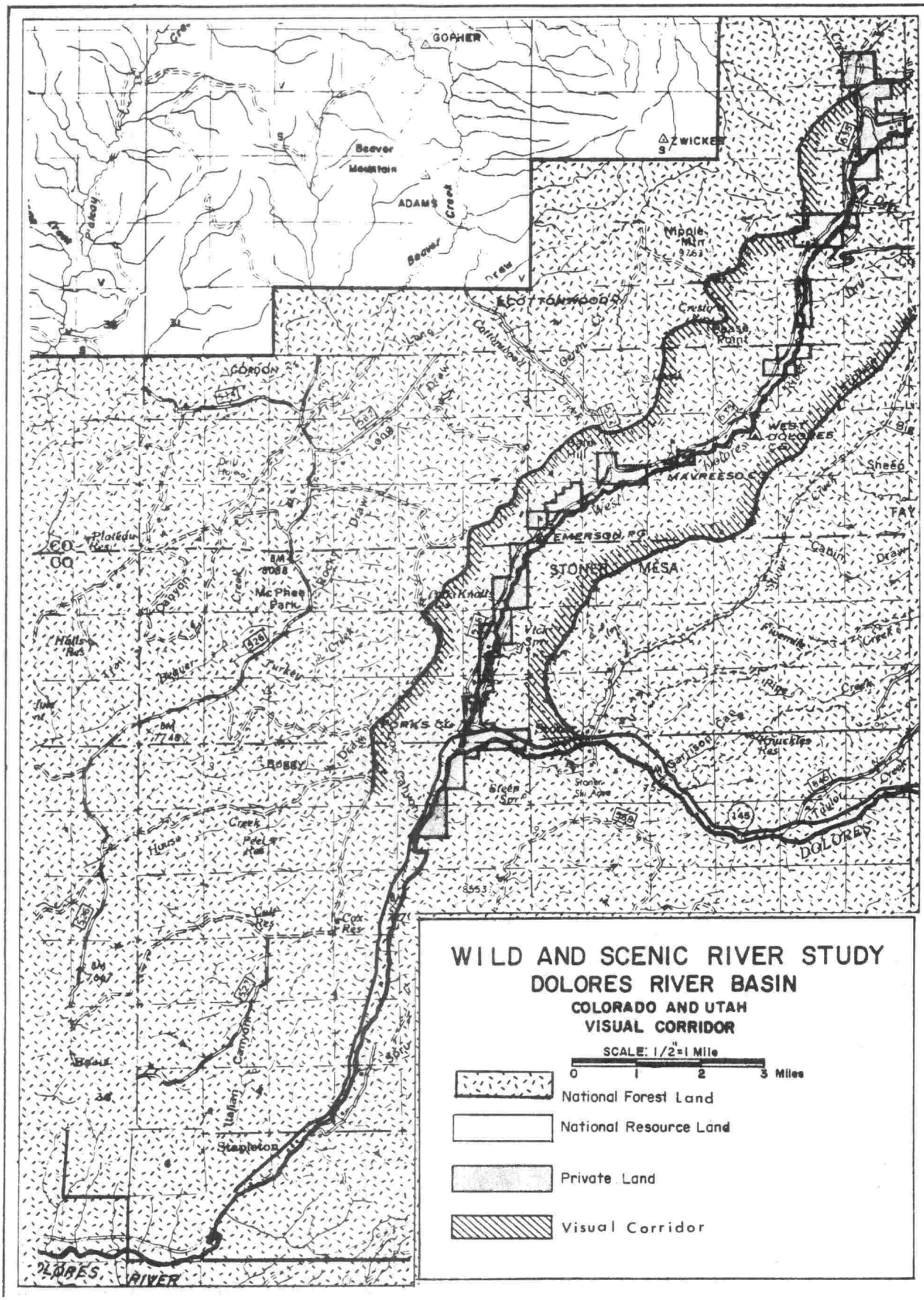
1) McPhee Dam to Bradfield Ranch (11 Miles) - This is a gentle, pastoral stretch of the Dolores. In the spring, riverflow is moderate (2 to 3 mph at 2,000 cfs), with no rapids and only a few splashes of white water. The valley floor is from one-quarter to one-half mile wide, about 8 miles of it privately owned ranchland. During the spring, summer, and fall, livestock graze the pasturelands; native hay is harvested in late summer. Ranch buildings, fences, and Forest Service Road No. 504 are all visible from the river, but there is no evident mining activity in the immediate river corridor. Cottonwoods, willows, and shrubs grow along the river bottoms, with steep, conifer-covered mountains rising from 600 to 1,000 feet on either side.

2) Bradfield Ranch to Disappointment Creek (41 Miles) - For several miles, the river continues to flow easily through a small valley before beginning to sink into Dolores Canyon, the first of five on the lower study segments. Riverflow picks up (3 to 4 mph at 2,000 cfs), and the first rapids of consequence appear. The canyon remains varied as it grows deeper; the walls are variously sloping, stairstepped, or sheer. Red and tawny sandstone predominates, often broken into many irregular outcrops. Height from river to rim ranges from 1,200 to 2,300 feet. Overstory vegetation is mainly conifers - tall ponderosa pine on the stream terrace and pinon-juniper woodland above.

MAP 1


WILSON MOUNTAINS
Middle Peak 13261
Dunn Peak 12989
Dolores Peak 13290
Groundhog Mtn. 12765
BLACK MESA
DUNTON
Dunton
Gibbs Bridge CR
Cahone Spr.
Eagle Peak 12134
Exclestation Mtn. 12021
Stoner Peak
Landslide Mtn 11646
Trico
MOUNTAINS
Deadwood Gulch
Thiescope Mtn. 12201
Coke Oven
Union Carbonate Mine
Little Hell Canyon
Hell Canyon
Canyon
MESA
Salt Water Spr.
Gallison Gulch
Section House Draw
Schoolhouse Draw
Blue Spr.
FOREST OVALON
WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor

MAP 2


GOPHER
ZWICKER
Beaver Mountain
ADAMS
Beaver Creek
Middle Mtn
SCOTTSWOOD
GORDON
WEST DOLORES
MAYREESO
EMERSON
STONER MESA
McPhee Park
Boggy
Stapleton
DOLORES
DOLORES RIVER
FAY
Sheep
Cabin
Knuckles Res
Stoner Ski Area
WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor

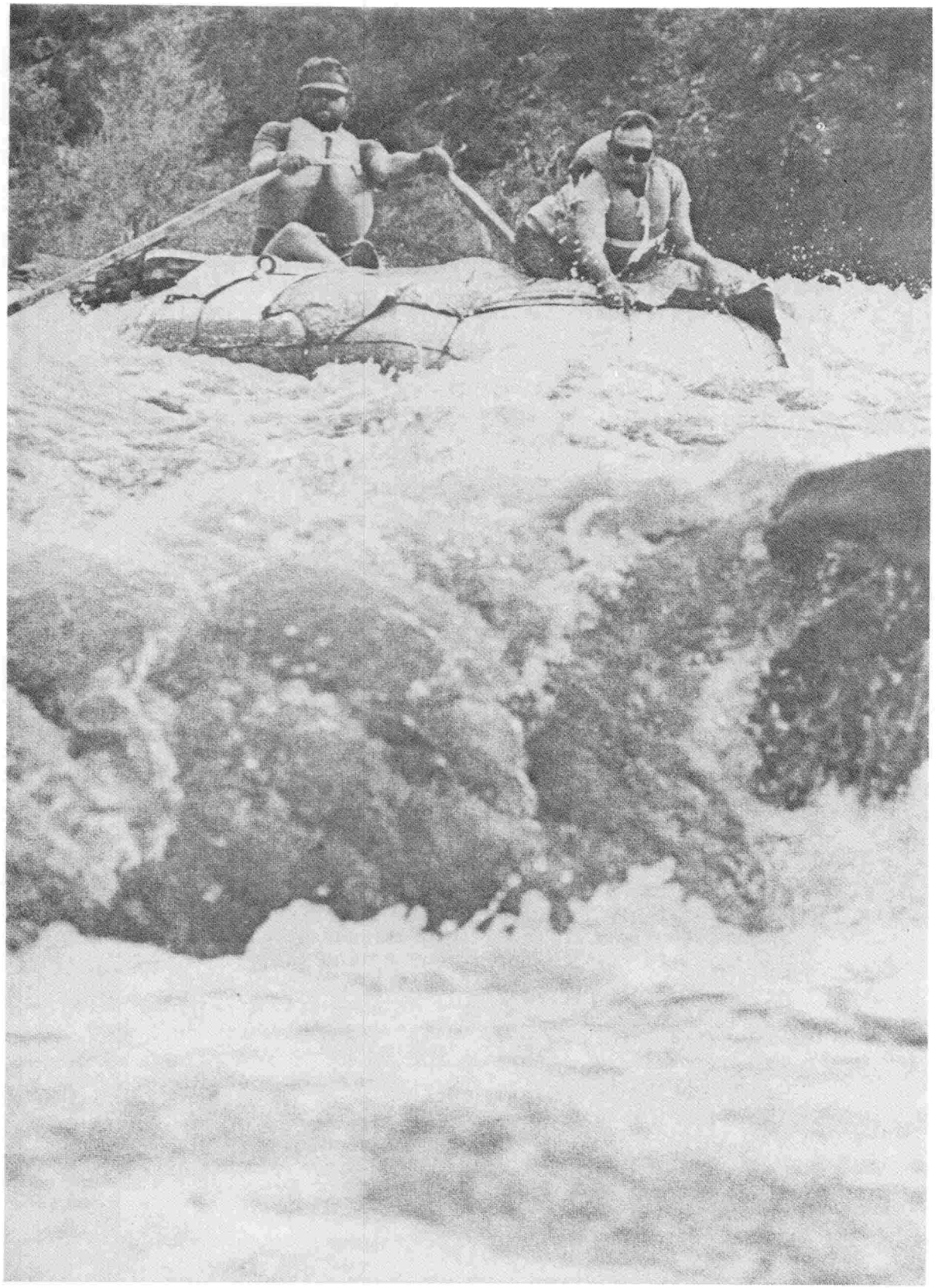
Snaggletooth Rapids is the major white-water stretch on this segment; in a run of 400 yards, the river drops approximately 20 feet through channel irregularly studded with boulders that have broken away from the canyon wall above. It is a difficult, challenging rapid, no matter what the riverflow, and is more often portaged than floated. The Dolores moves briskly from here on for a number of miles (4 to 7 mph at 2,000 cfs); below Snaggletooth is a demanding, intermittent sequence of lesser rapids, all of them requiring tricky, technical maneuvering.

Dolores Canyon remains deep until 5 miles below Horseshoe Bend; the walls and slopes then gradually taper downward until the rim is but 600 feet above the river. Scenic quality along this entire stretch is high, especially because of the stark, dramatic, and varied geology. Wildlife is typical of the region, but more concentrated along the river because of the generally arid land bordering the Dolores. Mule deer, coyotes, songbirds, waterfowl, and raptors are commonly seen on spring river trips. A number of archeologic sites have been inventoried along this subsegment, including a cliff dwelling tucked beneath a rock outcrop near the tip of Mountain Sheep Point.

Downstream from Bradfield Ranch, traces of ranching activity including cattle, fences, sheds, and corrals are evident for about 4 miles. A powerline is intermittently visible on the skyline of the west canyon rim. It crosses the river about 9 miles downstream of Bradfield Ranch. Further down, the town of Dove Creek has a water pumping plant on the river's west bank. From Horseshoe Bend on, signs of uranium mining activity appear sporadically on the high canyon rims.

3) Disappointment Creek to the bridge at Little Gypsum Valley (20 Miles) - This is a varied subsegment, beginning with a narrow valley, pinching in to a tight canyon, and finally opening out into a broad, pastoral valley.

The stretch from Disappointment Creek to below Poverty Flats is a narrow valley rolling away to hills and mesas on either side. Sandstone walls still intermittently line the river, but their color pales from red to tan; vegetation is more sparse. The small settlement of Slick Rock lies near the midpoint of this stretch; here the lands above shore are moderately developed by Western standards. This is a historic uranium mining area; signs of substantial activity are evident on hillsides and escarpments at Slick Rock. Three bridges span the river, one of them for State Highway 141, the only paved road on this entire 105-mile segment. In addition, there is a post office-cafe-gas station, a natural gas compressor plant, the remains



A raft drops into the **upper** end of Snaggletooth Rapids in Dolores Canyon. May 1975.

of a uranium ore concentration plant, plus cabins, sheds, trailers, and rusted car bodies and other debris. Alfalfa fields dot the valley bottoms.

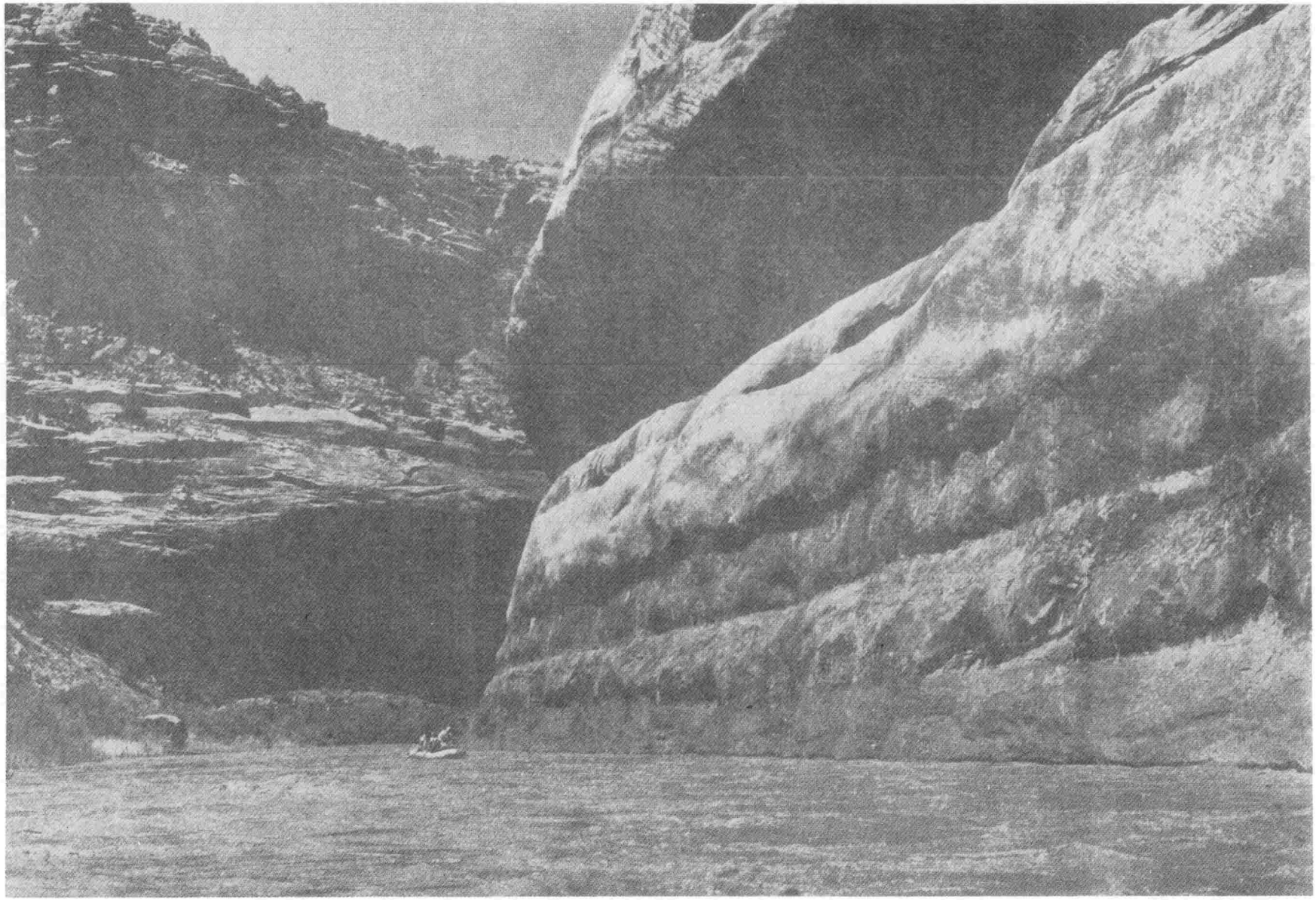
Riverflow here decreases to 2 to 3 mph at 2,000 cfs, and from here on heavy silt loads from the erosive soils of the Disappointment Creek drainage degrade water quality. A few road fills encroach on the river near Slick Rock.

Two miles below Poverty Flats, the Dolores slides abruptly into a 6-mile long scenic, red-walled canyon with many striking cliffs, buttresses, and intricate and irregular sandstone facets. The rust color of the rock contrasts sharply with the green of the vegetation. Tamarisk, cottonwoods, and box elder grow near the shore; pinon and juniper further back. No intrusions are visible from the river along this reach.

Below comes another sharp visual contrast as the Dolores meanders into Gypsum Valley, a broad, pastoral area of relaxed, rolling scenery and a distant vista west to the snowcrested La Sal Range, over 20 miles away in Utah. Large cottonwoods line the river and ranching and mining activity dominate the valley. An improved county road parallels the river on the bank for several miles. There are several petroglyph sites of archeological interest in this valley.

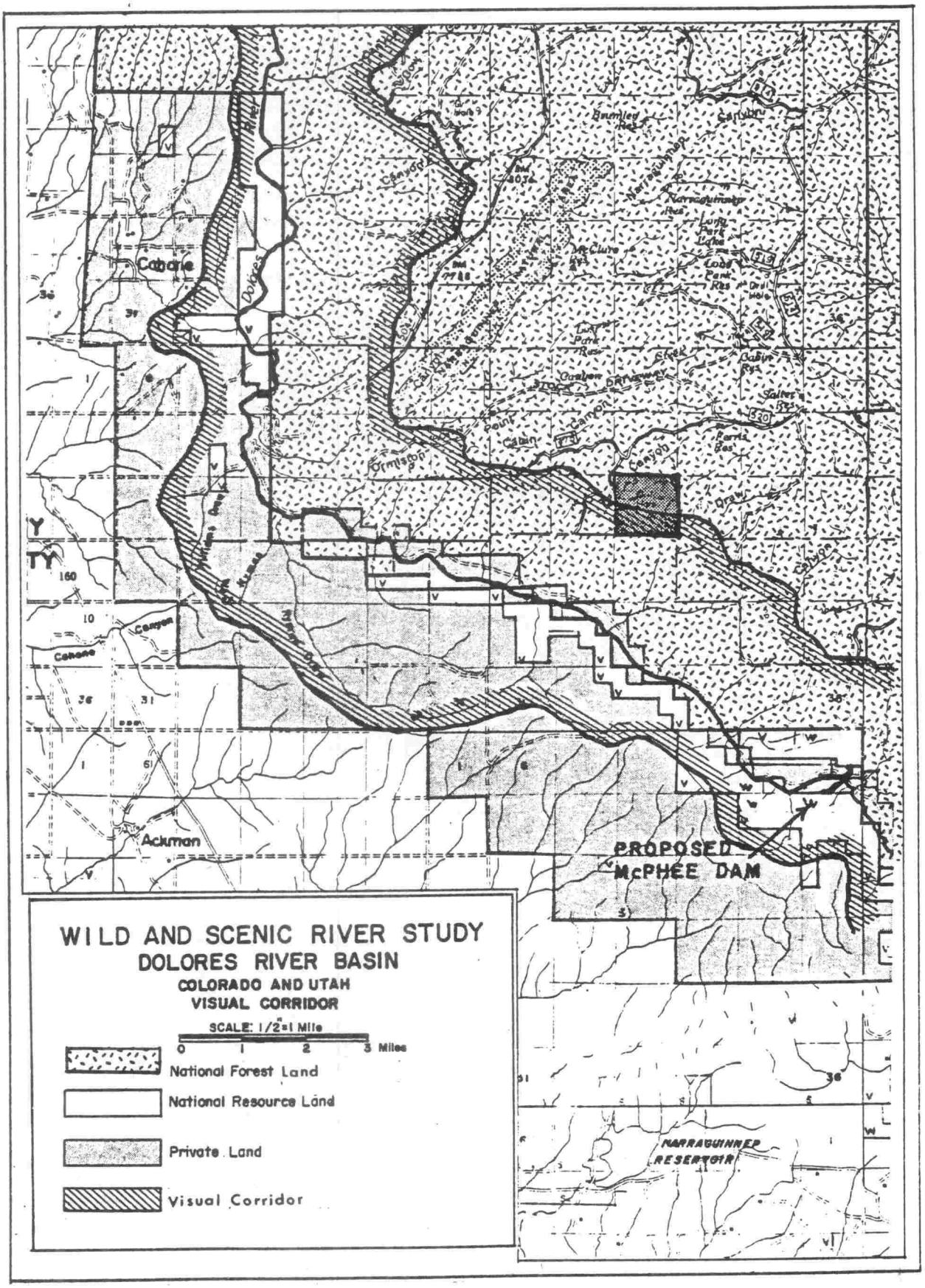
4) Slick Rock Canyon (33 Miles) - Beyond Gypsum Valley, the Dolores makes an S-shaped bend and drops suddenly into a massive, narrow, twisting, red sandstone gorge. Slick Rock Canyon is usually considered the most scenic on the entire river; partisans also note that it is one of the outstanding reaches of desert river canyon left in the Southwest - reminiscent of the now flooded Glen Canyon on the Colorado River - even though it can be floated for only a short time each year. Depth from river to rim varies between 600 and 1,800 feet, and the rims are often only one-quarter mile or less apart. The red walls may be streaked with blue-black "desert varnish," smooth and sheer, or cracked and fractured into arrays of fantastic shapes and color. Tamarisk is often thick along the shore; beyond are thinner stands of pinon and juniper wherever the terrain is level enough and the soil adequate for them to take root. At one point, the river flows under a large, arching overhang; at many others, it bends, loops, twists, and doubles so that all sense of direction, distance, and time is lost. Three major side canyons mysteriously beckon, offering opportunities for rewarding hikes.

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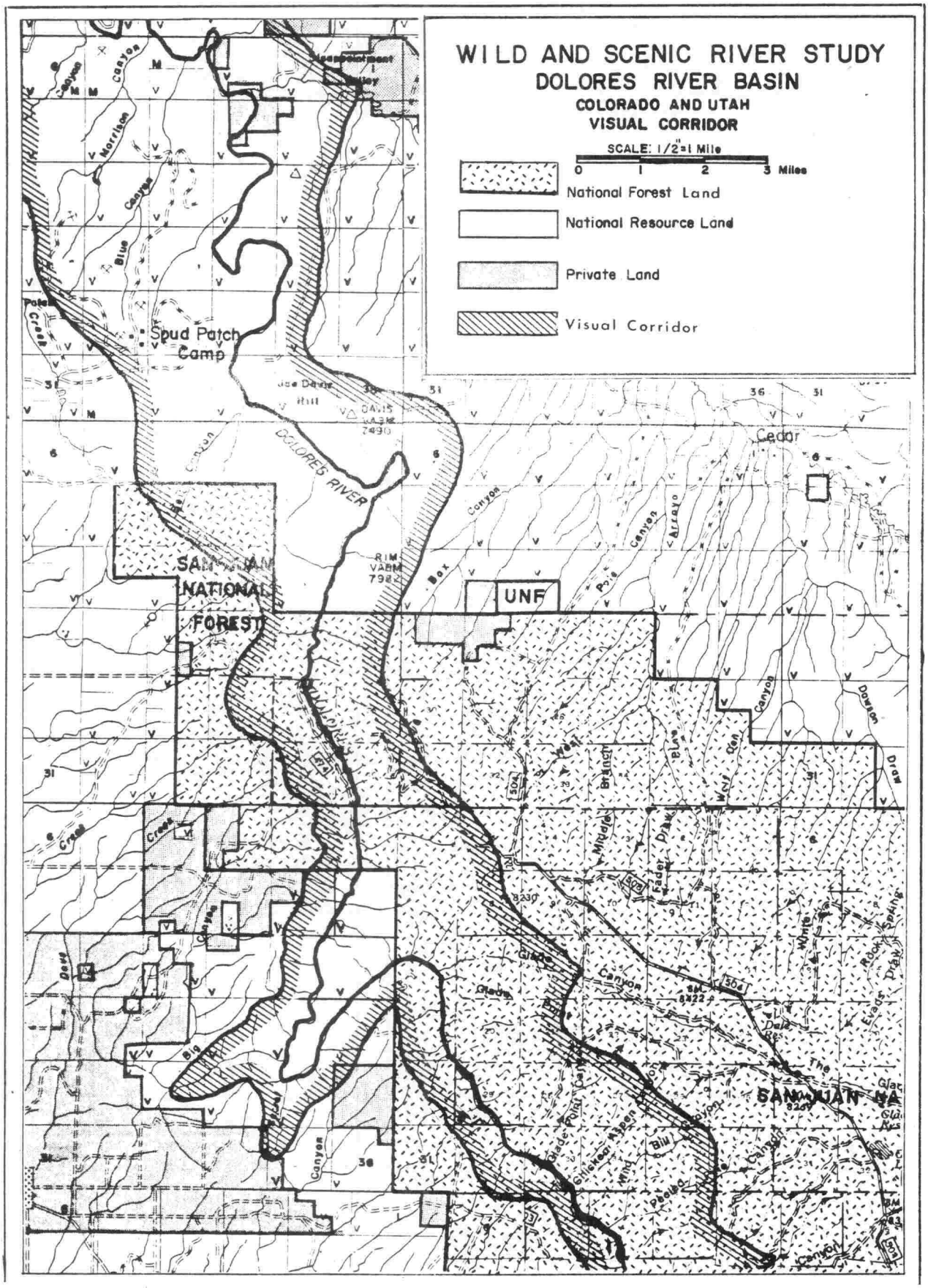


The sheer walls of Slick Rock Canyon dwarf raft and river. May 1975.

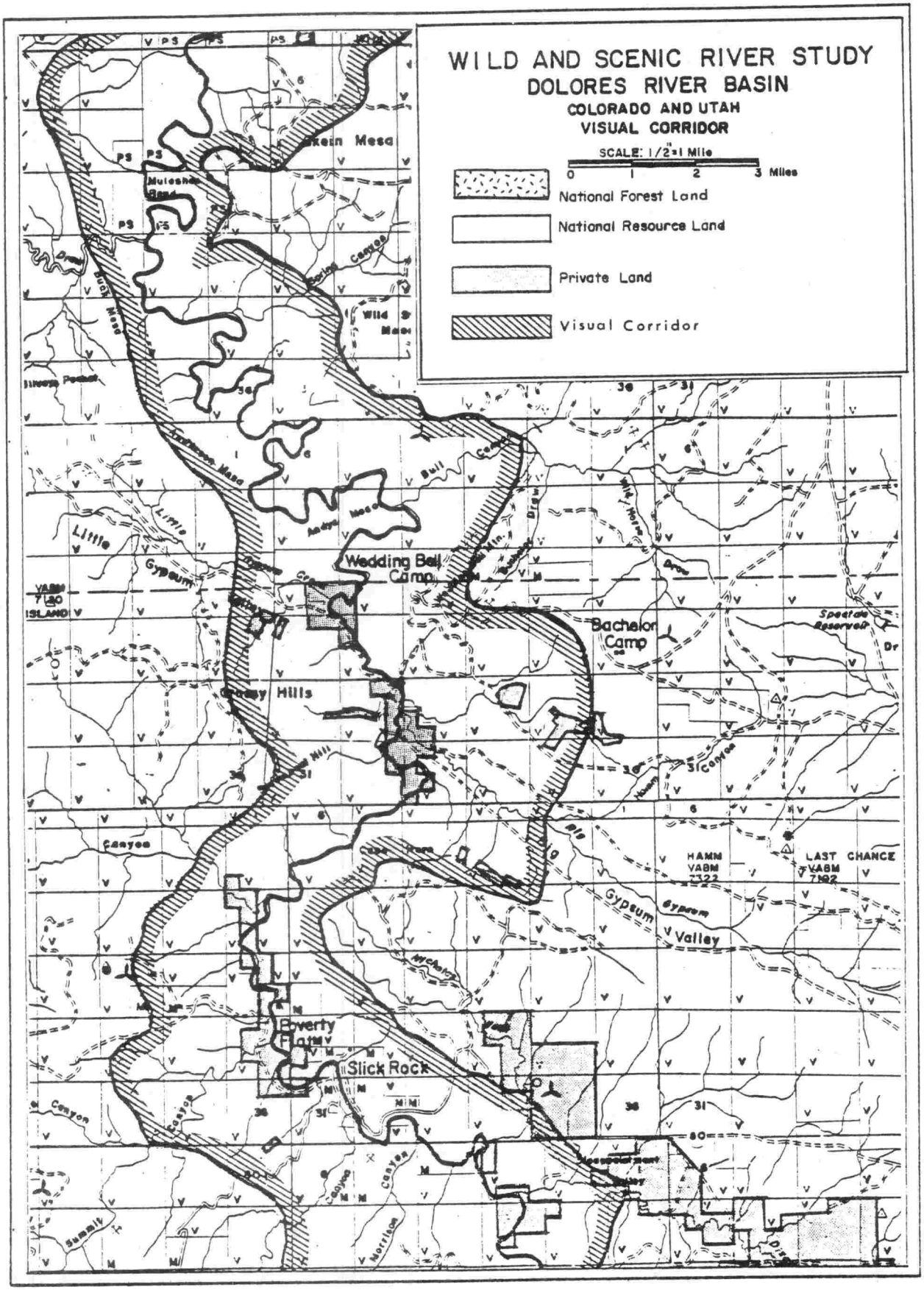
MAP 3


Cahone
Dolores River
Bradley Res
Carlton
Narraguinnep Res
Lone Park Res
McClure Res
Cabin Res
Salters Res
Ormiston
Ormiston Gulch
Canyon
Arriola Gulch
Arriola
PROPOSED
McPHEE DAM
NARRAGUINNEP
RESERVOIR
WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor

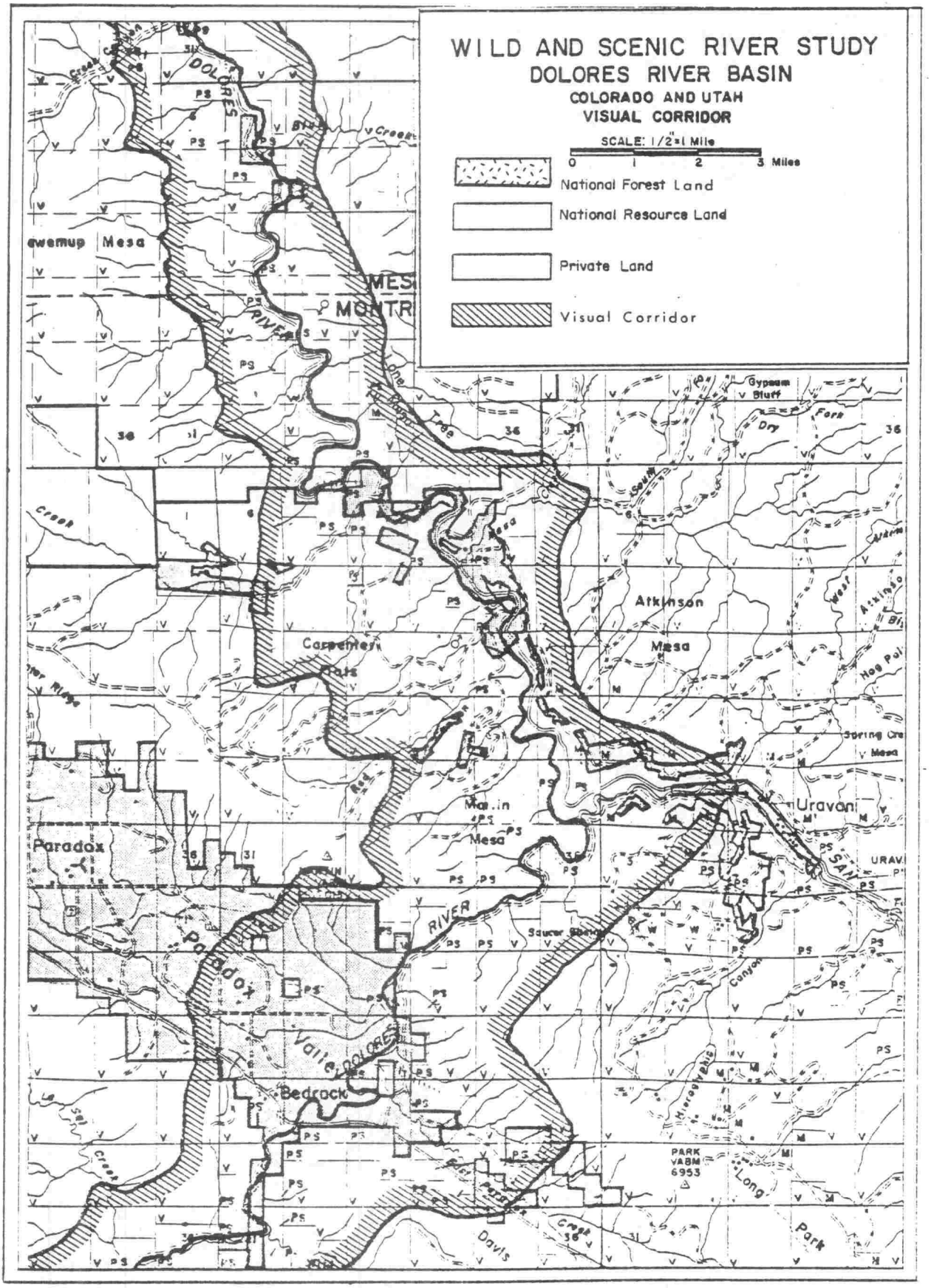
MAP 4


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor
Spud Patch Camp
DOLORES RIVER
SAN JUAN NATIONAL FOREST
UNF
Cedar
SAN JUAN RA

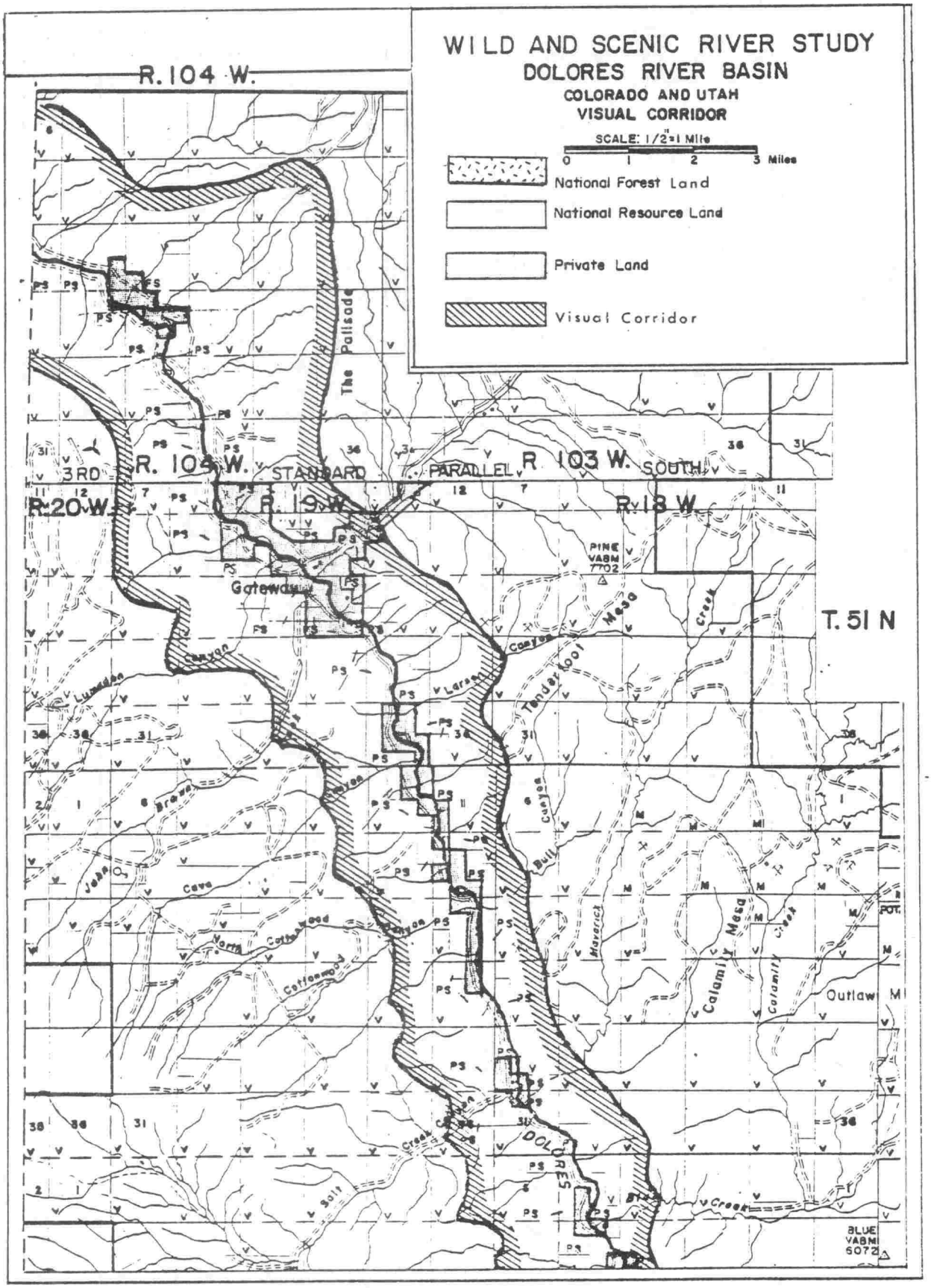
MAP 5


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor
Wedding Bell Camp
Bachelor Camp
Poverty Flats
Slick Rock
Gypsum Valley
HAMM VABM 7322
LAST CHANCE VABM 7192
Gypsum Hills
Little Gypsum
Bull Canyon
Wild Horse Mesa
Spectacle Reservoir
Summit
Morrison

MAP 6


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor
Paradox
Bedrock
Uravan
Atkinson Mesa
Carpenter Flats
Mesa
DOLORES RIVER
Paradox Valley
Gypsum Bluff
Dry Fork
Spring Creek Mesa
Saucer Basin
Long Park
Davis Creek
PARK
VABM
6953

MAP 7


WILD AND SCENIC RIVER STUDY
DOLORES RIVER BASIN
COLORADO AND UTAH
VISUAL CORRIDOR
SCALE: 1/2"=1 Mile
0 1 2 3 Miles
National Forest Land
National Resource Land
Private Land
Visual Corridor
R. 104 W.
3RD STANDARD PARALLEL SOUTH
R. 105 W.
R. 103 W.
R. 20 W.
R. 19 W.
R. 18 W.
T. 51 N
The Palisade
Gateway
PINE
VABM
7702
Tenderfoot Mesa
Creek
Canyon
Lumsden
Larson
Bull
Harvest
Calamity Mesa
Calamity Creek
Outlaw
POT.
Jobb
Cave
North
Cottonwood
DOLORES
Salt
Creek
BLUE
VABM
5072

Spring riverflow in Slick Rock Canyon is slow - only 2 to 3 mph at 2,000 cfs - with no rapids, only an occasional riffle, one chute, and many long, lazy stretches. A dirt road parallels the Dolores on the west for 3.5 miles upstream from Bedrock; otherwise Slick Rock Canyon is wild and inaccessible by vehicle of any kind.

Maps 3, 4, 5, and 6 show the location and extent of the visual corridor in this segment.

Segment IV - San Miguel River Confluence to the Colorado-Utah State Line (39 Miles)

The lowest study segment of the Dolores breaks naturally into two reaches - one long, the second comparatively short.

1) From the San Miguel-Dolores confluence for 31 miles downstream to the State Highway 141 bridge at the town of Gateway, the river flows through another varied sequence of landforms. The first 4 miles drop through a deep, scenic, red sandstone canyon with several brisk rapids; the remainder is a broader valley - U-shaped and known either as Red or Mesa Canyon. By comparison, this is a heavily developed portion of the river. The upper reaches have seen scattered mining activity - both for gold and for uranium; access roads, prospects, tipples, and powerlines are all visible from the river though generally dwarfed by the natural landforms. The lower two-thirds of this reach was heavily homesteaded and is now mostly farm and/or ranch along the river bottoms. Colorado Highway 141 parallels the Dolores for 29 of these miles.

2) From Gateway to the Colorado-Utah line - 8 miles - the river flows through a broad, arid valley; red sandstone cliffs bound it nearby on the west, but to the east they are more distant. Tall, twisted cottonwoods dominate parts of the shoreline; beyond is a combination of sage and salt desert shrubs. Streamflow is moderate (3 to 5 mph at 2,000 cfs), with several easy rapids followed by "The Narrows" at the State Line. The latter is the longest rapid on the river and is fully as challenging as Snaggletooth. Near Gateway, a high, narrow butte - the Palisade (or sometimes "Knife Edge") - is the dominant landform. From the State Line, the Dolores flows another 22.5 miles before emptying into the Colorado River near Cisco, Utah.

   Dirt roads used in local ranch operations parallel this reach of the river on both sides. Range cattle, fences, and occasional sheds are also visible from the river. Maps 6 and 7 show the location and extent of the visual corridor of this segment.



The rapid known as "The Narrows" begins right at the Colorado-Utah state line. May 1975.

B. Geology and Physiography

Sedimentary rocks exposed in the Dolores River Canyon range from Upper Devonian to Late Cretaceous in age. Because the layers dip gently westward from the San Juan Mountains, many of the same formations are exposed throughout the length of the canyon. The Cretaceous Burro Canyon Formation, Dakota sandstone, and Mancos shale underlie the surface of the mesas and canyon rims and can be seen as outcrops along the West Dolores and in Slick Rock Canyon. These locations are 60 air miles apart and have an elevation difference of 2,000 feet.

All told, the rock sequence exposed along the river corridor covers a time span of 250 million years. The oldest are the limestones and early sandstones of the Pennsylvanian period; the youngest are the tuffs and breccias formed during the last burst of tertiary volcanism - perhaps 50 million years ago. Neither Canyonlands, Zion, nor Bryce Canyon National Park has rock exposures that represent such a long span of time.

The following review touches on some major geologic and physiographic features of the Dolores River corridor:

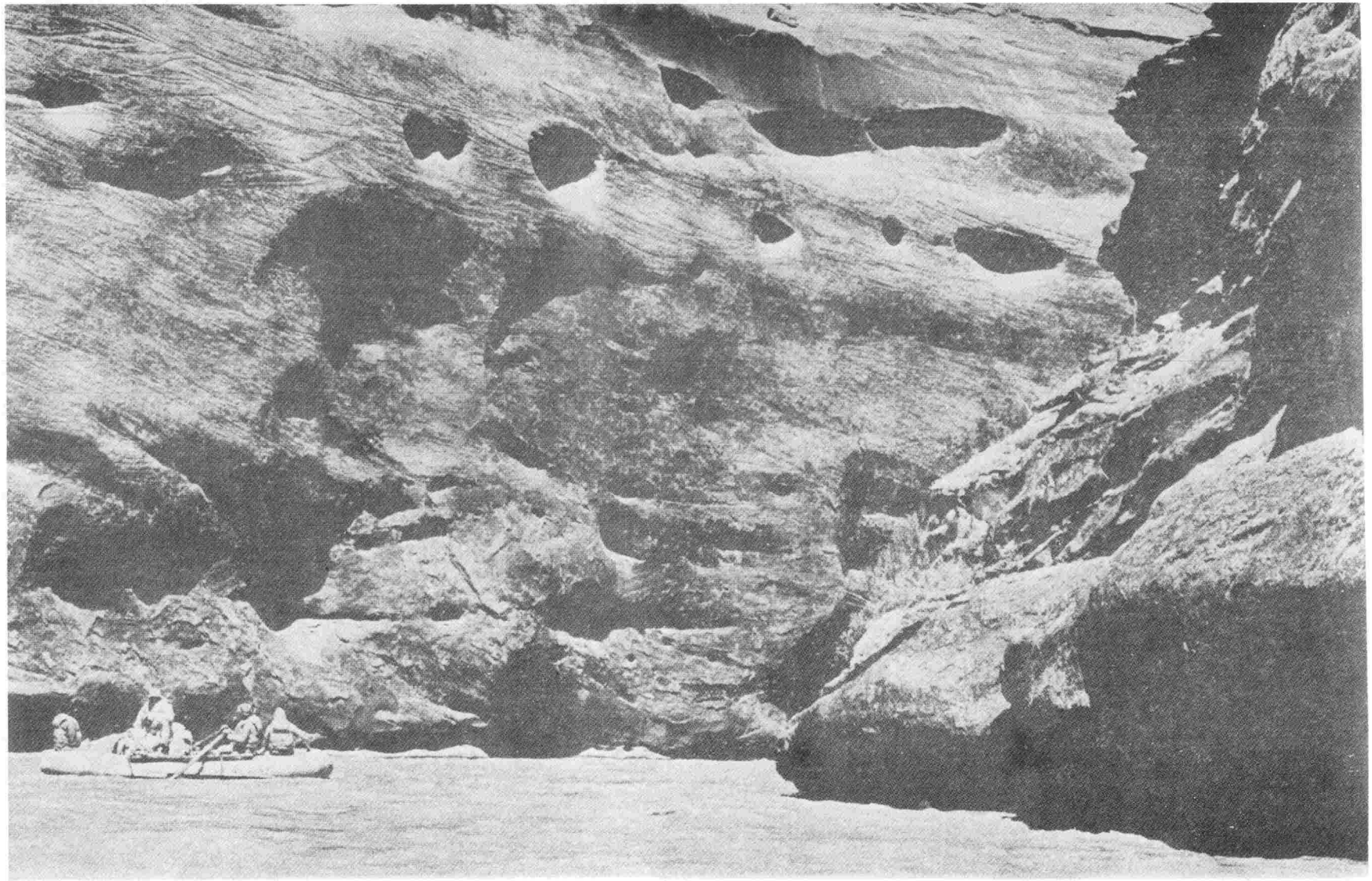
Segment I - Main Stem, Headwaters

From its source above timberline along Sliderock Ridge, the main stem of the Dolores drops approximately 3,000 feet in only 15 miles. Though the relief is extreme, this is not a dramatic mountain area as are many others in the San Juans. Where the Dolores joins State Highway 145, the corridor is about 1 mile wide. It is rolling meadowland rising steeply to conifer-covered mountains, with a view north toward the Wilson Mountains Primitive Area. Below this point, the river drops quickly into a narrow, U-shaped canyon.

The upper end of the headwaters reach of the Dolores is underlain by sedimentary rocks intruded by stocks, laccoliths, dikes, and sills. Near Rico, the dominant structural feature is the Rico Dome, roughly circular and up to 15 miles across; here Precambrian sedimentary and metamorphic rocks were intruded by volcanic stocks and sills and finally folded by faulting.

Segment II - West Dolores

The West Dolores heads among two of the westernmost volcanic landmarks in the San Juan Mountains - the Wilson and Dolores Peak stocks. Navajo Basin is a deep, mile-wide glacial bowl gouged from the west flank of the former, its nearly vertical walls rising as much as 2,100 feet from floor to rim or summit. From this source, the river



The Dolores River ranks high in geologic interest. Here differential erosion shows in a wall of Entrada sandstone in Slick Rock Canyon. Scour marks show height and power of water in flood times of ages past.
May 1975

drops close to a vertical mile during its 35-mile course; for 27 of those miles it flows through a U-shaped valley ranging from 1,200 to 1,500 feet deep and 1 to 2 miles wide.

Six sedimentary formations are exposed along the West Dolores and its tributaries - the oldest, the Permian Cutler Formation (deposited about 275 million years ago); the youngest, the Late Jurrasic Morrison Formation (laid down approximately 150 million years ago). In the headwaters area, thick zones of Mancos shale and Telluride conglomerate are stacked over these earlier strata; all these layers were intruded by tertiary volcanic stocks, dikes, and sills. Below the headwaters area of the West Dolores, intrusives of the same general age underlie Black Mesa and the southern slopes of Groundhog Mountain.

Segments III and IV - McPhee to State Line (Excluding Paradox Valley)

After flowing generally southwest out of the San Juans, the river makes an abrupt bend near the town of Dolores and angles north-northwesterly toward Utah. A sequence of five canyons is the dominant physiographic feature of this 150-mile reach of the river; the canyons are separated by a series of structural valleys alined along local synclines and anticlines. Especially in the two largest canyons, the Dolores has cut through 2,000 feet of relatively flat-lying sedimentary strata from the Cutler Formation to the Early Cretaceous Dakota sandstone (deposited about 130 million years ago). In so doing, the river has exposed an imposing geologic clock - a record of what happened in this region over nearly incomprehensible time periods.

Dolores Canyon (on the upper part of Segment III, where the foothills of the San Juans merge with the high desert) reaches a maximum depth of 2,300 feet not far below Snaggletooth rapids. Its width varies from 3/4 to 1-1/2 miles; its walls are usually either steep slopes or stairstepped. Slick Rock Canyon (on the lower part of Segment III in the desert province) is never deeper than 1,800 feet but is very narrow - only 1/4 to 3/4 mile across - often with nearly vertical walls. The three other canyons studied are less dramatic in relief - a small canyon between Poverty Flats and Gypsum Valley; a short, tight canyon at and below the confluence with the San Miguel; and Red Canyon (or Mesa Canyon) which extends from 4 miles below the confluence to Gateway.

Structural features along these two segments are dominated by a series of northwest-trending synclines and anticlines - the most prominent of these lying along Disappointment Creek, Gypsum Valley, and Paradox Valley.

Exhibit 3 is a cutaway view showing the strata exposed along the lower portions of Dolores Canyon at the Dolores-San Miguel County line. A list of the geologic strata found in the river corridor appears in Appendix I of this report.

C. Soils

Though seven distinct soil types are present in the Dolores River corridor, by far the most prominent is the rock outcrop-shallow soil complex of the canyons. This type dominates all the way from the McPhee Dam area, downstream to the Colorado-Utah State Line. Above McPhee, three mountain soil types border the river; a combination of dark soils with light subsurface horizons is the most common.

The rock outcrop-shallow soil type of the canyons has a low water-holding capacity (i.e., runoff is rapid and erosion can be severe); it yields from less than 0.2 to 1.0 acre-foot of sediment per square mile per year. Another 45 percent of this type is bare rock, mainly sandstone. Another 49 percent is thin soil, loamy and light colored on the surface, overlying sandstone. Because of the many steep slopes and its general shallowness, this is seldom an economically productive type. Where it lies in wide valleys, a few irrigated hayfields occur. Otherwise, the dominant ground cover is pinon-juniper at lower elevations and oakbrush, serviceberry, and grasses higher up.

The predominant dark-colored mountain soil type is high in organic content, deep, and neutral to acid. It is economically productive, but the short growing season at these higher elevations generally limits crops to hay and pasture. Spruce, fir, ponderosa pine, oakbrush, aspen, and grasses grow abundantly on this type.

Table II-1 in Chapter II gives an overview of the soils of the Dolores River corridor, relating them to both the physiography and climate of the larger basin.

D. Vegetation

Vegetation along the Dolores River is generally typical of the five Western life zones through which it flows. However, two features combine to produce distinctive local plant communities within those zones. First, on the stream terraces, water from the river and

related aquifers permits a greater (and slightly different) variety of growth than that found where rainfall and groundwater are the only sources. Secondly, the abundance of north and south facing slopes creates situations where there are visible vegetative differences from one side of the river to the other. Particularly in the upper reaches of Segment III in the Dolores Canyon, these factors make for the simultaneous presence of communities normally not found so closely and intricately intermingled.

Information on Plants of the Dolores River Basin, Colorado, Which May be Candidates for Threatened or Endangered Listing by the Department of the Interior and Candidates for Rare and Endangered Status by the State of Colorado

The Federal Register 40(127, V), page 27847, (Appendix H-27 of this report) contains a list of 23 endangered and 17 threatened candidate plant species in Colorado, as determined by the Smithsonian Institute.

Appendix H of this report (page H-16, et seq.) lists several plant genera for which species are indicated in the Federal Register notice, to wit: Senecio, Arabis, Lesquerella, Stellaria, Astragalus, Oxytropis, Trifolium, Phacelia, Eriogonum, Aquilegia, Mertensia, and Draba. It remains to be determined whether the species listed in the Federal Register and especially those of the above-noted genera occur within the Dolores River Basin and the wild and scenic river study area.

Also, Carex microptera is mentioned in Appendix H, and Carex microptera var. crassinervia is in the Federal Register notice. The presence or absence of the variety in the basin and study area remains to be determined.

According to Dr. William A. Weber, University of Colorado Museum, Boulder, Colorado, who has prepared a draft list of rare and endangered plants of Colorado, Adiantum capillus-veneris and Bothriochloa barbinodis are found in the Dolores Basin, and Mentzelia pterosperma and Mimulus eastwoodiae are likely to be in the basin. Dr. Weber has indicated that the cliffs of the Dolores River area are not well known botanically because of their poor accessibility on foot. Thus, the area might have significant "hanging gardens" containing important floral elements.

Segment I

Vegetation along the main stem from its headwaters to Rico is typically alpine and subalpine. Along Sliderock Ridge, fingers of Engelmann spruce and subalpine fir reach upward along the river to tree limit. Scrub willow is also common, especially along the river and in wetter areas. Below the headwaters, growth is about

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half forest and half open parks; aspen becomes more common. From Snow Spur Creek down to Rico, the Dolores flows through a narrow bottom, mostly meadow, with occasional clumps of conifers. Other typical vegetation is grasses, sedges, and mountain wild flowers.

Segment II

The 35-mile West Dolores takes in the greatest vegetative diversity of the four study segments. Its headwaters, high in Navajo Basin, appear almost above the alpine tundra zone; at 13,000 feet there is little growing, save lichen on rock. As one descends toward Navajo Lake, diminutive grasses, sedges, and flora become more common in the sandy soils between boulders. From these elevations down to Dunton, growth along the West Dolores is generally similar to that of the main stem above Rico, but below Dunton (elevation about 8900 feet), species typical of the montane zone begin to dominate. Douglas-fir, ponderosa pine, white fir, and cottonwoods all appear, as do bitterbrush, mutton grass, junegrass, needlegrass, serviceberry, mountain mahogany, and other grasses and shrubs. At the mouth of the West Dolores (elevation 7380 feet), vegetation includes cottonwood, aspen, willow, alder, wildrose, bindweed, virgins bower, fireweed, grasses, and sedges.

All told, this river corridor traverses four distinct life zones.

Segment III

The Dolores River from the McPhee Damsite to Bedrock takes in only two life zones - foothills and Upper Sonoran - with lower remnants of montane communities on some of the high canyon slopes. Elevation at McPhee is approximately 6700 feet; at Bedrock it is 4980 feet.

The Dolores Canyon below Bradfield Ranch is one of the least disturbed areas studied. Here vegetation comes close to reflecting that of primitive conditions. In a few areas, livestock use has modified the natural ecosystems. In the upper portion of the canyon, imposing stands of virgin ponderosa pine, many of them over 120 feet tall, dominate the stream terrace, with an understory of oakbrush, shrubs, and grasses. Lower in Dolores Canyon, the ponderosa thin out, giving way to cottonwoods and an occasional box elder. Back from the stream terrace, juniper-pinon woodland is by far the most common type.

From Disappointment Creek through to the end of this segment, Upper Sonoran vegetation prevails. The first streamside tangles of tamarisk appear, growing progressively more dense as elevations drop. Cottonwoods remain the dominant tree, especially notable in large groves in Gypsum Valley. In Slick Rock Canyon, juniper and pinon

are the only trees of any significance; these stubby, often gnarled trees appear to grow wherever there is enouch soil for seeds to take root, sometimes in improbable niches and on ledges far up the face of cliffs. Understory is a varying combination of grasses, sage, some browse shrubs, cactus, yucca, etc.

Segment IV

From the confluence of the San Miguel to the State Line, the basic Upper Sonoran communities continue, with an increase in irrigated cropland above Gateway and in salt desert shrub cover below. Large cottonwood groves dominate the shoreline near Gateway. Common plants include pinon pine, juniper, prickly pear, greasewood, and shadscale.

A comprehensive list of the plants found in the Dolores corridor appears in Appendix H of this report.

E. Fish and Wildlife

Fish and wildlife in the Dolores River corridor are generally abundant and varied. Species common to all five of the river's life zones may be found. Some, like the mule deer, mountain lion, beaver, and coyote, appear in all the Dolores' environments; others, like the bighorn sheep, ptarmigan, various lizards, and trout, are confined to more specialized zones.

1. Fish

Historically, the Dolores was once an excellent trout fishery from its headwaters to Slick Rock and a notable catfish fishery below. However, in the last 90 years, mining, water diversion, road construction, and channelizing have decimated significant parts of the river.

Segment I

The main stem to Rico is a good fishery though, after the river joins State Highway 145, spills and slumps from road construction destroy some of the habitat. Species of trout caught here are cutthroat, brook, brown, and rainbow. The Colorado Division of Wildlife stocks this segment with trout to supplement natural reproduction.

Segment II

From Navajo Lake to Dunton, the West Dolores supports an excellent trout fishery; stream conditions are conducive to natural reproduction, and cutthroat, rainbow, and brook trout are all present.

Below Dunton, the fishery is good all the way to the mouth. Brown trout become more common at lower elevations. Some of the private lands below Dunton are closed to fishing. The Colorado Division of Wildlife currently stocks rainbow and cutthroat trout in both Navajo Lake and the West Dolores. About 5,000 pounds of trout are stocked yearly; they average three to four per pound.

Segment III

The fishery from the McPhee Damsite to Bedrock is now marginal, at best, due to diversions of the Montezuma Valley Irrigation Company.

Despite its seasonal depletion, this segment of the Dolores does support fish year round in its deeper holes. A 1973-1974 Colorado Division of Wildlife survey of the waters between McPhee and Slick Rock turned up the following: black bullhead, green sunfish, brassy and flathead minnow, dace, flannelmouth sucker, roundtail chub, red shiner, and carp. Brown trout are present, and until recently channel catfish were abundant in the Dolores from Slick Rock to Bedrock.

Development of the Dolores Project, with provisions of a year-long flow from McPhee Dam, will restore the fishery along this segment.

Segment IV

Historically, a warm water fishery existed in this segment of the river. The river was considered habitat for three endangered fish species of the Upper Colorado River Basin - the humpback sucker, the bonytail chub, and the Colorado squawfish. In addition, truckloads of channel catfish were taken from the river at Gateway for transplanting elsewhere in Western Colorado. However, the rise of the uranium-vanadium industry near Uravan in the late 1950's virtually destroyed the fishery on the lower San Miguel and on the Dolores, downstream from their confluence. Discharges of radioactive matter, toxic metals, and ammonia from ore processing facilities triggered this decline; these sources are now being progressively controlled so that fish and other aquatic life will return to the affected waters.

2. Wildlife

As noted in Chapter II, the entire Dolores River Basin is an excellent wildlife area. The river corridor reflects this, often in an intensified way, since the streamflow tends to create a richer "ribbon of life" (riparian habitat) along the river terrace and also serves many species directly as a drinking source.

Wildlife species along the four study segments are generally typical of the five life zones found here. A complete inventory of animals and their current status appears in Appendix H of this report. This inventory includes one mammal, the marten, and two bird species, the golden eagle and ferruginous hawk. The Department of the Interior has been requested to consider whether they are threatened species. Such a review is now underway. Also, two of the bird species in the inventory--the southern bald eagle and the peregrine falcon--are on the Department of the Interior's endangered species list.

Two of the three known colonies of a butterfly, the nokomis Fritillary (Speyeria nokomis nokomis), are found in Colorado. The third colony is in Utah. This butterfly is a candidate for the Department's endangered fauna list. These two colonies occur within the Dolores River Basin near two tributaries of the Dolores River: above West Creek in a series of springs in Unaweep Canyon (Mesa County); and adjacent to Paradox Creek in Montrose County. The species may be found in the study area, but this has not yet been determined.

The following review highlights some of the more important and/or unique wildlife populations, communities, and uses in the four study segments.

Segments I and II

The upper main stem and the West Dolores serve as spring, summer, and fall habitats for deer, elk, bighorn sheep, bear, and smaller animals. Important elk calving areas lie along the West Dolores and several of its tributaries; marginal elk winter range (usable in low snowfall years only) is present along the lower part of this segment and also on Stoner Creek near Dunton.

Segment III

From the McPhee Damsite downstream to Disappointment Creek, the Dolores flows through plant communities of the foothills zone.

This is an area of critical winter range both for deer and elk, and six heavily used elk migration routes cross the river between the town of Dolores and the Bradfield Ranch. Black bears appear to concentrate near Dolores and from Bradfield Ranch to the Dove Creek pumping plant. Principal mountain lion areas are near Dolores and 7 miles upstream from Slick Rock. Golden eagle aeries have been noted in Dolores Canyon.

Below Disappointment Creek, the Upper Sonoran communities of the high desert take over, and the variety and number of species decreases in these less supportive ecosystems. Here the riparian area is of increased importance. Mule deer are often year-round residents of the river bottoms and adjacent lands, seldom migrating to higher elevations in the warm months. Mountain lions prey on these deer and exist in stable numbers; numerous abandoned mines provide good denning sites. Fur bearers and nongame species occur in this area.

Segment IV

The Upper Sonoran zone continues below the confluence with the San Miguel, and wildlife communities remain generally similar to those immediately upstream. Near Gateway, large cottonwood groves are used by nesting great blue herons. Bald eagles winter here.

This is by no means an exhaustive review of the wildlife of the Dolores River corridor. Rafting and/or hiking Segments III or IV, for example, are almost invariably rich wildlife experiences because numerous wildlife species are attracted to the river corridor.

F. Waterflow

Natural flow in the Dolores River is erratic, with a high spring runoff followed by moderate to low summer flows and low discharges in fall and winter. Stream-gaging records at Dolores (USGS No. 1665) show that about 33 percent of the total annual runoff occurs during May, the month of largest runoff, and about 72 percent occurs during the 3-month period April through June. Daily climatic variations often cause significant short-term flow variations - a warm spell in the spring will accelerate runoff, while a cold snap will slow it; likewise, intense summer showers can sometimes cause flash flooding, especially on the lower segments where soils hold water poorly.

Segment I

The main stem above Rico is narrow, shallow, and not floatable. The stream gradient here averages just under 200 feet per mile. A stream-gaging station (USGS No. 1650) is located 2 miles below Rico. The discharge at this station during May and June, the months of peak runoff, averages 470 cfs, while the discharge during July through September averages 110 cfs. The mean discharge is 130 cfs, and the average annual discharge is 95,600 acre-feet, or about 13 percent of total undepleted water supply from the Dolores River Basin.

Segment II

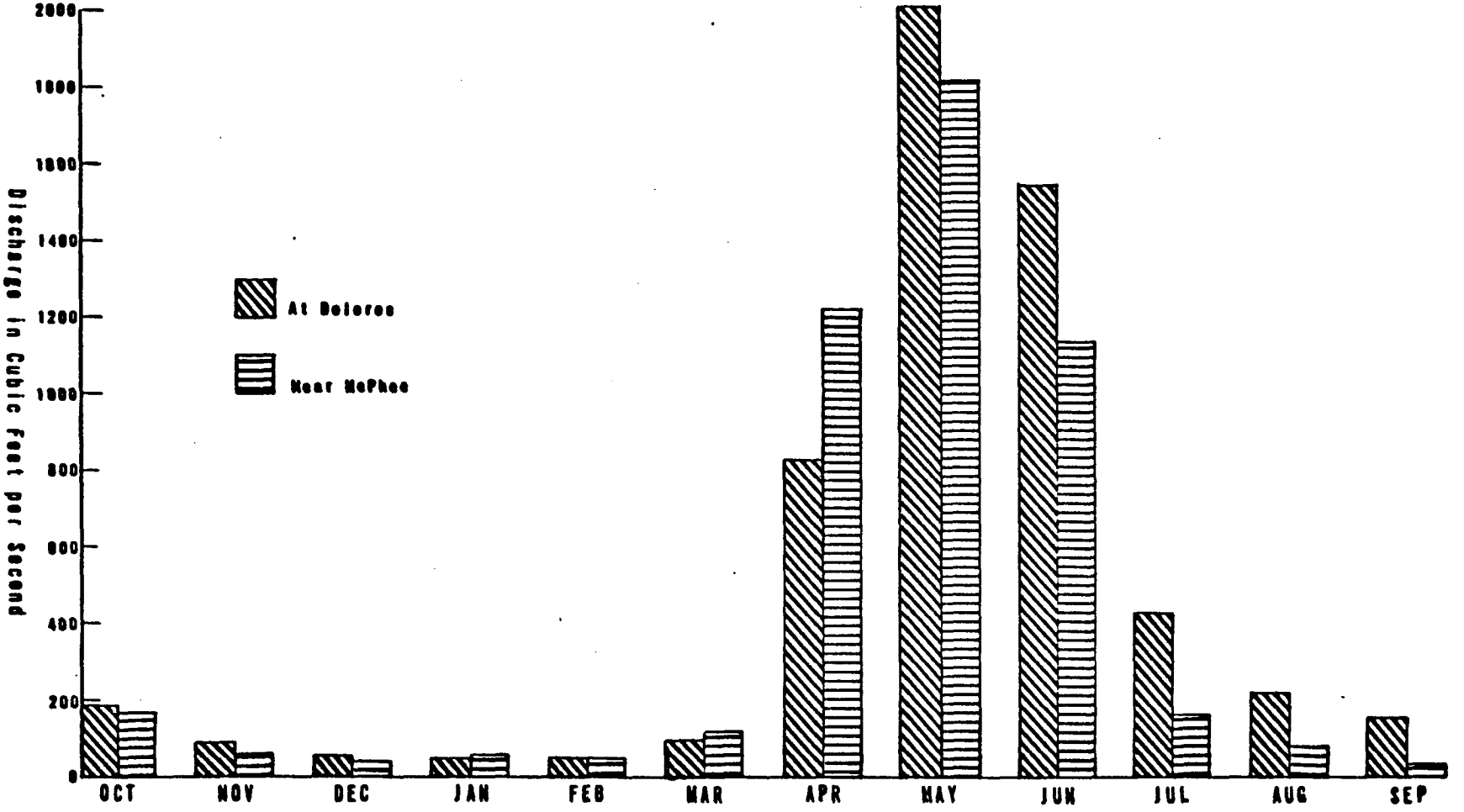
The West Dolores is larger than the upper main stem, but still not a floatable river. Stream gradient from Navajo Lake to Burro Bridge is 399 feet per mile; below, it is 67 feet per mile. A stream-gaging station (USGS No. 1660) was established and maintained near the river's mouth from 1941 to 1944. Flow during the spring runoff in this period averaged about 640 cfs. It averaged only 130 cfs during July through September. Annual discharge was about 139,200 acre-feet. These data are the best available and are believed to be very representative of the river today.

Segment III

Below the McPhee Damsite, the stream gradient decreases. From the Bradfield Ranch to Slick Rock, the river drops 24 feet per mile; from Slick Rock to Bedrock, only 11 feet per mile.

Figure 1

AVERAGE MONTHLY DISCHARGE
DOLORES RIVER
WATER YEARS 1939-1952



Flows of the Dolores River in this segment are affected by irrigation diversions made both upstream of and along this segment. Largest of these water users is the Montezuma Valley Irrigation Company (MVIC), which has absolute water rights as follows: 707.7 cfs for irrigation and 100 cfs for domestic use. In addition the Company has a conditional decree for 592.3 cfs for irrigation. The MVIC diversion point is located just below the town of Dolores and just above the beginning of this segment. The effects of these diversions are most noticeable during July through September. During May and June the irrigation requirements are relatively small while the flows are relatively large, but during July through September the irrigation requirements are relatively large and the flows are small. Figure 1 compares the Dolores River flows at Dolores (USGS No. 1665) above the MVIC diversion with flows at McPhee (USGS No. 1675) below the diversion and also shows the seasonal variation of its natural flows.

Streamflow records at McPhee are available from 1939 to 1952 and can be considered representative of existing conditions at the upper end of this segment. During May and June mean discharge was 1,480 cfs, while the mean discharge from July through September was 70 cfs. The effect of MVIC diversions on the July through September flows is apparent. The average annual discharge was 403 cfs, or 292,000 acre-feet.

This segment is the most popular white-water rafting and kayaking reach of the river, but these activities are normally possible only in May and June. Studies performed by the U. S. Bureau of Reclamation show that, on the average, launching days have occurred 13 days during the year. This is an average figure; the actual number of launching days in any one year varied from none to more than 50, depending on winter snowpack and the rate at which it melted. Launching days were counted when the flows were between 1,000 cfs and 2,500 cfs for 5 consecutive days or more. Days when flows exceeded 2,500 cfs were not counted.1/

Segment IV

From its confluence with the San Miguel, the Dolores drops almost lazily at a rate of 10 to 15 feet per mile. Waters from the San Miguel measurably increase the size of the Dolores, with an average annual discharge of 251,000 acre-feet (USGS No. 1770). Average flow of the San Miguel is 925 cfs during spring runoff and 74 cfs in January. At Gateway, the flow of the Dolores averages 2,830 cfs during spring runoff and 187 cfs in January.

1/ These days were not counted because of hazardous conditions created by flows exceeding 2,500 cfs. Management agencies cannot encourage boating use under these conditions.

G. Water Quality

A purpose of the Wild and Scenic Rivers Act is to protect the water quality of designated rivers (Section 1(b)). The Act also specifies that Wild River areas will have waters that are unpolluted (Section 2(b)(1)). The guidelines for evaluating wild and scenic rivers furth state that all rivers included in the national system should meet the "Esthetics - General Criteria" as defined by the National Technical Advisory Committee (NTAC) on Water Quality report entitled Water Quality Criteria, 1968, and that rivers can be designated Wild River areas only if they also meet the minimum criteria for primary contact recreation, except as the criteria might be exceeded by natural background conditions.

A subsequent report published by NTAC entitled Water Quality Criteria 1972, which supersedes the 1968 report, includes a discussion of wate quality requirements for specialized recreation. One conclusion of this report is that "water quality supportive of general recreation is adequate to provide for the intended uses of wild and scenic rivers Water suitable for general recreation should be esthetically pleasing, free from chemicals in concentrations as to be toxic to man if small quantities are ingested, and they should not contain chemicals in such concentrations as to be irritating to the skin or mucous membranes of the human body upon brief immersion. No recommendation is given concerning microbiological qualities because in most cases gross microbiological polluted waters will be accompanied by other foreign substances of such magnitude as to cause the water to be esthetically unacceptable. Microbiological pollution is one of the main indicators that untreated or inadequately treated human wastes are entering the water course. In addition to the requirements for general recreation water, quality for primary contact recreation, such as swimming, has special requirements. For example, the water should not cause an appreciable decrease in the deep body temperature of swimmers. Waters should not irritate the eye. For swimming waters, this irritation is minimized if the pH is within the range of 6.5 and 8.3; however, where waters naturally exceed this pH a range of 5.0 and 9.0 may be tolerated Also, swimming waters should be clear enough for users to estimate depth and to see subsurface hazards easily and clearly. Table III-1 shows the thermal limitation of waters.

Table III-1

LIFE EXPECTANCY IN WATER

(Expected duration in hours for adults wearing life vests and immersed in waters of varying temperature)

Duration hours	Temperature of the Water								
	32° F 0° C	41° F 5° C	50° F 10° C	59° F 15° C	68° F 20° C	78° F 25° C	86° F 30° C	95° F 35° C	104° F 40° C
0.5	M	M	S	S	S	S	S	S	M
1.0	L	M	M	S	S	S	S	S	L
2.0	L	L	M	M	S	S	S	S	L
3.0	L	L	L	M	S	S	S	S	L
4.0	L	L	L	L	M	S	S	S	L

L = Lethal, 100 percent expectancy of death
M = Marginal, 50 percent expectancy of unconsciousness, probably drowning
S = Safe, 100 percent survival

Adapted from tables by Pan American Airways and others.

One of the most important indicators of a health hazard in water is its microbiological quality. Although Water Quality Criteria, 1972 does not recommend a specific limit on this parameter, Colorado standards for waters that will be used for body contact state that bacteriological concentrations shall not exceed a geometric mean of 200 coliform groups per 100 milliliters from five samples obtained in a 30-day period. These standards are slightly more stringent than U. S. Public Health Service standards. Mean coliform groups at Dolores, Bedrock, and Gateway have averaged 55, 24, and 39 groups, respectively, indicating bacteriologically good quality water. Table III-2 shows the water quality parameters for the Dolores River segments.

Specific standards for toxic or poisonous substances have not been formulated for recreational waters; however, if the water is safe to drink, then it should be safe for swimming. Except for dissolved solids concentrations below Paradox Valley and occasionally manganese from the San Miguel, toxic or poisonous substances are either absent or occur in such small concentrations that U.S. Public Health Service drinking water

standards are not violated. The dissolved solid standard is based upon the laxative effect to persons unaccustomed to drinking such water. High concentrations of manganese (greater than 0.05 mg/l) stains clothes when it is used for washwater. Neither of these constituents affects the suitability of the water for primary contact recreation.

The waters of the Dolores River segments studied presently meet requirements for water quality. Below the confluence of the San Miguel River, the waters of the Dolores were polluted by wastes from the Union Carbide mill at Uravan on the San Miguel in the 1950's and 1960's. In recent years, discharge of wastes from the mill have been brought under control. The water is not a hazard to human health, and aquatic life is reported to be returning to this segment of the river.

Effluent limitations that have been placed on present discharges to the river and which will be placed on future discharges will insure that the present water quality will be maintained even if the river is not included in the National System. Natural forces and the activities of man that alter the physical, chemical, and biological character of the waters of the Dolores River are discussed by segments.

Segments I and II

Water quality in the upper main stem and the West Dolores has not been sampled. It appears to be suitable for both recreation and the propagation of aquatic life natural to both streams. Historic mining activity on the upper main stem above Rico has not had a measurable effect on the aquatic biota of that segment. Wastes from the few homes in the old settlement of Dunton on the West Dolores are treated in septic tanks and should not have a significant impact on stream water quality. Considerable summer and fall camping along both segments occurs in developed and undeveloped sites. Waste from these activities does not now affect water quality, but if use increases rapidly, added precautions--such as self-contained waste treatment systems, vault storage and pumping of water, or linkage of recreation sites to regional collection systems--will be necessary.

Sediment yield on these reaches is low. Higher elevations in the Dolores River Basin yield an average of 641 acre-feet of water per square mile per year, but only 214 tons of sediment per square mile per year.

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Table III-2

SUMMARY - WATER QUALITY PARAMETERS -
DOLORES RIVER MEAN VALUES

Criteria	Standards: Primary Contact Recreation	Standards: USPHS Drinking Water Standards	Effects	Sampling Location: Dolores	Sampling Location: Bedrock	Sampling Location: Gateway
Temperature (°F)	See Table A	-	Cause loss of deep body temperature	45° F	56° F	52° F
pH	5.0-9.0 6.5-8.3 desirable	-	Cause eye irritation	8.2	8.3	8.1
Coliform (Geometric Mean)	200	-	Indicate sanitary cleanliness	44	29	34
Dissolved Oxygen	5 mg/l	-	Indicate ability of aquatic life to thrive	8.6	8.5	8.0
Poisonous Substances						
Arsenic	-	0.05 mg/l		0.0001	0	0
Cadmium	-	0.01 mg/l		0	0	0
Chromium	-	0.05 mg/l		0	0	0
Cyanide	-	0.20 mg/l		0	0	0
Lead	-	0.01 mg/l		0.00009	0.00073	0.00094
Silver	-	0.05 mg/l		0	0	0
Toxic Substances						
Radium-226 (pc/l)		3*		0	0.71	1.0
Total Dissolved Solids (mg/l)		500 recommended 1,000 - Find alternate source	Laxative effect	295	3,679	2,331
Manganese (mg/l)		0.05	Staining	0	0.014	0.018

* When this concentration is exceeded, a water supply shall be approved by the certifying authority if surveillance of total intakes of radioactivity from all sources indicates that such intakes are within the limits recommended by the Federal Radiation Council for control action.

Segment III

Water quality in the 105-mile stretch below McPhee Damsite deteriorates for a number of reasons. Municipal and industrial sources, irrigation depletions, increasingly erosive soils, and natural springs and seeps all contribute to this decline.

Industrial pollution sources are presently limited. Upstream from this segment at Rico, toxic metals pollution from mine drainage has degraded the river for 9 miles. However, this is not as serious as accidental spills from a base metals mill; despite precautions, this mill has periodically dumped sulfuric acid, sodium cyanide, and other chemicals into the Dolores. A 1974 mishap released 3,000 gallons of cyanide into the river and killed fish for 30 miles downstream. While none of this activity has affected the study segment, it does remain a threat.

At Slick Rock in the 1950's and 1960's, uranium was taken from the Burro Mine and concentrated (upgraded) nearby; the effluent went into the river. Today however, the mined ore is shipped to Uravan for concentrating, and there are no discharges at Slick Rock. Old tailing piles from the upgrader have been stabilized; however, there is a small amount of intermittent drainage from the tailing piles of the Burro Mine. There is little or no threat of contamination from either.

At present, municipal sources are not serious polluters. Communities along the river are small and scattered, and existing levels of domestic waste are easily assimilated. The town of Dolores does not always treat its wastewaters to meet secondary effluent standards. This affects only a small reach of the river not included in this study. A new sewage treatment facility, to enable Dolores to meet secondary standards, will be provided when McPhee Dam is built. The most serious problem with domestic wastes appears to be in the future - active and potential land subdivisions along the river could eventually have significant adverse impacts.

Natural sources contribute heavily to the declining water quality along this segment. Below the town of Dolores, the sediment yield of the Dolores Basin increases rapidly to produce an average yield of 590 tons per square mile per year. The silt load of the river is moderate to the mouth of Disappointment Creek. At this point, the Dolores is colored an opaque light tan, mostly by suspended matter from the light-colored erosive soils in Disappointment Valley.

Dissolved solids also increase on this segment of the Dolores. At Bedrock, these salts have reached an average concentration of 319 mg/l (or 456 tons per day). Nearly all of this amount, almost double the salinity of the river upstream at the town of Dolores, is attributable to natural sources.

Segment IV

Two major sources of pollution are responsible for a sharp decline in water quality downstream from Bedrock. Under present conditions, water here does not meet the criteria for fisheries because of high ammonia levels from industry on the San Miguel and high salinity from the Dolores as it flows through Paradox Valley. The latter is a natural source of pollution and does not detract from the wild and scenic values of the river.

Mining and processing of uranium and vanadium have occurred along the Dolores River and its major tributary - the San Miguel River - since the 1880's. Effluent from the Union Carbide mill on the San Miguel River grossly polluted the San Miguel and Dolores Rivers during the late 1950's and early 1960's. Effluent from the mill contained toxic wastes, suffered extreme variations in pH, and contained radioactive materials. Prior to 1956, the Dolores River, below the confluence of the San Miguel, was considered a good catfish stream and a source of broodstock that was harvested for transplanting to other areas. Wastes discharged from the mill resulted in severe population declines by 1966.

The investigations in 1966 showed that radioactivity, namely Radium-226, increased in the San Miguel from 0.23 picocurries/liter (pc/l) above the Uravan mill to 2.33 pc/l below the mill. Radioactive levels have been reduced to 0.5 pc/l in recent years (1970-1974, Colorado Health Department data) because of cleanup efforts by Union Carbide and strict effluent limitations on wastes discharged to the river. Radium-226 levels at Dolores, Bedrock, and Gateway are shown in Table III-2. Radioactivity in the Dolores River does not now constitute a health hazard.

Currently, the greatest water-quality problem on the Dolores is the exfiltration of ammonia from holding ponds at Uravan. Excessive concentrations of un-ionized ammonia are toxic to aquatic life; however, there is no agreement to the toxic level. Research by Union Carbide Corporation indicates that catfish are returning to, and surviving in, the Dolores and San Miguel Rivers. Their most recent discharge permit requires them to maintain un-ionized ammonia levels in the San Miguel at concentrations that are not toxic to the aquatic life in the river.

Between Bedrock and the confluence with the San Miguel (about 12 miles), the Dolores meanders through the Paradox Valley and picks up one of the heaviest concentrations of salts found anywhere in the Colorado River Basin. Paradox Valley is a salt anticline, adding approximately 548 tons of dissolved solids to the river daily - an amount equal to one-third of the Dolores River's salt contribution to the Colorado River and about 11 percent of the total salt content of the Colorado River at Cisco, Utah. The total dissolved solids discharged by the Dolores into the Colorado is about 600,000 tons per year.

In June 1974, Congress passed the Colorado River Basin Salinity Control Act (P.L. 95-320) which authorized construction of four units, one of them in the Paradox Valley, to reduce its salt discharge into the Dolores. Several design alternatives are under study by the Bureau of Reclamation, the agency charged with carrying out this project. The goal is to remove as much as 180,000 tons of salt per year. When achieved, water quality in the lower Dolores will be vastly improved.1/

1/ The Paradox Valley Unit is the reason that the 6-mile segment of the Dolores flowing through the Paradox Valley is excluded in the legislation authorizing this study. For a discussion of these exclusions, see Appendix F.

H. Water Rights

Like much of the West, Colorado is an "oasis civilization," without sufficient water to satisfy the needs of various users. This situation has led to the evolution of a complex system of State water laws focused on the doctrine of prior appropriation. Basically, water rights are acquired by appropriation, which is actually applying the water to a beneficial use. Priorities are awarded solely on the basis of who appropriated or used the water first; the phrase "first in time - first in right," summarizes this doctrine. It follows that when water supply in a stream is limited (as in a dry year), the oldest (or "senior") rights are the first served. The Colorado Constitution recognizes three beneficial water uses: domestic, agriculture, and manufacturing. Impoundment for recreation and preservation of the natural environment has received statutory recognition. In Colorado, water rights are awarded by special water courts and administered by the State Engineer.

All told, there are 81 decreed water rights on the Dolores and West Dolores Rivers. These include conditional and absolute direct flow decrees (allowing diversion for direct use) and conditional and absolute storage decrees (allowing storage for later use). The oldest of these rights dates back to 1879; the most recent, 1951; the majority in the 1880's and 1890's. A summary of absolute water rights located in the study segments is given in Appendix J.

There are certain Indian water right claims involved in the Dolores River System. Nothing in this proposal, or any actions taken with it, are intended to encroach upon or in any way violate these water right claims.

I. Water Uses and Related Developments

A small proportion of the Dolores River water supply is used in the Dolores River Basin. There are small irrigated areas along the West Dolores, below McPhee Dam, in the Slick Rock-Gypsum Valley area, and below the confluence with the San Miguel River. Otherwise, the diversions carry water out of the Basin, principally to the adjoining Montezuma Valley in the San Juan River Basin. In-stream water uses include esthetics, recreation, and fishing on the upper main stem and the West Dolores. Esthetics, fish, and recreation are important uses from the Bradfield Ranch to the Bedrock Segment.

The Energy Research and Development Administration does not foresee the development of any additional uranium or vanadium milling facilities in the Basin. They feel that land values, associated environmental protection costs and the need to purchase water rights from a senior right

holder, if they would hope to use Dolores River water, will cause any milling facilities to be located elsewhere.

The Dolores Project will develop water for irrigation and municipal use in the Montezuma Valley, the Dove Creek area, and Ute Mountain Reservation near Towaoc, and will also significantly alter the existing flow regime of the river below McPhee. Two additional purposes of the Dolores Project are as follows:

First, the Project will provide a minimum flow that will meet many of the fish, wildlife, and esthetic needs; in normal hydrologic years, this will be 50 cfs, increasing to 78 cfs in wet years, decreasing to 20 cfs in dry years. Using flow data from the period 1928-1973, the Bureau of Reclamation has estimated that the 78 cfs would have been released 33 percent of the years, the 50 cfs released during 45 percent of those years, and the 20 cfs release would have been necessary only during 22 percent of the period. The main impact of these releases will be to assure flow in the river below the McPhee Dam and thereby establish a trout fishery below the dam. The fishery is expected to extend 56 miles downstream to Slick Rock. Improved waterfowl habitat is also an envisioned benefit, but many other wildlife species also stand to gain.

Second, the Dolores Project will have an impact on the already limited number of recreational boating days. After the project is constructed, riverflows below McPhee will be sufficient for rafting and kayaking only in those years when the reservoir fills and spills water. Reviewing the period 1928-1973, it was calculated that the average annual spill, had McPhee been in place during those years, would have been 76,000 acre-feet. This would have enabled an average of 13 launching days annually; launching days are counted when the flows are between 1,000 and 2,500 cfs for 5 consecutive days or more. Days when flows exceed 2,500 cfs are not counted.

However, average figures offer an incomplete picture. Historically, flows sufficient for launching occurred during 31 of the 46 years between 1928 and 1973. Had McPhee been in place, sufficient boating flows would have occurred during 21 years. Thus, boating opportunities would have occurred 10 fewer years. The effect of the Dolores Project will be to reduce boating opportunity during dry years and increase them during wet years.

When spills are sufficient for boating, there will be an added benefit. Ever since the Dolores was first run by raft in 1948, boaters have been dependent on the uncertainties of nature, i.e., the depth of the winter snowpack and the rate of its runoff. Boating opportunities are now unpredictable - a string of warm days can increase runoff up to 4,000 cfs, while a cold spell can drop it to 100 cfs. With McPhee Dam in place, this unpredictability will be largely eliminated. In years when snowpack data indicate there will be spills, releases from the dam can be made earlier in the spring in anticipation of later runoff filling the reservoir. Summer flows cannot be augmented since once the snowpack is gone there would be no replacement water for releases. Thus, boating days can be (a) predicted, (b) scheduled, and (c) grouped. For example, in a hypothetical year when the snowpack is such that spills are anticipated, river runners will know that a boating release is scheduled to begin on day X, that it will be discharged at Y cfs, and that it will last for Z days. This situation will hold except during those periods when the reservoir is at capacity and spills will, of necessity, be equal to the amount that natural upstream inflow demand exceeds project demands; that is, an element of unpredictability will remain. At any rate, rafters will be able to utilize a larger proportion of the boating opportunity because they will know well in advance when the opportunities will occur.

Though total numbers of boating days will be slightly reduced, there will be a gain in those days which are grouped to assure a river trip of predictable duration - normally 3 to 5 days since those are the two most common lengths of time on the Dolores.

An interesting comparison of boating (rafting) benefits can be made with the Dolores Project irrigation benefits. River management proposals developed jointly by the Bureau of Land Management and the Forest Service would enable three parties to launch per day. It was assumed that 50 percent of the parties launching each day would be commercial, and the other 50 percent would be private. This controlled use of the river would allow approximately 40 to 50 people on the river each day. With an estimated value of $14 per boating day,1/ the estimated maximum daily boating benefits are $700. It would require a minimum flow of 1,000 cfs for 24 hours to accrue the above benefits. The same 1,000 cfs released for irrigation would amount to 2,000 acre-feet per day, or just about enough water to irrigate 1,000 acres for an entire irrigation season.

1/ Commercial boat trips usually cost $25 to $40 per day.

The U. S. Bureau of Reclamation estimates irrigation benefits at $50 per acre-foot of water, at $100 per acre of land, to produce a total annual irrigation benefit of $100,000, which would be foregone if the water were used to provide a minimum boating day. Thus, the cost to provide Project water for boating would average $2,000 per day for each user, and the total cost of a 3-day boating experience would be $6,000 per person in terms of benefits foregone.

J. Access

Access to the four study segments of the Dolores varies from none to unlimited. In some areas, the river travels through near wilderness, in others it flows through towns and along State highways.

Segment I

Approximately 75 percent of the 15-mile upper main stem is accessible either by primitive road or State Highway 145. Two old mining roads reach into Tin Can Basin and the headwaters area - one which travels up Barlow Creek, one which climbs over Bolem Pass from the adjoining Hermosa Creek drainage. For approximately 2 miles downstream from its source, a primitive road follows the Dolores; for the next 4 miles a Forest Service trail parallels the river.

Highway 145 follows the Dolores for 9 miles from the confluence of Snow Spur Creek to Rico. A bridge crosses the river near the mouth of Barlow Creek, and there is a ford at a millsite a quarter mile upstream from Rico.

Segment II

About 77 percent of the 35-mile West Dolores is accessible by road. From its headwaters in Navajo Basin downstream to Burro Bridge, a distance of 8 miles, only a Forest Service trail follows the river. Below, for the next 27 miles, the Dunton Road (National Forest Road No. 535) runs along the river, seldom more than 1/8 mile from its banks. This well-graveled route is used by as many as 30 loaded logging trucks daily working timber harvest outside the study area. Nine road bridges and a footbridge cross the West Dolores.

Segment III

Long reaches of the 105-mile stretch of the main stem from McPhee to Bedrock are inaccessible by road. Only one paved highway crosses this segment; otherwise, vehicles must reach the river via graveled or primitive road as follows:

- McPhee Dam to Bradfield Ranch. - A well-maintained all-weather gravel road parallels the river. At Bradfield Ranch, the river is crossed by a gravel road from Cahone.

- Dove Creek Pumping Plant. - A graveled road drops down from the town of Dove Creek to its pumping plant on the west bank of the river. A county-maintained, bladed, dirt road (National Forest No. 474) used by prospectors, by recreationists, and boaters parallels the river for a distance of 10 miles downstream on the west. Intermittent traces of four-wheel-drive-vehicle use are evident on both banks from Bradfield Ranch to Disappointment Creek. Apparently, the riverbed is used to gain access to the canyon during summer and fall.

- Disappointment Creek, Slick Rock, Poverty Flats. - Several rough roads reach upriver from the settlement of Slick Rock as far as Disappointment Creek. At Slick Rock, three bridges - one of them for State Highway 141 - cross the Dolores. A San Miguel County-maintained road parallels the river for 6 miles downstream from Slick Rock.

- Gypsum Valley. - Another San Miguel County-maintained road gives access to the river in Gypsum Valley, paralleling the Dolores for about 5 miles before bridging it and stopping at the upper end of Slick Rock Canyon.

- Paradox Valley. - A primitive road travels 3 miles upriver from Bedrock on the west bank.

Segment IV

This 39-mile segment from the confluence of the San Miguel to the State Line is the most accessible of those studied. Only its upper 4 miles, sunk into a narrow canyon, are not paralleled by a road. State Highway 141 bridges and runs along the Dolores for 29 miles to the town of Gateway; from there, graveled ranch roads parallel the river on both sides to the State Line.

K. Landownership and Use

Approximately 75 percent of the lands in the Dolores River corridor are public - either National Forest lands or National Resource lands. Most of the private lands are either homesteads or patented mining claims. Table III-3 gives a breakdown of landownership on the four study segments.

Principal land uses are agriculture (primarily livestock grazing), mining (especially for uranium and vanadium), and recreation.

Table III-3

LANDOWNERSHIP WITHIN VISUAL CORRIDOR BY STUDY SEGMENTS, DOLORES RIVER, 1975

Ownership or Administration	Total	Segment I	Segment II	Segment III	Segment IV
	----------Acres----------				
Private	14,280	200	2,600	5,180	6,200
Federal					
USDA Forest Service	39,780	4,600	19,800	15,180	0
USDI Bureau of Land Management	44,600	0	0	36,040	8,200
Total	98,660	4,800	22,400	56,400	14,400

Segment I

The 15-mile-long, 1/2-mile-wide corridor along the main stem above Rico includes 4,800 acres of land - 96 percent of it in the San Juan National Forest, the remaining 4 percent private. The latter is centered on 26 patented mining claims near Rico; these cover about 200 acres.

Significant land uses include recreation (especially fishing), sheep grazing, mining, and highway right-of-way. The Forest Service has withdrawn 370 acres in the corridor for recreational sites, and the Federal Power Commission 1,900 acres for a powerline paralleling Highway 145. The only active mining is 1/2 mile above Rico.

Segment II

The 35-mile-long, 1/2-mile-wide corridor along the West Dolores takes in about 11,200 acres, almost 70 percent of it in the San Juan National Forest. A visual corridor, about 1 mile wide, contains 22,400 acres, of which 88 percent is National Forest. Approximately 2,600 acres are privately owned in 13 separate holdings scattered along the segment (included among these are 140 acres of patented mining claims). There is a question regarding the accuracy of old land surveys in the valley, and private landownership along the river may vary.

Ranching, farming, mining, and recreation are the prime land uses. The pasturelands along the West Dolores are summer range for cattle and sheep; farming is confined largely to hay on the lower half of the river. Dunton and the upper (eastern) reaches of Navajo Basin are historic mining areas; today the most significant mining activity is copper prospecting in Navajo Basin. No timber has been harvested along the West Dolores for several decades, though cutting continues in areas out of the river's view corridor. A number of the cabins around Dunton serve as summer homes. A possible winter sports site (for downhill skiing) has been inventoried about 1/2 mile east of Dunton.

The Forest Service has withdrawn 832 acres in the corridor for nine recreational and two administrative sites.

Segment III

This 105-mile segment includes a visual corridor 0.18 to 4 miles wide, containing 56,400 acres - 27 percent of it in the San Juan National Forest, 64 percent National Resource Land, and 9 percent private. Private lands lie in four principal areas - the McPhee-to-Bradfield stretch, the Slick Rock-Poverty Flats area, Gypsum Valley, and Bedrock. Total area of these private holdings is 5,280 acres. Patented mining claims are limited largely to the Slick Rock area and Gypsum Valley.

Foremost land uses are uranium prospecting and mining (on public lands), livestock grazing, and recreation. Uranium prospecting has picked up sharply in recent years and shows no signs of tapering off. (A total of 443 claims that affect about 6,600 acres have been filed upon.) There are active mines on the rims of the lower Dolores

Canyon, in the Slick Rock-Poverty Flats area, on hillsides and rims above Gypsum Valley, and on the plateau lands above Slick Rock Canyon (out of sight of river users). Cropland is about 3,000 acres, most of it in hay and alfalfa, between the McPhee Damsite and the Bradfield Ranch and near Slick Rock.

Segment IV

Landownership between the San Miguel and the Colorado-Utah line is about 57 percent National Resource Land and 43 percent private, in a 1/2-mile-wide river corridor totaling 14,400 acres. On the upper end of this segment, patented mining claims dominate the private holdings, while the middle and lower reaches have mostly old homestead lands. About another 5,800 acres are involved in 390 unpatented claims.

Land uses here are almost exclusively mining and agriculture. Uranium activity from 3 to 10 miles downstream of the San Miguel is extensive. Below that, ranch and farmland take over along the river bottoms, the principal crops being hay, alfalfa, and pasture. From about 12 miles above Gateway to the State Line, ranching is by far the dominant use. Recreational boating from the San Miguel to Gateway is negligible, but picks up below town; the 32-mile run over to the confluence with the Colorado in Utah is increasing in popularity and includes some of the most challenging rapids on the entire Dolores.

Most of the Bureau of Land Management lands along the river, from the San Miguel to Gateway, are covered by Federal Power site withdrawals. However, no projects are currently planned.

Table III-4

RIVER OWNERSHIP - DOLORES RIVER CORRIDOR

Study Segment	Ownership			
	National Forest	National Resource Land	Private	Total
	Linear Miles			
Dolores River above Rico	14	-	1	15
West Dolores River	23	-	12	35
Dolores River from McPhee Damsite to Bedrock	16	67	22	105
San Miguel River to Colorado-Utah State Line	-	22	17	39
CORRIDOR TOTALS	53	89	52	194

L. Minerals

The Dolores River corridor has supported vigorous mining activity in selected areas for almost a century. The two major historic centers are Rico, where a silver boom was touched off in 1879, and Slick Rock where uranium was mined before the turn of the century. Lesser efforts occurred in Navajo Basin at the head of the West Dolores, around Dunton also on the West Dolores, and on the main stem just below the confluence with the San Miguel.

Today mining interest on long reaches of the corridor remains high. Rico is a small but steady producer of base metals, and prospecting for a variety of minerals (especially copper, uranium, aluminum, and gold) continues in the upper main stem and West Dolores area. On the lower two segments, uranium and vanadium are the subject of both active mining and intensive prospecting.

Segment I

Mining activity along the upper main stem is presently concentrated in the lower reaches near Rico where the Rico-Argentine Mining Company produces silver, lead, zinc, copper, and gold. Pyrite mined in the Rico area is used to produce sulfuric acid at a plant in the town. Exploration for new deposits continues, and old dumps are being leached for silver.

Other mineralization includes:

Coal. - Bituminous coal is present in the Dakota sandstone; most beds are less than 5 feet thick. Historically, these deposits were used in making coke for the Rico smelters and for home heating.

Aluminum. - Disseminated alunite deposits are present in the Calico Peak area on the divide between the headwaters and West Dolores basins. The resource is estimated at 6 million tons, 17.1 percent alunite. This deposit is also a potential source of potassium.

Oil and Gas. - Sedimentary rocks suitable for oil and gas production are present. To date, there has been little exploration and no production.

Gypsum. - A bed of gypsum 15 to 30 feet thick has been identified near Rico.

Sodium. - Layers of salt and potash minerals underlie the extreme southwest corner of the headwaters basin at considerable depth.

Geothermal. - Iron or Railroad Spring, 3/4 mile north of Rico flows 25 to 30 gallons of 82°F water per minute. It is undeveloped.

Uranium and Vanadium. - Both minerals have been mined from surface deposits on the North Fork of Hermosa Creek immediately south of Tin Can Basin. Claims associated with this operation reach into the upper Dolores Basin, extending 2 miles down the river from its source. These claims were test drilled in the mid-1960's. Uranium and vanadium have also been mined on Barlow Creek, a short tributary which joins the main stem 5 miles above Rico.

Segment II

Historically, the West Dolores area has not been a major mineral producer. Navajo Basin was the site of gold and silver activity before the turn of the century, but the most ambitious mine here - the Rock of Ages - was never profitable. Silver, gold, and a little lead have come from the Dunton area, but the mines are now inactive. Today, most of the mineral resources of the West Dolores exist in potential:

Coal. - Lenticular bituminous beds, usually less than 5 feet thick, are present in the Dakota sandstone.

Oil and Gas. - Sedimentary rocks suitable for the occurrence of oil and gas underlie the West Dolores. To date, these have been explored little.

Geothermal. - Dunton Hot Springs flows 20 gallons per minute at 110°F; other hot springs exist along Geyser Creek, southwest of Dunton. Their potential is unquantified.

Copper. - In 1972, the U.S. Geological Survey reported the presence of disseminated copper in Navajo Basin. Subsequently, Texas Gulf, Inc., filed 800 acres of claims in the area and prospected intensively. As of August 31, 1975, activity on these claims had been stopped due to economic conditions at this time.

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Antimony and Arsenic. - Both could be produced from the ruby silver ores of the Dunton district.

Sodium. - Salt beds in the Paradox Member of the Hermosa Formation underlie the western two-thirds of the West Dolores Basin at depths of from 5,000 to 6,000 feet. Thickness is unknown.

Segments III and IV

Uranium and vanadium are the principal minerals found in and adjacent to the lower study segments. Almost all deposits occur in the Salt Wash member of the Jurassic Morrison Formation, and the major deposits occur largely in the area draining into the corridor from near T. 42 N. northward (i.e., below Snaggletooth Rapids). This formation is usually exposed on slopes and canyon rims high above the river surface. There are many deposits in this area, but most have been mined out. Current economic conditions relating to the value per pound determine the amount and extent of mineral resources. If uranium is selling at $15 per pound, only the portion of known deposits economical to mine at that value are classified as reserves. If the price goes up, ores with lower amounts of U_3O_8 can be mined economically. If the price drops, only richer ore is taken. Presently, uranium on old contracts is averaging $15 per pound. Prices for future delivery range from $25 to $35 per pound. Current resource calculations are based on $15 per pound. At $15 per pound of U_3O_8 concentrate, known reserves within the line-of-sight land along the river are estimated to total over 257,000 pounds. This represents about 0.03 percent of the U.S. total known $15 reserves.

Most present day prospecting and mining is on the tablelands to either side of the river, above the canyon, and usually out of the view corridor. Most of the uranium claims in the river area were staked during the "U-boom" era of the mid-1950's, but since 1968 there has been a second-generation upswing in activity. Anaconda Copper and Phillips Petroleum Companies have filed claims on substantial areas in or near the corridor in the last 2 years. Some are in the Chinle Formation, which is believed to contain uranium, but is unproven. The Chinle Formation is often located in close proximity to the river in the canyon bottom. The Energy Research and Development Administration (ERDA) has estimated probable potential uranium and vanadium resources in the river corridor at between 4 and 8 million pounds of U_3O_8 and between 23 and 28 million pounds of V_2O_5. This represents about 0.32 percent of the total probable potential $30 resource of U_3O_8 in the United States.

Although portions of Mesa County contain oil shale deposits, they do not occur in the Dolores River basin.

Other minerals found along the lower two segments are:

Coal. - The coal-bearing beds in the Dakota sandstone have been eroded from the Dolores River canyons, but they are present on the higher mesas. There are no active mines in the area; access to coal to be mined in the future may be easiest by adits from the canyons.

Oil and Gas. - The entire lower segments are underlain by sedimentary rocks suitable for the occurrence of oil and gas, but there is only one small, producing field in the drainage basin - at Andy's Mesa west of Slick Rock Canyon.

Potassium and Sodium. - Potassium and sodium minerals are present at depth beneath the entire corridor. Total amount of salt is very large, but information is insufficient for meaningful estimates.

Gypsum. - Outcrops of gypsum occur in Gypsum Valley and elsewhere as a cap rock over the salts. Again, information is insufficient for any estimates of reserves.

M. Recreation

Because of its relative isolation from major population centers, its areas of inaccessibility, and its restricted seasonal recreational use, the Dolores has not been a major recreational area. As a result, developed sites are minimal on most of the segments.

Segment I

The upper main stem is not a major recreational area. The scenery is not sufficiently outstanding to attract any significant number of hikers or climbers, and the fishery while good is equaled or surpassed by many other streams in southwestern Colorado. In the winter, occasionally, ski touring and snowmobiling take place near Lizard Head Pass. The one developed campground on this segment is just off State Highway 145 at the mouth of Barlow Creek; it contains 27 units and space for travel trailers.

Segment II

At present, the West Dolores supports the heaviest recreational use of the four study segments. Four developed campgrounds (all on the San Juan National Forest) adjoin the river; these have a total of 48 camping units plus space for travel trailers. In addition, there is a small National Forest picnic area. Trout fishing, camping, and sightseeing are the major summer recreational pursuits. Estimated visitor days of fishing and camping use in 1974 totaled 20,000 and 12,000, respectively. This use appears to be increasing. The trail along the river from Burro Bridge up into Navajo Basin and the area of spectacular 14,000-foot peaks above is popular with hikers, backpackers, and mountaineers. The West Dolores Valley and the hill-and-mesa country above are popular deer and elk hunting areas in the fall. In the winter, ski touring and snowmobiling are the major activities. The hot springs and rustic resort at Dunton are also recreational attractions.

Segment III

Below McPhee Dam, hunting and river boating are the most popular recreational activities. Boating is by far the best known activity to nonresidents. The main launch points are the Bradfield Ranch 11 miles downstream of the proposed damsite and at Slick Rock.

Until recently, this Dolores River segment languished in comparative obscurity, primarily because of its short, unpredictable rafting season. At least a half-dozen rivers within a 150-mile radius may be run for most of the entire summer, and over the years convenience has made them more attractive, especially for commercial operators who must carefully schedule their trips.1/ From 1948, when it was first run, until the early 1970's, the Dolores was known only to a small cadre of white-water enthusiasts.

In the last 3 years, however, awareness of the Dolores has picked up sharply. Part of this rise can be attributed to the general surge of interest in river-running throughout the West. This popularity is such that many streams are now under permit systems, with limits on numbers of boaters established according to recreational carrying capacities. With demand exceeding opportunities

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1/ For comparative purposes, a series of sketches of "Nearby Rivers Offering Similar Recreational Opportunities" is included as Appendix D of this report.

on many of the more popular rivers (e.g., the Colorado in Grand, Cataract, and Westwater Canyons; the Snake in Grand Teton National Park and Hell's Canyon; the Middle Fork and Main Salmon in Idaho), river-runners have been forced to look elsewhere - including the Dolores. In addition, publicity associated with this Study and the legislation which enabled it has also stimulated interest in the Dolores. Heavy winter snowpack made 1975 an excellent boating year with the season lasting from early May to mid-July. While records have not been kept, in 1975 an estimated 800 persons enjoyed a total of approximately 2,800 visitor days of boating use, probably the greatest amount of rafting-use days the river has ever received. About 92 percent of this activity occurred on Segment III; the other 8 percent was on the stretch from Gateway to the Colorado River in Utah.

There are few developments on the Dolores to accommodate this or other recreation uses. The 11-mile stretch from the McPhee Damsite to Bradfield Ranch is infrequently floated because there are no significant rapids, and there are fences across the river. In the spring, however, it carries sufficient water for both kayaks and rafts. The adjoining, graveled National Forest road makes it accessible for day-use activities such as picnicking and fishing. With the completion of McPhee Dam, these are expected to improve substantially because of the maintenance of a minimum fishing flow and development of several recreation sites around the reservoir and in the downstream segment.

Bradfield Ranch is the most popular launching site for white-water boaters. Most parties launching here run the entire 97 miles to Bedrock in from 3 to 5 days. The privately owned ranch contains no developed facilities. To date, there has been no objection to boaters using this as a staging area, though as many as 30 people have camped here for the night prior to an early launch the next morning.

Downriver, there are many level waterside benches, so that parties are not pressed to find places to beach and camp for the night. Even in Slick Rock Canyon, with its many sheer walls and steep slopes, there are ample sites for smaller groups.

The broad benches along the west bank of the river at Snaggletooth Rapids are among the few areas along the river to receive heavy recreational use by boaters. Here, all parties put ashore to scout the rapids before running them. Many groups portage and, because the site is about a day's float (approximately 25 miles) from Bradfield Ranch, overnight camping is also heavy. There are no developments to accommodate this concentrated use, save a primitive road which doubles as a portage path and occasionally as an access route.

Many parties beach their rafts in the Slick Rock area. Some take out and others put in to run the lower portion of this segment to Bedrock. Since almost all the shoreline in the Slick Rock area is privately owned, these activities usually occur in trespass, and there have been minor conflicts with owners. No designated take-out or launch sites exist at Slick Rock. There is an undeveloped put-in site on public land at the Little Gypsum Valley Bridge near the mouth of Slick Rock Canyon.

Most boating parties terminate their trips just above the Highway 90 bridge at Bedrock. The take-out area here is on private land, and space is limited.

Other recreational uses in the Bradfield-to-Bedrock corridor are minor, though opportunities are great. In addition to fall hunting, mostly for deer, there is a modest amount of sightseeing, fishing, camping, and picnicking. Off-road vehicle use and rock and artifact collecting also occur. The San Juan National Forest maintains an overlook site and small picnic area on the rim of the Dolores west of Dove Creek. It is the only developed recreation site between McPhee Damsite and Bedrock. Both Slick Rock and Dolores Canyons could become popular hiking corridors in the low-flow season, comparable to Grand Gulch and Dark Canyon (BLM) Primitive Areas in Utah and Paria Canyon in Arizona. There is also potential for significant fishing, camping, and picnicking-use increases. These opportunities complement the boating and fall hunting activities and extend the recreation use season.

Recreation facilities are planned along the River as a part of the Dolores Project. Between the damsite and Bradfield Ranch, four sites are planned for development. These include two sites that contain boat launching facilities and fisherman parking and two additional sites for fisherman parking only. Between Bradfield and Bedrock, a campground and three access/boat launching facilities are planned.

Segment IV

The lower segment of the Dolores from the San Miguel River confluence to the State Line is not a popular rafting stretch. Immediately below the confluence is a narrow scenic canyon and a portion of the historic hanging flume. Approximately 4 miles from the San Miguel, the river flows into a more open landscape and is paralleled by State Highway 141. A float trip on this stretch would require 2 days; landing and camping sites are ample. Red Canyon, as this broad cut is known, is actually deeper than Slick Rock Canyon above Bedrock, but its greater width and less spectacular canyon slopes diminish the scenic impact. Maverick Canyon, one of a number of tributary canyons

off the Uncompahgre Plateau, offers a unique hiking experience - a one and one-half mile walk to Juanita Arch, one of the few natural bridges in Colorado.

At Gateway, there is a moderately popular launchsite below the Colorado Highway Department sheds. River-runners putting in here usually float the Dolores to its confluence with the Colorado River near Cisco, Utah. This is a 2-day or long 1-day trip covering 34 river miles, including 3 miles on the Colorado River to the principal take-out point.

As with the upper segments, hunting is a popular activity here, especially up the canyons and draws draining the western edge of the Uncompahgre Plateau. Mule deer are common.

Table III-5 gives an overview of the recreational picture in the Dolores River corridor in 1974.

Table III-5

ESTIMATED PARTICIPATION IN RECREATION DAYS
FOR SELECTED ACTIVITIES IN THE DOLORES
CORRIDOR - 1974

Activity	Total Estimated Participation	Estimated Percent of Resident Use
Camping	24,200	39
Picnicking	2,710	21
Hiking and Mountain Climbing	7,050	28
Rafting and Kayaking	2,800	18
Other	41,900	59
Hunting	78,000	89
Fishing	54,800	86
TOTAL	211,460	NA

N. History

The Dolores River corridor includes a variety of historic resources from two distinct periods: (a) Indian occupation from 7000 B.C. or earlier to the early 19th Century and (b) White settlement in the last decades of the 19th Century.

Segments I and II

Historic interest along these two upper segments is primarily of local significance and focuses almost exclusively on the boom days of the 1880's when "Rico silver" was a magnet for many hopeful prospectors. Along the upper main stem, the only relic of this era is the Rio Grande Southern Railroad grade abandoned in 1951, but as one nears Rico weathered cabins and other mining structures become more prominent. The Rico City Hall and a row of coke ovens just below town are included in the National Register of Historic Sites. In 1889, Butch Cassidy followed an escape route along the Dolores from Snow Spur Creek downstream after launching his career with a bank holdup in Telluride.

Historic sites along the West Dolores are modest in number and significance. High in Navajo Basin, only a tattered cabin and a rusted ore cart remain from the old Rock of Ages mine. Old cabins and mine buildings are prominent around Dunton.

Segment III

Archaeologists believe that this 105-mile segment is a potentially rich, prehistoric resource. Today, the region is still virtually unexplored, though three reconnaissance-type studies have been made.

- 1972-1973 - An archaeological reconnaissance of portions of the Dolores Project area was completed. This is the most extensive work done in the river area to date. A total of 190 sites were recorded, including four which produced projectile points that may date back to 7000 B.C.

  Twelve sites were recommended for general or test excavation. Reference: "Report of the Dolores River Project, Archaeological Reconnaissance, 1972-1973," NPS Contract No. 2-920-P2-0880 (Principal Investigator, Dr. David A. Breternitz).

- May 22-25, 1972 - An 11-man crew made a hasty investigation along the banks of the Dolores from Slick Rock to Bedrock. A total of 17 sites were recorded, most of them surface materials, but also

potential depositional sites beneath rock overhangs, pictographs, and petroglyphs. Reference: "Final Report of Inventory of Indian Ruins, Dolores River Area, May 22-25, 1972," Bureau of Land Management Contract (Renewal) No. 14-11-0008, (Director, Dr. David A. Breternitz).

- June 11-22, 1974 - A two-man team surveyed the river corridor from near McPhee to a point 3.5 miles north of the Dove Creek pumping plant. A total of 41 sites (five with more than one area) were discovered. Reference: "Archaeological Resources of the Dolores River Canyon Below the Proposed McPhee Reservoir; Montezuma, Dolores, and San Miguel Counties; June 11-12, 1974," Bureau of Land Management Contract (Renewal) No. 14-11-0008-3159, (Investigators, H. W. Toll, III, and D. D. Dykemann).

  It is presumed, in a general way, that many of these sites are of the same provenance as those at nearby Mesa Verde National Park, Hovenweep National Monument, and Lowery Pueblo. However, much specific work needs to be done before precise determinations can be made.

More recent historical sites along this segment are limited. It is known that Don Juan Marra de Rivera explored the river, probably from near the present town of Dolores to the Paradox Valley, in 1765; but no signs of this journey remain. Fathers Francisco Atanasio Dominguez and Silvestre Velez de Escalante explored the area in 1776, but no evidence of their journey has been found.

There are, however, signs of early homesteading along the Dolores in the form of old cabins and dugouts, two of the more notable being about 10 miles below Snaggletooth Rapids and near the mouth of Disappointment Creek. The uranium activity around Slick Rock is of historic interest; in 1898 the Smithsonian Institute shipped carnotite ore from here to France where Mme Curie extracted radium.

Segment IV

From the mouth of the San Miguel to the State Line, knowledge of the historic resources of the Dolores River corridor is sketchy. Immediately below the confluence is the Hanging Flume, remnant of a placer gold-mining operation. Ten miles south of Gateway on State Highway 141 is a large petroglyph panel of unknown origins.

CHAPTER IV

WILD AND SCENIC RIVER CLASSIFICATION SUITABILITY

After gathering relevant data on the four study segments of the Dolores River, the Study Team determined potential suitability in the following ways:

- first, the four segments were evaluated in terms of their eligibility for inclusion in the National System;

- second, segments judged eligible were broken into classifiable units according to length and similarity of character;

- third, the classification (wild, scenic, or recreational) which best describes the existing conditions of each unit was determined; and

- fourth, all inputs from the public were evaluated.

The Wild and Scenic Rivers Act contains the basic criteria for rivers or segments of rivers that are being considered for inclusion in the National System. They must be free flowing and possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value.

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Basic criteria in the Wild and Scenic Rivers Act are supplemented by the 1970 Guidelines (Appendix A). Pages 2-5 of that paper spell out the general characteristics of rivers to be included in the system, and outline the approach to be taken in evaluating them. For the Dolores, the most important of these are:

- free flowing: "Without impoundment, diversion, straightening, rip-rapping or other modification of the waterway. However, low dams, diversion works, and other minor structures will not automatically preclude the river unit from being included ...."

- water volume: "There should be sufficient volume of water during normal years to permit, during the recreation season, full enjoyment of water-related outdoor recreation activities

generally associated with comparable rivers. In the event the existing supply of water is inadequate, it would be necessary to show that additional water can be provided reasonably and economically without unreasonably diminishing the scenic, recreational, and fish and wildlife values of the area."

- length: "The river or river unit must be long enough to provide a meaningful experience. Generally, any unit included in the system should be at least 25 miles long. However, a shorter river or segment that possesses outstanding qualifications may be included in the system."

- water quality: "The river should be of high quality water or susceptible of restoration to that condition."

- outstandingly remarkable qualities: no definition is offered.

- methodology: "The investigator has to exercise his judgment, not only on the specific criteria as they apply to a particular river, but on the river as a whole, and on their relative weights. For this reason, these guidelines are not absolutes. There may be extenuating circumstances which would lead the appropriate Secretary to recommend ... a river for inclusion in the system because it is exceptional in character and outstandingly remarkable even though it does not meet each of the criteria set forth in these guidelines."

Table IV-1, "Capsule Summary of Eligibility," shows how these guidelines measured the eligibility of the four segments of the Dolores.

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Of the two segments judged to be eligible, only the 105-mile reach from the McPhee Dam site to Bedrock required subdivision into smaller units. The extreme variations in scenery, geology, and degree of shoreline (and visual corridor) development made this step necessary. In addition, the eight-mile part of Segment IV from Gateway to the State line was also considered eligible -- if future legislation and study joined it with the 22-mile reach of the Dolores in Utah.

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Components of the Wild and Scenic Rivers System must be classified, designated, and administered as one of the following:

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 water unpolluted. These represent vestiges of primitive America.

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Scenic river areas - Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas - Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

.....

An intrinsic part of this study effort was to solicit and obtain public input. In the pursuit of this goal two series of public meetings were scheduled. The first series was held in Denver, Grand Junction, and Cortez the week of March 24, 1975. The intent was to provide the public with basic information about the objectives and direction of the study and to give individuals an opportunity to become involved. At each of these meetings, participants received a form asking their interest in the study, level of involvement, and general attitudes toward the study. Several individuals became members of the Steering Committee.

The second series of meetings was held the week of July 7, 1975, in Denver, Grand Junction, Norwood, and Cortez. The basic intent of this series was to provide a sounding board for alternative views, new data, and general public opinion. To provide a basis for comparison, the study team presented four conceptual alternatives based on the data which had been compiled up to that point. Under a workshop format, the public was asked to analyze a condensed version of the data utilized in forming these alternatives and to form new alternatives or affirm the study team alternatives.

Two polarized alternatives, based on divergent philosophies, evolved from the public participation. Alternative Four, "No Action," was generally chosen by residents living in or adjacent to the study area, while "Citizens' Alternative Five," prepared by the University of Colorado Wilderness Study Group, was supported by a number of conservationist organizations and individuals. Alternative Five suggested that the entire river basin should be studied and proposed designation for the river in its entirety. The attitudes expressed at the public meetings and in the communications received from individuals since the meetings have mostly been divided between these two alternatives.

Those supporting Alternative Four, "No Action," generally state there now is adequate protection afforded by the State and Federal agencies responsible for the river corridor and associated lands. Landowners in the study corridor expressed concern over phrases such as "scenic easement,"

"visual corridor," "public access," and "condemnation." Fears were expressed concerning the loss of grazing rights on public land in the basin. Mining interests pointed to the need for energy development and questioned the compatibility of designation with national energy problems.

The status of the Dolores Project, however, overshadows nearly all other concerns of those in support of Alternative Four. Despite the fact that the project area was expressly excluded from the study area by Congress and was accepted as "in place" by the study team, misunderstanding persists equating designation of the Dolores River and the death of the project. Alternative Four is a viable alternative which is covered under the "No Action" plan in Chapter 5.

Alternative Five was developed by the Colorado University Wilderness Study Group and represents the recommendations of a number of conservationist organizations. These recommendations are made on the premise of "Total Basin Planning" and favor designation of the entire Dolores River Basin as a component of the National Wild and Scenic River System.

Alternative Five recommends:

1. West Fork - Headwaters of the West Fork to 1.0 mile above Burro Bridge. Length 5.6 miles. *WILD*

2. West Fork - From 1.0 mile above Burro Bridge to the confluence with the main Dolores. Length 29.0 miles. *RECREATIONAL*

3. Main Dolores - Headwaters of the Main Dolores to Beaver Creek confluence. Length 77.0 miles. *RECREATIONAL*

4. Beaver Creek confluence to Cahone Bridge. Length 13.0 miles. *SCENIC* (However, inclusion of this would conflict with the Dolores Project and may cause it to be foregone.)

5. Cahone Bridge - (Bradfield Ranch) to confluence with Disappointment Creek. Length 39.0 miles. *WILD* Excluding 1/4 mile on each side of the Dove Creek pumping station which is recommended for "Scenic" classification.

6. Disappointment Creek confluence to 1/4 mile after the bridge in Little Gypsum Valley. Length 24.5 miles. *RECREATIONAL*

7. Little Gypsum Valley to 1.0 mile above Highway 90 Bridge near Bedrock. Length 33.5 miles. *WILD*

8. 1.0 mile above Highway 90 Bridge near Bedrock to 1/2 mile after Bridge at Gateway. Length 41.5 miles. *RECREATIONAL* (However, this conflicts with the Paradox Valley Salinity Control Project and may cause it to be foregone.)

9. Gateway to confluence with Beaver Creek in Utah just after Stateline. Length 8.5 miles. *SCENIC*

10. Beaver Creek to Dolores River - Colorado River confluence. Length 22.5 miles. *WILD*

After sifting this material and weighing it along with the data generated by this study, two alternatives were selected as having the best qualities for further analysis. Each was judged to satisfy the eligibility requirements of the 1970 Guidelines. Table IV-2 shows these two alternatives.

Table IV-1.--Capsule Summary of Eligibility, Dolores River

Characteristics	River Segments			
	Main Stem Source to Rico	West Dolores Source to Main Stem	McPhee Dam to Bedrock	San Miguel Confluence to State Border
Free-flowing Nature Affected by:				
Impoundments	None	None	None	None
Diversions	None	9	7	10
Road fills	Several	Several	Few	Many
Length	15 miles	35 miles	105 miles	38 miles
Water Quality Meets Criteria for:				
Primary Contact Recreation	No*	No*	No*	No*
Secondary Contact Recreation	Yes	Yes	Yes	Yes
Water Esthetics	Yes	Yes	Yes	Yes
Fish and Aquatic Life Propagation	Yes	Yes	Yes	No**
Outstandingly Remarkable:				
Scenic Values	No	Yes	Yes	No
Recreation Values	No	No	No	No
Geologic Values	No	Yes	Yes	No
Fish and Wildlife Values	No	No***	No	No
Historic (Archaeologic) Values	No	No	Yes	No
Cultural Values	No	No	Yes	No
ELIGIBILITY FOR NATIONAL WILD AND SCENIC RIVERS SYSTEM	Not Eligible	Eligible	Eligible	Not Eligible

* Not suitable because of natural causes.
** Currently unsuitable, but being restored.
*** State believes segment possesses outstanding fish and wildlife values.

Table IV-2.--Classification Alternatives, Dolores River, Colorado

Segment	Miles	Alternative 1	Alternative 2
I: Main stem, source to Rico	15	NC	NC
II: West Dolores, source to main stem	35	Recreational	Recreational
III: McPhee Dam to Bedrock	105		
A) McPhee Dam to Bradfield Ranch	11	Recreational	Recreational
B) Bradfield Ranch to Disappointment Creek	41	Scenic	Scenic
C) Disappointment Creek through Little Gyp. Valley	20	Recreational	NC
D) Little Gyp. Valley to Bedrock	33	Wild	Wild
IV: San Miguel Confluence to State border	39		
A) Confluence to Gateway	31	NC	NC
B) Gateway to State border	8	NC *	NC *

NC = No Classification

* = This segment meets eligibility criteria except length. Any classification of Utah segment, now outside study area, should include this segment.

Determination of Classification Levels

The following criteria are summarized from the "Guidelines for Evaluating Wild, Scenic, and Recreational River Areas proposed ... under Section 2, Public Law 90-542." These were used to determine the classification eligibility of the various river segments.

WILD

1. *Flow* - Free flowing. Low dams, diversion works or other minor structures which do not inundate the natural riverbank may not bar consideration as wild. Future construction restricted.

2. *Accessibility* - Generally inaccessible by road. No roads in narrow, incised valley. If broad valley, no road within 1/4 mile of riverbank. One or two inconspicuous roads to the area may be permissible.

3. *Shorelines* - Shorelines essentially primitive. One or two inconspicuous dwellings, limited amount of domestic livestock, and land devoted to production of hay may be permitted. Watershed natural-like in appearance.

4. *Water Quality* - Water quality meets minimum criteria for primary contact recreation except where such criteria could be exceeded by natural background conditions and esthetics and capable of supporting propagation of aquatic life normally adapted to habitat of the stream.

SCENIC

1. *Flow* - Free flowing. Low dams, diversion works or other minor structures which do not inundate the natural riverbank may not bar consideration. Future construction restricted.

2. *Accessibility* - Accessible by roads which may occasionally bridge the river area. Short stretches of conspicuous and well-screened roads or railroads paralleling river area may be permitted, but consider type of road use.

3. *Shoreline* - Shoreline and immediate river environs still have overall natural character. Small communities limited to short reaches of total area. Agricultural practices which do not adversely affect river area may be permitted. This could include unobtrusive row crops and timber harvest.

4. *Water Quality* - Water quality should meet minimum criteria for desired types of recreation except where such criteria would be exceeded by natural background conditions and esthetics and capable of supporting propagation of aquatic life normally adapted to habitat of the stream, or is capable of and is being restored to that quality.

RECREATIONAL

1. *Flow* - May have undergone some impoundment or diversion in the past. Water should not have characteristics of an impoundment for any significant distance. Future construction restricted.

2. *Accessibility* - Readily accessible, with likelihood of paralleling roads or railroads along riverbanks and bridge crossings.

3. *Shoreline* - Some shoreline development. May include all agricultural uses, small communities, or dispersed or clustered residential.

4. *Water Quality* - Should meet minimum criteria for desired types of recreation except where such criteria would be exceeded by natural background conditions and esthetics and capable of supporting propagation of aquatic life normally adapted to habitat of the stream, or is capable of and is being restored to that quality.

NO CLASSIFICATION

Segment does not meet minimum general characteristics and one or more specific criteria described in the evaluation "guidelines."

SUMMARY OF ATTRIBUTES AND CLASSIFICATION

ELIGIBILITY FOR RIVER SEGMENTS

Segment I - Main Stem, Source to Rico

1. Major Attributes

   Flow - Small stream. No impoundments, some highway fills. Insufficient flow for boating.

   Accessibility - Easy access. Paralleled by Colorado Highway 145. One bridge.

   Shoreline - Moderately narrow valley bottom, bordered by moderate to steep forested slopes. Scenic, but typical mountain landscape. Developments are paralleling highway, roads, and powerline, and one Forest Service recreation site, one bridge.

   Water Quality - Generally clear, no significant pollution sources. Quality sufficient for recreation and propagation of aquatic life normally adapted to habitat of stream.

2. Most protective classification for which segment is eligible based on existing conditions:

   No Classification. Ineligible for inclusion in system; lacks outstandingly remarkable values.

3. Alternative classifications considered by study team:

   None, because of ineligibility.

Segment II - West Dolores, Source to Main Stem

1. Major Attributes

   Flow - Small stream; at high flow about 70 feet wide at mouth, 30 feet wide near Dunton. Nine diversion structures. Insufficient flow for boating. No impoundments, some road fills.

Accessibility - Easy access. Paralleled by county-maintained Forest Service road and private roads, except 8 miles in headwaters. Ten bridges.

Shoreline - Narrow valley bottom, bordered by moderate to steep forested slopes. Prospecting in Dunton area. Below Dunton, numerous year-round and seasonal dwellings, ranchland, and support facilities, and bridges. Outstanding mountain scenic and geologic values in upper reaches; attractive pastoral views below. Five Forest Service recreation sites.

Water Quality - Good. No pollution sources above Dunton; several below Dunton from bordering habitations. Suited for recreation activities and propagation of normal aquatic life.

2. Most protective classification for which segment is eligible based on existing conditions:

   Recreational

3. Alternative classifications considered by study team:

   Nonclassification.

Segment III-A - McPhee Dam to Bradfield Ranch

1. Major Attributes

Flow - Seasonal, relatively slow, unchallenging water. Several irrigation diversions. Existing diversion below town of Dolores nearly dries up stream by late summer.

Accessibility - Moderate. Private lands limit access along much of reach. Paralleled by gravel county road. Bridge at lower terminus.

Shoreline - Moderately broad valley floor bordered by high, steep slopes. Hayfields and grazing lands, with ranching facilities on bottomland. Cottonwood, willows, and shrubs along stream course, pinon-juniper types near rims.

Water Quality - Some minor pollutants from habitations and gravel operations. No health hazards to recreationists. Light silt load. High pH. Lack of year-round water limits fisheries.

2. Most protective classification for which segment is eligible based on existing conditions:

   Recreational

3. Alternative classifications considered by study team:

   Nonclassification.

Segment III-B - Bradfield Ranch to Disappointment Creek

1. Major Attributes

   Flow - Seasonal outstanding opportunities for white water floating in primitive environment. Average gradient about 24 feet/mile. Contains reaches with nearly continuous series of river's most challenging and technically difficult rapids. Diversions nearly dry up stream by late summer.

   Accessibility - Bradfield Ranch is a primary entry point for commercial and private users. Dove Creek pumping plant dirt access road provides an entry/recovery site; below plant, truck road parallels river about 11 miles. Remnants of old trail or 4-wheel drive road near lower terminus and upstream of Dove Creek pumping plant.

   Shoreline - Striking contrasts of lush vegetation and colorful geologic formation in deep and impressive V-shaped canyon. Narrow valley bottom with a number of wooded and grassy flats. Tall ponderosa pine and thick deciduous trees along shore; pinon-juniper and oakbrush at high elevations. Cows, fences, and corral in first 3 to 4 miles. Large powerline intermittently visible on west rim until crossing gorge near Chicken Aspen Canyon. Other intrusions are the Dove Creek pumping station, followed by 11-mile paralleling dirt road. Evidence of mining activity in this area.

   Water Quality - Similar to Segment III-A.

2. Most protective classification for which segment is eligible based on existing conditions:

   Scenic

3. Alternative classifications considered by study team:

   Nonclassification, Recreational and Wild.

Segment III-C - Disappointment Creek through Little Gypsum Valley

1. Major Attributes

Flow - Seasonal, relatively slow, no significant rapids. Wire fence crossing above Slick Rock. Water diversions in Slick Rock and Gypsum Valley areas. River is usually nearly dry by summer.

Accessibility - River easily accessible at numerous points, three bridges, Highway 141, and several gravel and dirt roads, including paralleling roads in Slick Rock and Gypsum Valley areas. Primary launch/recovery site at Highway 141; several others available.

Shoreline - One mile above Cougar Canyon to Big Gypsum Valley, a scenic 6-mile long canyon with campsites available; otherwise segment of little scenic interest. Roads, bridges, buildings, mining and industry activity, mine spoil area, powerlines, irrigated pastureland, and large private land ownership detract from natural river setting. Petroglyphs in Big Gypsum Valley.

Water Quality - High silt content during spring runoff. Natural and man-caused seepage of ammonia, radioactive, and other contaminates. Aquatic life limited.

2. Most protective classification for which segment is eligible, based on existing conditions:

Recreational

3. Alternative classifications considered by study team:

Nonclassification.

Segment III-D - Little Gypsum Valley to Bedrock

1. Major Attributes

Flow - Seasonal, free-flowing, relatively slow; several easy rapids. Safe for novice boaters. Average drop about 11 feet per mile. Slow flow permits appreciation of outstanding scenery, geology, and isolation. River usually low or nearly dry by summer.

Accessibility - Totally inaccessible, except for 3-1/2-mile primitive road from Colorado Highway 90 at Bedrock.

Shoreline - A pristine, narrow, winding canyon between high, sheer and mostly unscalable red, yellow, and buff sandstone cliffs - some rising vertically over 1,000 feet from water's edge. No man-made intrusions. Limited number of sites for overnight stops.

Water Quality - Heavy silt load during spring runoff. Low levels of radioactive and ammonia contaminates are present. Aquatic life limited, but apparently primarily due to past pollution.

2. Most protective classification for which segment is eligible, based on existing conditions:

   Wild

3. Alternative classifications considered by study team:

   Nonclassification, Scenic, and Recreational.

Segment IV-A - San Miguel River to Gateway

1. Major Attributes

Flow - Relatively slow. A few white water riffles and fairly easy rapids.

Accessibility - Gravel county road between Bedrock and Uravan provides access at confluence with San Miguel (but does not follow the Dolores downstream). Limited space here for parking and launching. First 4 miles, inaccessible canyon. Below this, river paralleled by busy Colorado Highway 141 and numerous gravel and dirt roads. Access to river good, except on some private lands.

Shoreline - Scenic quality of canyon moderately high, characteristic of region. First 4 miles narrow, deep, scenic red sandstone canyon; historic hanging wooden flume on right bank cliffs. Remainder of canyon U-shaped, and moderately broad. Extensive mining activity; access roads, bridge, tailings, tipples in upper 10 miles. Lower 15 miles: considerable ranchland with support facilities and cattle. Highway a fairly serious source of visual and noise pollution for river users.

Water Quality - Very silty and salty. Low level ammonia and heavy metal-radioactive pollution hazard from uranium developments on San Miguel. Water presently not potable. Aquatic life eliminated by past pollution, but apparently improving.

2. Most protective classification for which segment is eligible based on existing conditions:

   No Classification due to lack of outstandingly remarkable values.

3. Alternative classifications considered by study team:

   None, because of ineligibility.

Segment IV-B - Gateway to State Line

1. Major Attributes

   Flow - Several easy rapids. Slow to moderate river flow. One diversion structure/ford in Section 39, creates significant rapid at high flow. A long, major rapid in Utah begins at State line.

   Accessibility - Initial access off Highway 141 at Colorado Highway Department yard at Gateway. County road parallels right bank. Road approximately parallels south bank.

   Shoreline - Arid, wide, agricultural, and nearly barren valley. Bordering pinon-juniper covers 1,200-1,700-foot bluffs and red sandstone cliffs 1 to 3 miles from river. Palisade Bluff, a prominent landmark, is at upper end. Willow thickets and large cottonwood groves are along river. Ranchland, cattle, and supporting structures visible. Rich in birdlife.

   Water Quality - Same as Segment IV-A.

2. Most protective classification for which segment is eligible, based on existing conditions:

   No Classification due to short length (8 miles). (However, if combined with Utah portion, may be eligible.)

3. Alternative classifications considered by study team:

   None, because of ineligibility.

CHAPTER V

ANALYSIS OF ALTERNATIVES

Preface

The Water Resources Council developed and tested an analytical procedure for weighing costs and benefits of alternative water and land resource development plans in 1971. The process was first known as the multi-objective planning process since alternative plans for four, often conflicting, objectives were developed. The process was substantially modified and finally adopted by Executive Order as the "Principles and Standards for Planning Water and Related Land Resources" (Federal Register Volume 38, No. 174, September 10, 1973). Although this procedure is intended primarily for water resource development analysis, it is also mandatory for wild and scenic river studies. This section describes the results of such analysis of eight alternative plans for the Dolores River segments found eligible for inclusion in the National Wild and Scenic Rivers System. A complete step-by-step description of the Principles and Standards analysis is included in Appendix E.

Purpose

This analysis provides a basis for recommendations of inclusion or exclusion of eligible Dolores River segments into the National Wild and Scenic Rivers System. This section describes and quantifies, to the extent possible, the costs and benefits of each alternative plan. Both monetary and nonmonetary effects are considered. A total of eight plans are analyzed. Five of the alternatives describe various environmentally oriented wild and scenic river options. Two plans are concerned with economic development and one plan, "No Action," reflects a continuation of current land and water use and management. Each plan is compared to the No Action Plan and the additional impacts, as well as the total effects, are given for these alternatives. It is important to note that the Economic Plans have some positive environmental effects just as the Environmental Quality Plans have some positive economic effects. Neither is completely one-sided.

The Principles and Standards procedure specifies that each alternative be evaluated within the framework of a four-account system. These accounts are National Economic Development, Environmental Quality, Regional Development, and Social Well-Being and each plan is discussed within this framework. Appendix E also includes a series of tables which display the effect of each plan on each account in greater detail.

Management Authorities and Programs

The mixture of National Forest, National Resource, and private lands along the Dolores and West Dolores Rivers results in several authorities governing uses and management of the river and its associated land corridor. This section briefly reviews major laws and policies governing water and land use and management along the river to set the stage for the No Action Plan.

National Forest

Among the many statutory authorities of the Secretary of Agriculture in National Forest Administration are:

- The Multiple Use - Sustained Yield Act of 1960 (74 Stat. 215). This Act reaffirms the policy that Congress established the National Forests with the intent that they be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. The Act does nothing to preclude mineral development. National Forests are administered in accord with this directive. Multiple Use Plans establish management direction for various zones or areas of National Forest lands. Consideration is given to relative values of the various resources in each particular area. Generally, management seeks the combination of resources that will best meet the needs of the American people. Judicious use of the land for some or all of these resources over areas large enough to provide sufficient latitude for periodic adjustments in response to changing needs and conditions is the objective. Multiple use management is directed to harmonious and coordinated resource use with consideration of the relative value of each and not necessarily to the combination of uses that yields the greatest economic return or maximum output.

Multiple Use Management Guides exist for all National Forest lands. Management zones for the Dolores River area are Special, Crest, Intermediate, Travel Influence and Water Influence Zones.

A Special Zone is an area of land which has been established by the Secretary of Agriculture, Chief of the Forest Service, or Regional Forester due to particular conditions of public significance. The Wilson Mountains Primitive Area, containing the headwaters of the West Dolores River, is an example of a Special Zone. Management direction for this area is the same as for a Wilderness Area. Special Zones override all other zones.

The Crest Zone is high elevation areas and is characterized by rugged, alpine peaks. The lower boundary is generally considered to be at the upper edge of the commercial timber type. The headwaters of the West Dolores River and the Dolores River above Rico are both within this zone. Recreation is a key value of the Crest Zone and management is directed toward minimum modification of natural conditions.

The Intermediate Zone is the general forest area extending from the Crest Zone to the lower edge of the commercial timber growing area. The major goal is production of the optimum quantity and quality of water with stable soil conditions. Where commercial timber production is possible lands are managed to obtain a sustained volume of timber with good watershed conditions. On lands best suited for grazing, livestock and wildlife forage is maintained and improved. The West and Main Dolores flow through this zone. Intensive recreation use within the zone occurs primarily in the Travel and Water Influence Zones.

The Travel Influence Zone parallels designated roads and trails. It includes the most accessible areas and provides for the most intensive occupancy and use. Width of the zone varies from a few hundred feet to a mile or more. Resource management and use is guided by the recreational and occupancy demands resulting from accessibility. Scenic values are protected and enhanced. Recreation sites may be developed on suitable areas as needed, but with due regard for esthetic values. The roads and the trails paralleling the West Dolores River and Dolores River are Travel Influence Zones.

The Water Influence Zone varies in width along or around rivers, streams, lakes, and reservoirs. The key values are those associated with quantity and quality of the water and the attractiveness of adjoining lands. This zone transects all other zones except Special Zones. All of the West Dolores River and all of the Dolores River including their headwaters are Water Influence Zones to the canyon rim or valley crests. Management direction is to:

1. Maintain and improve the onsite and downstream usefulness of water.

2. Maintain and improve soil stability of shore areas and water channels, protect and develop riparian vegetation needed for soil stabilization and wildlife habitat and fisheries.

3. Provide optimum recreation opportunities and scenic values consistent with soil and water needs.

4. Protect and improve fish and wildlife habitat.

5. Provide reasonable public access.

- The Organic Administration Act of 1897 (30 Stat. 35) which gives the Secretary of Agriculture control over the uses to be made of national forests. Among other things, the Act provides control over surface effects of mining, and of trespass.

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- The U. S. Mining Laws Act of 1872 (17 Stat. 91) and the Secretary of Agriculture's Regulations provide statutory rights for miners and prospectors to explore and produce minerals from public lands. The Secretary's Regulations reinforce the Forest Service authority to control and protect the land surface. Mineral claimants are required to file notices of intent, operating plans, and to protect and restore surface resources affected by mining or exploration.

- The General Exchange Act of 1922 (42 Stat. 465) is a law which allows land and/or easement acquisitions. The purpose of this Act is to advance the public interests by allowing acquisition of lands within the exterior boundaries of the National Forest that are valuable for National Forest purposes.

Bureau of Land Management

The Secretary of the Interior has broad and inherent authority to manage all resources on the National Resource Lands for multiple use values. The basic authority and power over the national resource (public domain) lands are derived from Article IV of the Constitution. Congress delegated this authority to the Secretary of the Interior by the Act of April 25, 1812 (2 Stat. 716).

The Picket Act of June 25, 1910, as amended (43 U.S.C. 141, 142), and Executive Order 10355 of May 25, 1952 (17 F.R. 4831) delegated to the Secretary of the Interior full authority to withdraw or reserve "... land owned or controlled by the United States ... and to issue such rules and regulations ... as are necessary for the exercise of this authority." Pursuant to this authority, the Secretary may withdraw lands for any public purpose, including scenic and open space corridors. The lands may be withdrawn from certain uses or laws if they are incompatible with the purpose and intent of the withdrawal, including the mining laws (30 U.S.C., Ch. 2). Only the Secretary of the Interior has the authority to order such withdrawals on either National Forest or National Resource Lands.

The Classification and Multiple Use Act of September 19, 1964 (43 U.S.C. 1411-18) directed all lands administered by the Secretary through the Bureau of Land Management will continue to be administered for multiple use and sustained yield of the several products and services obtainable therefrom. Consistent with the provisions of applicable law, the land will be managed "... to attain the widest range of beneficial uses of the environment, to preserve important historic, cultural, and natural aspects of our national heritage; management for fish and wildlife development and utilization and provision and maintenance of public access thereto (Sec. 9, Taylor Grazing Act (43 U.S.C. 315h)), F&W Coord. Act (16 U.S.C. 661-666c), (43 CFR 2420.2(b)(2)); management for outdoor recreation, protection, regulated use, and development of lands having open space value (4 U.S.C. 1500-1500e), (43 CFR 2420.2(b)(5)) in a manner that will preserve their values and will make them available for appropriate recreation enjoyment by the public (16 U.S.C. 460:1 et seq.), (43 CFR 2420(b)(5)); and to manage for wilderness preservation and regulating such uses."

The National Environmental Policy Act of 1969 (P.L. 91-190), (E.O. 11514) gives authorities for the protection, preservation and regulation of public values, including open space, unique characteristics and natural beauty as listed in 43 CFR 1725.3-3(f) and (j), and in P.L. 89-285 (1965 Highway Beautification Act).

Under the regulations contained in 43 CRF 2070 (78 Stat. 986; R.W. 2478, as amended); (43 U.S.C. 1411, 1201), the Secretary may designate Areas and Sites, and to specify the nature and effect of such designations.

Criteria for the Protection and Preservation of Natural Values is set forth in 43 CFR 6200 (secs, 1, 3, 5), (50 Stat. 874, 875); (43 U.S.C. 1181 (a)(c)(e)); (R.W. 2476); (43 U.S.C. 1201). The objectives include the preservation and protection of significant, natural, historic, and cultural resources, and provide for their public use and development consistent with preservations goals. Subpart 6222 sets forth the policy on scenic corridors and buffer zones. Scenic corridors may be established along rivers and streams, trails, and other lands for the preservation, protection and enhancement of scenic and natural values. Size and use of scenic corridors shall be consistent with the purposes for which they are established (35 F.R. 9795, June 13, 1970). Lands so identified may be designated pursuant to 43 CFR 2070 and segregated pursuant to 43 CFR 2440.

Public Law 90-542 requires that public values are to be preserved on land lying within or near the National Wild and Scenic River System. BLM Manual 2031.3, Environmental Quality and Natural Beauty sets forth the criteria "...classification and management procedures, take into consideration public values in relation to the scenic rivers system ... the character of such public use is to be consistent with the objectives of the scenic rivers system ... adequate stipulations are to be provided to protect scenic values and regulate use consistent with the preservation of public values."

The Bureau Planning System (D.M. 135.1.2; 235.1; 603.3.4, BLM 1601-1608) and BLM Manual 2032 (Act of 9/19/1964) (78 Stat. 986), (43 U.S.C. 1411-18); (43 CFR 1725.2 (a)); (43 1725.3.3 (f and j); (43 CFR 2410) defines the objectives, responsibilities, and policy to protect open space values in the planning system. National Resource Lands having open space or buffer zone values will be identified and protected (43 CFR 2410.1-2).

Private Lands

- The Local Government Land Use Enabling Act of 1974 (H.B. 1034, 1974 Session Laws). This statute gives local governments authority to plan and zone land use in several areas. These include:

    i. regulating development in hazardous areas;

ii. protecting lands critical to wildlife; and

iii. preservation of areas of historical and archaeological importance.

This statute is directed to controlling how a subdivider may divide and sell lots rather than preservation of natural or scenic values. It does not provide any procedures for such regulation--it implies that any regulation will be done through the normal zoning function. The statute does not specify that regulation must be done.

- H.B. 1041, 1974 Session Laws. This statute gives the local governments the authority to designate areas of state interest (natural hazard areas, mineral resource areas, and natural or archaeological resource areas). It does not affect activities presently planned and approved by local governments nor those presently planned for land of compatible zoning. Development within an area of state interest is not precluded but only restricted to the extent it will have minimum damage. The initial decision of designating an area of state interest belongs to the local government. If the local government fails to designate an area as such, then the Colorado Land Use Commission can request it to do so. If it still fails to designate, the Land Use Commission must go to the local district court and seek judicial review. There is no guarantee that a court will order local government to designate an area as requested by the Land Use Commission.

Both H.B. 1034 and H.B. 1041 share a common shortcoming. In a river corridor, the size of the Dolores', numerous local governments are involved (five counties, in the case of the Dolores). Each has the same freedoms and rights to refuse to regulate and to designate under the bills.

- The Antiquities Act of 1906 (34 Stat. 225). This law protects historic or prehistoric remains, "or any antiquity," on Federal lands. Specifically, it establishes criminal sanctions for unauthorized destruction or appropriation of antiquities; it authorizes the President to proclaim National Monuments; and authorizes the scientific investigation of antiquities on Federal lands, subject to permit and regulations.

- National Historic Preservation Act/National Register of 1966. This Act establishes a Federal policy of encouraging the preservation of the Nation's historic and archeologic resources by placing worthy resources on the National Register of Historic Places. Federally licensed or funded projects affecting properties on or eligible for the National Register must be evaluated by the Advisory Council on Historic Preservation.

- Executive Order 11593. Executive Order 11593 directs federal agencies to inventory U.S. Government-owned property to identify possible National Register entries and directs the agencies to protect properties listed on the National Register or eligible to be listed.

- State Antiquities Act (131-12-1). The State Antiquities Act (131-12-1) reserves title to all historical, prehistorical and archaeological resources relating to the historical or prehistorical culture of people in Colorado. It established the Office of the State Archaeologist within the State Historical Society to administer the Act and to identify, collect, and preserve archaeological resources. The State Archaeologist is empowered to consult and advise agencies on archaeological problems and to issue permits for the investigation, excavation, gathering, or removal of historical, prehistorical, or archaeological resources.

- Endangered Species Act of 1973. This Act is designed to protect and perpetuate species that are endangered with extinction and those species that are threatened with endangerment.

Alternative Plans

NO ACTION PLAN - Continue Current Management

This plan involves Federal, State, and local agencies. It is based on continued application of current management authorities to protect scenic, recreation, geologic, fish and wildlife, archaeologic, and other values. It also assumes that current trends in the use and development of resources will continue and that no new action will be taken as a result of this study.

The visual corridor area of the two eligible segments contains about 79,500 acres. Of this area, about 71,500 acres, or 90 percent, are administered and managed by Federal agencies. The Forest Service manages 35,200 acres, of which 19,800 are along the West Dolores and 15,400 are along the Dolores below McPhee Dam. The Bureau of Land Management manages 36,400 acres, all along the Dolores below McPhee Dam. Private lands are subject to county regulations governing land use. The State's authority to regulate land use is untested.

Environmental and Land Use Impacts

No changes in the types of land use within the foreseeable future are expected. Ranching, recreation, and mining will continue to be the predominant activities along the Dolores and its tributaries. The intensity of some of these uses, especially recreation, subdivision for vacation homes, and uranium-vanadium mining, is expected to increase in some segments. Federal control and administration of these uses will continue

on the public lands within the corridor. The Forest Service and Bureau of Land Management will utilize the full range of their management authorities to protect and preserve scenic, recreational, fish, wildlife, and other values of the river and corridor.

Besides the Dolores Project, two other water conservation projects in the Dolores River basin have been authorized by Congress for construction. These projects could be built regardless of River designation. The Paradox Unit of the Colorado River Basin Salinity Control Project would affect the River near Bedrock, Colorado (outside of study area). The San Miguel Project would withdraw between 50,000 to 80,000 acre feet annually from the San Miguel River near Norwood, Colorado, and have some effect on the Dolores River flows (about 10% of reduction in annual flows as measured near confluence). In this regard, the "No Action" plan is identical to all seven of the alternatives. The McPhee Reservoir will provide flow releases for fish habitat improvement and will regulate to some extent the flood flows on the lower river. These effects are fully discussed in Chapter III.

The State of Colorado and the U.S. Environmental Protection Agency programs currently in effect are improving water quality in the river. Increased mining activity, especially for uranium and vanadium, and mineral prospecting could degrade water quality. Both State and Federal safeguards and enforcement programs will concentrate on preventing such degradation. The land managing agencies require soil and watershed protection measures in all exploration and operating plans. Sedimentation and other adverse effects of mining and prospecting will be controlled to the maximum practicable extent.

Major portions of these river segments are now in public ownership. Mineral development poses a significant threat to the natural value of these public lands.

Most existing residential and industrial developments occur on the West Dolores, between the proposed McPhee Damsite and Bradfield Ranch on the main stem and in the Slick Rock-Gypsum Valley area. Additional residential, industrial, and mineral development may reduce the natural quality of the river corridor in these reaches. A high potential exists for subdivisions in development of vacation homes and multi-family dwellings on privately owned land along the West Dolores and in the general area of the proposed McPhee Reservoir. As a part of the Dolores Project fishermen's access easements are planned to be acquired along the river between McPhee Dam and Bradfield Ranch.

Economic and Regional Development Impacts

Present yields from croplands and pasturelands will remain the same. Most of the farms and ranches in the River area are stable and provide a major source of economic value in the area. Since the primary use of agricultural land in the corridor is for the production of range livestock, agricultural production is measured in terms of animal unit

months (AUM). The estimated production is about 27,000 AUM annually with a value of $121,500. Corridor lands are not used for commercial timber production.

There are about 5,000 mineral claims and about 10 working mines in the corridors of the two eligible river segments. Uranium and vanadium will continue to be an important part of the local and national economy. The value of mineral production is expected to be about $5,000,000 annually by 1990 if current rates of production continue. Minerals on Federal lands will be available for appropriation under the Mining Laws and the mineral leasing laws will be operative.

Recreation use in the Basin and the River area has been increasing slightly over the past 25 years. Modest increases (5-10 percent per year) are anticipated. Most use would occur on the developed Forest Service sites along the West Dolores, at the McPhee Reservoir, and in the Dolores Canyon. As a part of the Dolores Project, the Bureau of Reclamation plans to construct boat launching and fisherman parking facilities immediately below the dam and at Bradfield Ranch along with two sites containing fisherman parking facilities. A campground is planned at Mountain Sheep point and boat launching facilities at Slick Rock, Little Gypsum Valley and Bedrock. Major development of facilities including campgrounds, boat ramps, etc., is planned around McPhee Reservoir. By 1990, about 223,000 recreation use days are expected to occur annually. The value of this use is estimated to be $1,101,700 annually.

Social Impacts

The No Action Plan will have little effect on individuals in the Dolores River area. Little change in land use is expected, and growth of the area will be modest. Recreation activity and agriculture will increase in and around the McPhee Reservoir. Tourists and recreationists will come to the area at about the same rate and numbers. More boaters may seek to use the Dolores as other rivers reach maximum capacity. About half of these will be from out-of-State. The major economic activities will continue to be agriculture and mining.

Owners of private land generally recognize and appreciate the scenic and natural values of the river. The private land (10 percent of the corridor) could suffer from misuse and subsequent degradation, but on the basis of expressed attitudes this is not expected. However, historic and archaeological sites on private lands would not receive additional protection and could be degraded.

NATIONAL ECONOMIC DEVELOPMENT PLANS

The basis of a National Economic Development Plan (NED) is the increased output of goods and services or the increased economic efficiency in the output of goods and services.

Realistically, there is little that State or Federal Governments can do to promote rapid or maximum economic development within the Study Area. The local economy is based on agriculture and mining and is likely to remain so, even under stimulated economic conditions. Thus, the distinction between an NED Plan and the No Action Plan is one of degree rather than kind. These options outline the likely impacts of possible, rather than probable, programs of maximum resource exploitation. They are presented for comparison purposes and are not proposed for implementation.

In the formulation of alternative plans, one must arrange the component needs that are essentially complementary, i.e., the satisfaction of one component need does not preclude satisfaction of, or add to, the cost of other needs. "NED Plan A" is essentially a plan which generates maximum recreational benefits. "NED Plan B" is a plan which maximizes mineral development and output. It was the assumption of the study team that the satisfaction of the mineral needs - uranium, vanadium, copper - and geothermal resources inhibited, not precluded, the satisfaction of picnicking, camping, hiking, and boating component needs. Neither plan wholly precludes environmental quality objectives; however, satisfaction of environmental quality is reduced.

National Economic Development Plan A

Increased Recreation Development

There is a national need for boating, fishing, hiking, camping, picnicking, and livestock production; and the goal of this NED plan is to maximize the opportunities to satisfy these needs. This would be done on the West Dolores River and on about 105 miles of the Dolores River between McPhee Damsite and the community of Bedrock.

Environmental and Land Use Impacts

If selected, this alternative would develop recreation on public lands to about twice the level considered consistent with maintaining a high-quality environment. Development of facilities for recreation under this plan is physically possible and economically beneficial, even though the density of recreation use could cause environmental impacts. These impacts could cause some loss of diversity and density of wildlife, soil erosion, disturbance of vegetative cover, vandalism, litter, loss of auditory and visual qualities due to overcrowding, and a general reduction of those qualities which make the Dolores River a valuable addition to the National Wild and Scenic Rivers System.

Development of public land for other uses under this plan would have to be kept at a minimum to allow for recreation development and use. Environmental controls would have to be placed on mineral extraction between Dove Creek pumping plant and Little Gypsum Valley bridge.

These controls would cost the industry approximately $100,000 annually. It is expected that there would be some degree of conflict between recreationists and grazing stock.

Conservation/Recreation Costs and Trends

If selected, this plan would result in development of 203 camping units, 66 picnic units, 103.4 miles of trail, and additional recreation and recreation access. Recreation development would cost approximately $1,480,000. Operation and maintenance (including a sinking fund) costs for these developments would require about $137,000 annually. In addition, management and operation expenses for plan administration would be approximately $193,000 annually. It would cost about $2 million to do validity determinations on mining claims in the corridor. This does not include costs of acquisition of valid claims.

Under existing circumstances and developments planned by other agencies, an estimated 224,000 recreation days would occur on public recreation facilities within the area by 1990. With the developments proposed by this plan, a total of 478,000 recreation days would be generated annually by 1990 without exceeding unmet demand. This would consist primarily of increases in camping, picnicking, boating, and hiking. The value is estimated to be an additional $410,000.

Energy Impacts

There are no hydroelectric sites on the Dolores River with economic potential, so this plan would have no effects on this energy source. It is also expected to have no significant impact on fossil fuel energy sources. There is some active uranium mining in the corridor, and this plan would place a burden of about $100,000 annually on that energy industry (as discussed in the Environmental and Land Use Impact Section of this plan). However, since the area affected by this plan (a corridor 0.5 to 2.0 miles wide) contains only about 0.03 percent and 0.26 percent of the United States' total known resources and probable potential reserves of U_3O_8, respectively, this impact is small but could affect national and regional energy production.

Economic and Regional Development Impacts

There are no adverse economic effects other than those discussed in Conservation/Recreation Costs and Trends and Energy Impacts. However, recreation users are expected to spend $430,000 more annually in the basin by 1990 than they would without this plan.

Social Impacts

Although the amount of recreation use would increase greatly under this plan, there would be a significant degradation of the quality of the experience. Additionally, destruction and some vandalism of cultural sites is expected to increase if this plan is selected.

National Economic Development Plan B

Increased Mineral Development

The authorized study portions of the Dolores River visual corridor contain approximately 0.03 percent and 0.32 percent of the United States' total supply of known $15 reserves and probable potential $30 resources of U_3O_8, respectively. Vanadium occurs in many of the uranium-bearing ores in this area. Management for the maximization of yield and efficient production of these two strategic minerals is the basis of NED Plan B. Other minerals occur within the visual corridor but are not presently economic to extract. If this plan is selected, it is possible that extraction of these minerals would become economically feasible.

According to the Energy Research and Development Administration, additional methods to increase mineral extraction, if this plan is selected, might include:

- the provision of low-interest loans through the Office of Mineral Exploration (USDI)
- development of access roads
- a Government-guaranteed base price for these minerals
- maintenance of present safety and environmental controls which are considered adequate by the industry
- development of a program to train miners (which are now in short supply)
- development of additional housing and public services (such as health and education) to encourage miners to move into and stay in this area

If this plan is selected, it is expected to significantly increase production of minerals in this area by 1990. Access roads and minimum environmental controls could probably be implemented in the local area by the Forest Service and Bureau of Land Management. However, the production would have to be increased without an adverse effect on production in other areas to fall within the criteria for an NED plan. (That is, production in the corridor cannot exceed the proportioned share of national demand.)

Environmental and Land Use Impacts

Under this plan, adverse environmental impacts would increase significantly. Much of the scenic, geologic, recreation, fish, wildlife, and cultural qualities which make the affected areas valuable for inclusion in the National Wild and Scenic Rivers System would be lost.

Shifts in land use from agriculture and grazing to mineral extraction and the associated support services (such as more housing, schools, and mills) would occur.

Conservation/Recreation Costs and Trends

The adverse effects of this plan on recreation would be twofold. First, the quality and value of a recreation day would decrease, and secondly the number of recreationists using the area would decline significantly.

Energy Impacts

This plan would significantly increase the production of U_3O_8 and, therefore, make it more available to the nuclear-powered utilities.

Economic and Regional Development Impacts

This plan would improve the economy in the area by providing jobs; more stable employment, and increased income to area residents. It would, however, tend to lessen the diversity of the local economy.

Social Impacts

If selected, this plan would have adverse social impacts. They primarily include the loss of cultural sites and recreational opportunities.

However, positive social impacts of this alternative, such as increased health services, educational opportunities, and housing, would also occur.

WILD AND SCENIC RIVER PLANS

Significant, long-term preservation of the Dolores River Systems' outstanding values may be accomplished by designating wild and scenic river segments. The river's great length and outstanding values permit consideration of a variety of protection options depending upon the extent of environmental preservation desired and the degree of accommodation with incompatible resource uses found necessary. Although formulated to satisfy the Environmental Quality Objective, each plan has economic benefits. Five feasible options are evaluated here. These range from designation of about 105 river miles to designation of all 140 miles which qualify for wild and scenic river status to non-designation, in order to protect archaeologic and cultural resources. Classification options are also discussed.

Wild and Scenic River Plan A (EQ A)

(Colorado Department of Natural Resources Recommendation)

Plan Summary Table

Eligible Segments	Recommended for Designation	Proposed Classification
West Dolores River	Yes	Recreational
Section 2, T. 16 N., R. 38 W. to Bradfield Ranch Bridge	Yes	Recreational
Bradfield Ranch Bridge to Disappointment Creek	Yes	Scenic
Disappointment Creek to Little Gypsum Valley Bridge	Yes	Recreational
Little Gypsum Valley Bridge to one mile above Highway 90	Yes	Wild

This wild and scenic river option would protect 140 miles of river classified as wild, scenic, and recreational. Under this plan, the 35-mile West Dolores River and 105 miles of the main stem of the Dolores River from about 1 mile below the proposed McPhee Damsite to about 1 mile above the State Highway 90 bridge, near the community of Bedrock, would receive protection.

As with all wild and scenic river proposals considered, resource value protection would be achieved primarily through scenic and public use easements. If this plan were implemented, a total of over 78,000 acres would be protected. Approximately 8,000 acres of private land would be protected by easements, and the remaining 70,000 acres are public lands in the visual corridor. No fee title acquisition is expected. A graphic display of scenic and public use easement relations to the corridor is given in Figure 2.

Environmental and Land Use Impacts

This alternative offers more statutory preservation of the Dolores River than any other alternative discussed. It would protect about 1,900 acres of cold and warm water fishery habitat and would ensure protection for all eligible study portions of the river at the highest classification for which those segments are suitable. These eligible stream segments include 35 miles of the West Dolores River and 105 miles of the Dolores River between McPhee Damsite and Bedrock. These two river segments cross a total of five life zones from alpine through high Sonoran.

Selection of this alternative would not affect logging since there has been none in the corridor for decades. However, environmental controls on mineral extraction between Dove Creek pumping plant and Little Gypsum Valley bridge would cost the industry approximately $100,000 annually. Some minor impacts on present farming and grazing may occur but cannot be quantified. Probable future subdivisions expected along the West Dolores River and between McPhee Damsite and Bradfield Ranch would have an adverse impact on the existing environment in the river corridor, so they would be planned to minimize their impact.

Conservation/Recreation Costs and Trends

This plan would require no known transfers of private land to public ownership. Development of public recreational facilities would include two picnic sites (totaling 15 units), two primitive camping areas in the wild river segment, and two standard campsites (totaling 42 units). In addition, 64 miles of hiking trail would be developed. Recreation development would cost approximately $780,000. Operation and maintenance costs for these developments would be about $60,000 annually (including a sinking fund). In addition, management and operation expenses for plan administration would be about $95,000 annually. The cost for doing validity determinations on mining claims in the corridor would be about $2 million. This does not include the cost of acquiring valid claims. No relocation costs would be incurred; however, easement costs are estimated to be $323,000.

Under existing circumstances and developments planned by other agencies, an estimated 223,000 recreation days will occur on public recreation facilities by 1990. The interest and publicity which normally attends wild and scenic river designation is expected to generate a total of 323,000 recreation days by 1990, if this plan were adopted. This increment in recreation days will consist primarily of increases in camping, picnicking, boating, hiking, and fishing. No significant overcrowding is expected, although management agencies will have to monitor recreation use to ensure this.

Energy Impacts

There are no hydroelectric sites on the Dolores River with economic potential so this plan would have no effects on this energy source. It is also expected to have no significant impact on fossil fuel energy sources. The plan is not expected to have an effect on the ability to mine coal in areas drained by Dolores River tributaries if adequate standard surface protection measures are utilized. There is some active uranium mining in the corridor, and this plan would place a burden of about $100,000 annually on that energy industry (as discussed in the environmental and land use impact section of this plan). However, the designation area contains only about 0.03 percent and 0.32 percent of the United States' total known $15/lb reserves and probable potential $30 resources of U_3O_8, respectively. Minerals on Federal lands which constitute the bed, or bank, or situated within 1/4 mile of the bank of the river, would be withdrawn

from all forms of appropriation under the mining laws and from operation of the leasing laws.

Economic and Regional Development Impacts

The primary economic impact resulting from adoption of this alternative would be from a significant increase in regional tourism. Tourists are expected to spend about $208,000 per year more in the Basin by 1990 with adoption of this alternative than without. All adverse economic effects that would be caused by adoption of this alternative are discussed in the sections on Conservation/Recreation Costs and Trends and Energy Impacts. Mineral and agricultural uses, costs, and values are about the same as described in the No Action Plan.

Social Impacts

The quality and variety of outdoor recreation available within the plan's boundaries would be protected and enhanced if this plan is selected. Additionally, the cultural, archeological, and historical resources of the plan area would be surveyed, protected, and possibly receive some interpretive work and access so that the public can receive benefits from their use. Designation of the river would not preclude future highway improvements in the basin.

Wild and Scenic River Plan B (EQ B)

(Federal Recommendation)

Plan Summary Table

Eligible Segments	Recommended for Designation	Proposed Classification
West Dolores River	No	None
Section 2, T. 38 N., R. 16 W. to Bradfield Ranch Bridge	Yes	Recreational
Bradfield Ranch Bridge to Disappointment Creek	Yes	Scenic
Disappointment Creek to Little Gypsum Valley Bridge	Yes	Recreational
Little Gypsum Valley Bridge to one mile above Highway 90	Yes	Wild

This alternative would protect 105 miles of river from about 1 mile below McPhee Damsite to about 1 mile above the State Highway 90 bridge, near the community of Bedrock.

About 70 percent of the West Dolores Corridor, including the areas with highest scenic, recreation, geologic, fish and wildlife values, is federally owned. Because of this and because designation would incur high costs for easements, development, operation and administration and adverse environmental impacts, it is not included in this alternative. The Federal agencies believe that the federal lands along the West Dolores can be protected best by continuing Forest Service Multiple Use Management.

Resource value protection would be achieved under this plan primarily through scenic and public use easements. Easements would be secured on about 5,600 acres of private land within the proposed area of designation. There are also about 50,800 acres of public land in this area which would also be protected. No fee title acquisition is required.

Environmental and Land Use Impacts

Environmental and land use impacts on the Dolores River below McPhee Dam to Bedrock would be the same as in the Wild and Scenic River Plan A.

The West Dolores is not included in this alternative. The protection and management for it would be the same as provided in the No Action Alternative. The Forest Service would continue to protect the resource values of National Forest lands on this stream through existing authorities. County zoning could be used to protect River values.

About 1,700 acres of cold and warm water fishery and the most outstandingly remarkable resource values on the river would still be protected if this plan is selected.

Nondesignation of the West Dolores River avoids conflicts with the owners of many private holdings which are scattered along about one-third of this segment, while at the same time protecting this segment. However, if subdivisions are constructed along the West Dolores River, this could lead to degradation of the designated stream segments below, due to domestic waste. If State and Federal water quality standards are met, this will not be a problem.

Conservation/Recreation Costs and Trends

This plan will require no known transfers of land from private to public ownership. Development of additional public recreation facilities would include one picnic site (totaling 12 units), two primitive campsites, and one standard campsite (totaling 28 units). In addition, 36.5 miles of hiking trail would be developed. Recreation development would cost approximately $453,000. Operation and maintenance costs for these developments would be about $40,000 annually (including a sinking fund).

In addition, plan administration would require about $50,000 annually. No relocation costs would be included; however, easements are expected to cost $220,000. This is the least costly of any of the wild and scenic river plans developed by this study.

Under existing circumstances and recreational developments already planned, an estimated 168,000 recreation days will occur on public recreation facilities within this plan's boundaries by 1990. The interest and publicity which normally attends wild and scenic river designation is expected to generate a total of about 220,000 recreation days by 1990 if this plan is selected. This would consist primarily of increases in camping, picnicking, boating, and hiking. No significant overcrowding is expected, although plan management agencies would have to monitor recreation use to ensure this.

Energy Impacts

Energy impacts under this plan are the same as discussed under Wild and Scenic River Plan A. Minerals on Federal lands in the river bed, bank, or within 1/4 mile of the bank, would be withdrawn from appropriation under the mining laws and from operation of the leasing laws.

Economic and Regional Development Impacts

These impacts are also basically the same as in Wild and Scenic River Plan A; however, tourists under this plan are expected to spend about $122,000 more annually in the basin by 1990 than they would without this plan.

Social Impacts

Social impacts under this plan are the same as under Wild and Scenic River Plan A, except the social impacts under this plan are of lesser magnitude due to non-inclusion of the West Dolores.

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Wild and Scenic River Plan C (EQ C)

Plan Summary Table

Eligible Segment	Recommended for Designation	Proposed Classification
West Dolores, Source to Main Stem	Yes	Recreational
Section 2, T. 38 N., R 18 W. to Bradfield Ranch	Yes	Recreational
Bradfield Ranch to Disappointment Creek	Yes	Scenic
Disappointment Creek to Little Gypsum Valley Bridge	Yes	Recreational
Little Gypsum Valley Bridge to one mile above Highway 90	Yes	Scenic

This alternative would protect 140 miles of the Dolores. The degree and kind of protection would be similar to that afforded under Plan A, except in the last segment where the "Wild" classification would be lowered to "Scenic." Easements and acquisitions would be the same as under Plan A.

Environmental and Land Use Impacts

Resource protection would be identical to that offered by Plan A, with the exception of the Little Gypsum to Bedrock segment. Here the major difference would be the continuation of mineral exploration and development, with environmental controls in Slick Rock Canyon. Existing land use patterns would not change significantly.

Conservation/Recreation Costs and Trends

Recreation use and developments would be the same as would occur without a plan in all but the last segment. In this segment, there would be about 59,200 more visitor days by 1990 than would occur without a plan. This would require a boat launching area, an additional 32 miles of hiking trail, 33 camping units, and 5 picnic units at an annualized cost of $34,630, or a total construction cost of $438,354. The annual operation and maintenance costs, including a replacement sinking fund, would be approximately $28,500. As with Plan A, no relocation expenses would be incurred since no landowners or leases would be displaced.

Energy Impacts

Impacts on energy resources would vary from those described in Plan A only in the lower segment. By classifying this segment "Scenic" instead of "Wild," it would be possible to continue exploration for uranium and vanadium or other minerals. At the discretion of administering agencies, these lands could be withdrawn from mineral entry. If not withdrawn, minerals on Federal lands would be available for appropriation under the mining laws and the leasing laws would be operative. These activities would be conducted under controls that would ensure retention of the scenic qualities of this area. Since methods of meeting long-term energy demands are not now predictable, the need for energy resources that may exist in this corridor is uncertain. It should be noted that river management objectives associated with national designation can be modified or reversed if at some future time it is determined that exploitation of the energy resources in the Dolores corridor is in the national interest.

Economic and Regional Development Impacts

Classification of the lower segment as "Scenic" instead of "Wild" would have the effect of permitting a greater amount of mineral and recreational activity in this area. Although there are no known reserves of uranium or vanadium, the scenic designation would permit exploration, whereas "Wild" will not. This activity would not add significant economic benefits to the region unless major deposits of national importance were discovered. Their economic value to the region would then depend on national priorities of need for their extraction to meet energy demands.

Annual expenditures by recreationists would reach about $393,000 over those that would occur without a plan by 1990. Publicity associated with this study and the legislation which enabled it has stimulated considerable interest in this previously obscure segment of the river. This most likely will result in an even greater amount of nonresident participation than the estimated 55 percent. Although the number of boaters would necessarily remain relatively low because of the short floating season, it is this activity that likely would continue to have the highest percent of nonresident participation. Nonresident participation in camping, picnicking, and hiking would remain high.

Social Impacts

Social impacts under this plan would be similar to those under Plan A. However, by allowing more recreation use of the lower segment under a "Scenic" classification, more recreation opportunities would be provided at the expense of lowering the quality of the experience for some. Also, by permitting continued exploration for minerals in Slick Rock Canyon, it is possible that rich deposits of uranium/vanadium may be discovered that could help fulfill the national goal of energy independence.

Wild and Scenic River Plan D (EQ D)

Plan Summary Table

Eligible Segment	Recommended for Designation	Proposed Classification
West Dolores, Source to Main Stem	Yes	Recreational
Section 2, T. 38 N., R. 18 W. to Bradfield Ranch	Yes	Recreational
Bradfield Ranch to Disappointment Creek	Yes	Recreational
Disappointment Creek to Little Gypsum Valley Bridge	Yes	Recreational
Little Gypsum Valley Bridge to one mile above Highway 90	Yes	Recreational

This alternative would offer the least degree of protection to the 140 miles of the Dolores that were found eligible for classification. Under this alternative, the "Wild" and "Scenic" segments in Plan A would be changed to "Recreational."

Environmental and Land Use Impacts

At the discretion of the land managing agency, the area could be withdrawn from mineral entry. If not withdrawn, resource protection could be the same as that offered by Plan A in three of the segments. Classification of the other two as "Recreational," however, would allow a more intensive and greater variety of activity than under Plan A, with some environmental degradation expected.

Mining activities would include both exploration and extraction in all segments to a degree that they could degrade wild and scenic values. Existing land use patterns could continue and be intensified within the limits of the resource capability.

Conservation/Recreation Costs and Trends

Recreation use and developments would be increased considerably in the segments proposed as "Wild" and "Scenic" in Plan A. By 1990, there would be about 99,700 visitor days in the "Wild" segment and about 47,500 in the "Scenic" segment over what would occur without a plan.

This degree of use would require an addition of 52 miles of hiking trail all in the lower segment, 93 camping units, and 38 picnicking units. Costs associated with this development would be about $65,500 annually, or a total of about $828,500. The annual operation and maintenance costs, including a replacement sinking fund, would approximate $81,000. As with Plan A, there would be no relocation costs and no displacement of current landowners.

Energy Impacts

By changing the classification of the "Wild" and "Scenic" segments to "Recreational," it would be possible to continue the exploration and extraction of minerals with little constraint, at the discretion of the management agencies. Minerals on Federal lands would be available for appropriation under the mining laws and the leasing laws would be operative. Costs associated with rehabilitation of mined areas would be less than if the areas were in a higher classification. As a result, there would be some loss of natural and scenic quality. The extent to which this would occur would be in direct relation to the extent that mining occurs, which would be a product of the richness of the uranium/vanadium deposits and the national need for these ores to meet energy demands.

Economic and Regional Development Impacts

More favorable economic impacts could result from a "Recreational" classification of the "Wild" and "Scenic" segments proposed in Plan A. These would result primarily from an increase in activities associated with mineral exploration and extraction and from the increased recreational uses that would be permitted. The economic values are directly related to the national need for uranium/vanadium deposits that may be located in these segments. The amount that may be extracted and its value cannot be predicted.

Annual expenditures by recreationists would reach about $443,000 over those that would occur without a plan by 1990. Increased interest and knowledge of the Dolores would result from this study and would result in more people wanting to experience the river's resources. The increase of nonresident use would be similar to that mentioned under Plan C.

Social Impacts

Social impacts will be similar to those described under Plan C.

Environmental Quality Plan E

(Maximum Cultural Resources Protection)

Plan Summary Table

Eligible	Recommended for Designation	Proposed Classification
West Dolores River	No	None
Section 2, T. 38 N., R. 18 W. to Bradfield Ranch Bridge	No	None
Bradfield Ranch Bridge to Disappointment Creek	No	None
Disappointment Creek to Little Gypsum Valley Bridge	No	None
Little Gypsum Valley Bridge to one mile above Highway 90	No	None

The intent of this plan is to preserve the historical, archeological, and cultural resources along 140 miles of river. These resources would be protected along the 35 miles of the West Dolores River and the 105 miles of the Dolores River between about 1 mile below the McPhee Damsite and about 1 mile above the State Highway 90 bridge, near the community of Bedrock. This plan does not propose designation or classification of any of the study segments.

Environmental and Land Use Impacts

If selected, this plan would protect only the environment of cultural sites. It would only affect land use on or near these sites. Protection would require a complete survey of all sites. Analyses would then be made to determine if the sites warrant protection because of their historical, archaeological or cultural values.

Conservation/Recreation Costs and Trends

This plan would probably require transfers of some land from private to public ownership. It would also require a significant amount of funding for land purchase and protective measures. However, it is impossible to estimate costs of this plan before a complete survey and analysis of the significance of the cultural resources is done.

As protection is considered incompatible with use of these resources, no additional recreation days would occur as a result of selection of this plan. This plan, if adopted, may interfere with selection of future sites for recreation development and may conflict with existing recreation uses, if these uses or proposed development areas occur near a site.

Energy Impacts

If a site is on or near an area of uranium extraction, a conflict may occur. Mine shafts, portals, and access roads may not be able to locate where it is most economical to do so, and the cost of mineral extraction may increase. Minerals on Federal lands will be available for consideration under the mining laws and the mineral leasing laws would be operative.

Economic and Regional Development Impacts

There are virtually no beneficial economic impacts to this plan. It may conflict with regional development in the areas of recreation use and energy development.

Social Impacts

This plan will protect historical, cultural, and archeological resources until future generations desire to use these resources for scientific, educational, or other purposes.

Summary and Comparison of Effects of Alternative Plans

Net annual benefits of the seven alternative plans range from $829,595 to $1,088,995. Neither of the NED plans nor EQ Plan E contributes to the Wild and Scenic River component of the EQ objective. EQ Plans A, C, and D maximize the mileage of designated river; however, EQ Plans C and D would result in classification of river segments at levels less restrictive than they are qualified to be. EQ Plan B would include 105 miles of the river in the National System. Every segment would be classified at the most restrictive level for which it qualifies in both EQ Plans A and B.

NED Plan A was eliminated since it has a total net annual benefit lower than several EQ plans and it contributes significantly less to the EQ objective.

NED Plan B was eliminated because it has the highest annual cost and a benefit/cost ratio of 1:1.3, significantly lower than many EQ plans and NED A. NED Plan B would adversely affect the preservation of natural beauty, free-flowing stream, and historic and cultural components of the EQ objective.

EQ Plans C and D were eliminated because of high annual costs and lower satisfaction of the EQ objective components.

EQ Plan E has the lowest cost and best benefit/cost ratio. However, it contributes nothing to the preservation of the free-flowing stream component and provides for the lowest preservation of natural beauty of any EQ plan.

EQ Plan A and B differ only in that Plan B does not recommend inclusion of the West Dolores River. The net annual benefit for both plans is identical; however, EQ Plan A has $86,000 more in annual development costs, $8,300 more in annual cost for scenic and access easements, and $48,000 more in annual administration costs (the latter two are environmental quality costs).

Under EQ Plan B the West Dolores River would continue to be managed and utilized at about the same intensity and in the same ways as it currently is. EQ Plan A would result in legislative action to preserve 35 miles of stream and about 1,900 acres of private land more than does EQ B. Under EQ B the National Forest portions of the West Dolores River will be protected and scenic, recreational, and other values on these lands preserved according to principles of multiple use. EQ A would provide additional statutory protection for free-flowing qualities of the West Dolores River and would include private land use controls to insure retention of the scenic, recreation, fish and wildlife, and other values now found in portions of the corridor. An impact from trail construction, fence adjustment, and recreation site development would occur along the West Dolores with EQ A.

The Federal agencies recommend adoption of EQ Plan B. The State of Colorado recommends adoption of EQ Plan A.

Table V-1.--Summary and Comparison of Effects of Alternative Plans

Measurement of Effect	Unit	Alternative Plans: No Action	NED A	NED B	EQ A	EQ B 1/	EQ C	EQ D	EQ E
Visual corridor scenic values protected	Acres	70,000	69,000	10,000	78,000	76,100	78,000	78,000	70,000
Free-flowing river preserved	Miles	None guaranteed	None	None	140	105	140	140	None guaranteed
Boating	RD	4,600	6,900	4,600	4,600	4,600	5,940	7,760	4,600
Fishing	RD	69,700	69,700	69,700	84,955	44,955	84,955	84,955	69,700
Hiking	RD	68,830	187,410	68,830	126,445	92,195	164,845	197,925	68,830
Camping	RD	53,480	142,280	53,480	75,590	49,530	88,590	117,250	53,480
Picnicking	RD	26,640	71,640	26,640	34,710	28,770	38,150	62,245	26,640
Annual recreation use	Recreation Days	223,250	477,930	223,250	323,300	220,050	382,480	470,135	223,250
*Camping units	Number	245	448	245	287	273	278	338	245
*Picnic units	Number	78	144	78	93	90	83	116	78
*Hiking-riding trails	Miles	10	113	10	74	47	42	62	10
Recreation use value	$1,000	1,102	1,512	1,102	1,310	1,224	1,495	1,545	1,102
Recreation development cost	$1,000	192	569	575	350	264	415	532	192
Annual mineral production:									
Uranium	Lbs.	32,030	32,030	895,500	32,030	32,030	32,030	32,030	32,030
Vanadium	Lbs.	185,380	185,380	3,853,380	185,380	185,380	185,380	185,380	185,380
Annual mineral production value	$1,000	368.6	368.6	2,795.7	368.6	368.6	368.6	368.6	368.6
Annual mineral production costs	$1,000	313.3	409.6	2,376.3	409.6	409.6	409.6	409.6	409.6
Annual agricultural production	AUM	27,110	27,110	27,110	27,110	27,110	27,110	27,110	27,110
Recreational river area	Miles	0	0	0	66	31	66	140	0
Scenic river area	Miles	0	0	0	41	41	74	0	0
Wild river area	Miles	0	0	0	33	33	0	0	0
Archaeologic and historic values preserved and protected	Sites	Protects all sites, but allows uses and conflicts.	Sites protected but some conflicts and degradation may occur.	Sites protected but if mineral values exist, sites may be damaged by development.	All sites protected, but some conflict and damage may occur.	Same as EQ A.	Same as EQ A.	Same as EQ A.	All sites will be identified preserved and protected. Conflicting uses not allowed.
Preservation of threatened or endangered species	Wildlife vegetation	None	None	None	None	None	None	None	None
Freedom of choice	Qualitative	Many options preserved	Options on sites developed for recreation are lost.	Options on mined areas lost. Nat'l security enhanced and choices for alternate fuels preserved.	Options for scenic, recreation, wildlife, etc. values preserved. Development choices are lost.	Same as EQ A.	Same as EQ A.	Same as EQ A.	Options for use, study, and development of cultural values preserved. Other choices in sites are lost.
Regional income generated	$1,000	2,815.5	3,034.3	3,050.6	2,907.5	2,874.6	2,899.8	2,922.2	2,815.5
Value added	$1,000	4,000.7	4,307.8	4,334.8	4,129.8	4,080.9	4,119.0	4,150.5	4,000.7
Employment generated by activities in corridor	Man-years	221	256	235	237	230	235	239	221
Educational, cultural and recreational opportunities:	Qualitative	Diversity of recreation is enhanced.							
Emergency preparedness	Qualitative	Strategic materials and scarce fuels will be available. No restrictions on transportation.	Strategic materials and scarce fuels will be less available due to higher costs. No restrictions on transportation. Access may be improved.	Strategic materials and scarce fuels will be developed and used to maximum. No restrictions on transportation. Access may be improved.	Availability of strategic materials and scarce fuels will be limited. Higher costs will limit production. Transportation restricted, and some limits on access.	Same as EQ A.	Same as EQ A.	Same as EQ A.	Same as EQ A except less restriction on transportation.

* Recreation Developments shown for NED A, EQA, EQB, EQC, and EQD are those which will be built in addiiton to those shown in the No Action column

1/ It should be noted that the EQB column does not reflect activities on the West Dolores River.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations are:

...The Dolores River main stem from Rico upstream to its source including its headwaters and the main stem segment from the Dolores-San Miguel River confluence to the Colorado-Utah border are not eligible and should not be included in the National Wild and Scenic Rivers System. Federal, State, and local governments should continue to protect and enhance the values of these segments through application of existing land management and land use authorities.

...The Dolores Project is compatible with designation of the Dolores as a component of the National Wild and Scenic Rivers System. The McPhee Dam will enhance and complement such designation.

...The Dolores River from the west boundary, Section 2, Township 38 North, Range 16 West, NMPM, below the proposed McPhee Dam, downstream to 1 mile above Highway 90 should be included in the National Wild and Scenic Rivers System (EQ Plan B as described in Chapter V).

...The Colorado Department of Natural Resources finds that the entire West Dolores fully meets the criteria for inclusion in the National Wild and Scenic Rivers System (EQ Plan A). The West Dolores traverses three of the five western life zones represented in the Dolores River Basin and possesses outstanding scenic, geologic, and fish and wildlife values. The West Dolores provides a variety of recreational activity commensurate with the natural variety inherent in the three life zones. The fact that the upper 9 miles are being considered for addition to the National Wilderness System is immaterial. If the costs of including and thereafter maintaining the West Dolores as a recreational component of the National System are excessive for the preservation of a unique national heritage, then it appears that the provisions of the National Wild and Scenic Rivers Act have no meaning.

Although the West Dolores River generally meets the minimum criteria for inclusion in the National System, the Federal Study Team believes

it is the nine-mile portion of the West Dolores above Dunton that contains the outstandingly remarkable scenic and geologic values (Table IV-1). That portion of the stream is entirely National Forest land that is being considered for addition to the National Wilderness Preservation System. Below Dunton, the West Dolores is an attractive stream typical of high mountain valleys throughout the Rocky Mountains. The segment below Dunton has extensive intermingling of private lands with many houses, barns, mines, fences, and water diversions. Because of the short length of the outstandingly remarkable section and the potentially difficult and costly administration of the lower segment, the Federal agencies do not recommend inclusion of the West Dolores River in the National System.

...Although part of a larger segment deemed ineligible, the 8-mile reach of river from Gateway to the State line is eligible and should be added to the National System at such time as the Utah portion of the river is included. Classification of this segment should be determined by the Utah Study.

Classification Recommendations

The recommendations expressed below are based on the premise that the Dolores Project will be constructed. Its construction will enhance the outstanding wild and scenic values of the Dolores River by ensuring that a live streamflow will be maintained below McPhee Dam.

In accordance with Public Law 90-542 and the Guidelines issued by the Secretaries of Agriculture and Interior, the 105-mile Main Dolores segment is proposed for classification as follows:

(1) From the west boundary, Section 2, Township 38 North, Range 16 West, NMPM, below the proposed McPhee Dam, downstream to the Bradfield Ranch Bridge (about 11 miles)----------Recreational

(2) Bradfield Ranch Bridge to the Disappointment Creek confluence (about 41 miles)----------Scenic

(3) Disappointment Creek confluence to the Little Gypsum Valley Bridge (San Miguel-Montrose County Line) (about 20 miles)----------Recreational

(4) Little Gypsum Valley Bridge to one mile above the Highway 90 Bridge (about 33 miles)------Wild

(Note: For purposes of the Dolores River, it is proposed that legislation including the river in the National Wild and Scenic Rivers System include a provision modifying the (wild) area withdrawn from mineral development. This provision would call for establishing the withdrawn area boundaries during the management planning period, with the objective of conforming the boundaries to the unique, sheer-wall canyon topography in Slick Rock canyon, rather than establishing an arbitrary quarter-mile wide zone each side of the river. This would protect the canyon while allowing maximum utilization of the minerals outside the canyon. See page 104.)

The Colorado Department of Natural Resources recommends:

> The West Dolores River from its source to the Main Stem confluence (about 35 miles)----------Recreational

Management Plan

The Wild and Scenic Rivers Act allows a period of about one year after wild and scenic rivers designation for the administrative agency to prepare a management plan, including detailed boundaries (governed by provisions of the Act), classifications, and plans for necessary developments in accordance with its classifications. This management plan must be published in the Federal Register and does not become effective until 90 days after it has been forwarded to the President of the Senate and the Speaker of the House of Representatives. The objective of this plan should be to protect and enhance the values that caused it to be included in the national system with a minimum impact on private landowners and existing land use practices. Provisions in this plan determine the nature and the extent of the effects that inclusion in the National Wild and Scenic River System will have on private landowners. It is recommended that this plan be prepared in cooperation with concerned Federal, State, and local interests.

Since the primary purposes of designation of the River are to protect the river environment and provide public recreation uses, some controls on land in the corridor are necessary. These can best be provided through the use of scenic and public access easements. These are agreements between the administering agency and the landowners in which the administrator buys certain uses on selected portions of the owners' land. Scenic easements are written to prevent any degrading of the view from along the river by, for example, billboards, trash piles, excessive timbering, high density building construction and commercial sand and gravel operations. These agreements generally bind present and future landowners to existing uses and prevent developments that detract from the scenic and natural

character of the land. They do not: (1) give the general public access, or (2) restrict or change any present land uses -- unless the owner agrees to do so.

Public use easements allow public use of a continuous corridor along the river shore. The width of this corridor generally would be between 100 and 200 feet on both sides of the river centerline. Normally one easement is obtained and contains both scenic and public use stipulations.

County zoning and land use regulation under Colorado State H.B. 1034 and H.B. 1041 cannot be considered acceptable means of protection to reduce the need for scenic easements. Guarantees do not exist that counties will not award variances to zoning regulations nor that zoning regulations will not be made less restrictive or removed completely. H.B. 1034 has no direct application to preservation of scenic or natural values. The permissive authority and the ability to recognize areas of state interest contained in H.B. 1041 is not a mandate that it will be done. In addition, the number of local jurisdictions involved would create an extremely complex problem to provide uniform and adequate protection even if the counties were willing.

Management Recommendations for the Main Dolores, McPhee Dam to Highway 90 Bridge

Inclusion of this stretch of the Dolores River in the National Wild and Scenic Rivers System will provide statutory protection and preservation of the natural and scenic values of the river and its immediate area. Approximately 56,400 acres of the Dolores River corridor (Maps 3 through 6) should be included in the designation. This is based on a "visual corridor" which varies from 0.18 mile to 4.0 miles. Lands included should be refined in the detailed boundary description prepared by the designated administering agencies.

The administration of the Dolores River should be divided between the U.S. Department of Agriculture, Forest Service, and the U.S. Department of the Interior, Bureau of Land Management, at the Dolores-San Miguel County line. The Forest Service will administer and manage the river area upstream of the county line and the Bureau of Land Management will administer the segments downstream of the line. Public land within and adjacent to the McPhee Reservoir Project and the recreation developments from the Dam to and including the Bradfield Ranch site will be administered by the Forest Service.

The Coordinated Management Plan should refine and specifically delineate detailed boundaries of the River area and contain specific development and administration plans. The preparation of this plan should fully and actively involve Federal, State, and local government agencies, industry representatives, and interested citizens of the local area. The general management objectives of the Coordinated Management Plan should be to protect and enhance the natural values of the River. The Plan should be implemented with minimum impact on private landowners and existing land use practices. Designation of the River will not interfere with operation of the town of Dove Creek water supply facility.

In general, each component of the National Wild and Scenic Rivers System should be administered in accord with these goals:

- Maintain the free-flowing condition of the River between McPhee Dam and Bedrock.

- Preserve the natural scenic values, undeveloped and nearly primitive character, and the historical and archaeological features of the corridor. Use screening techniques such as vegetation and natural rock and non-specular (flat, non-reflective, earth tone pigments) paints to enhance scenic values.

- Prevent degradation of existing water quality; encourage water quality improvements so long as scenic, recreational, geologic, fish and wildlife, cultural, historic, and similar values are not adversely affected.

- Provide public access, use, and interpretation of the corridor and its resources in a way which is consistent with the protection and enhancement of the quality of the River and the corridor.

- Provide high-quality recreational opportunities associated with a free-flowing river at a level of use that does not cause deterioration of the resources, lower the quality of experiences, or adversely affect riparian landowners.

- Provide for the protection, use, and enhancement of fish and wildlife resources within the framework of appropriate Federal and State laws.

- Provide for and emphasize public safety in all activities and recreation uses of the River and adjacent areas.

These goals should serve as a working tool for the administering agencies in preparation of their Coordinated Management Plan. They should also provide individual landowners a means of determining how their property might be affected.

As stated, the amount of land needed to manage and protect the River corridor values will have to be identified in detail in the Coordinated Plan. This will require intensive investigation before the need and extent of control can be determined. The estimates of private lands to be acquired in fee title and of scenic and access easements should not be viewed as absolute or final. They are approximations made for cost estimates and to aid the administering agencies in the more intensive planning to follow.

Selected sites for stream access and essential basic recreation developments are planned for construction by the Bureau of Reclamation as part of the Dolores Project. Should the River be added to the National System, and if the Dolores Project's downstream recreation developments are eliminated from final Project plans, these facilities should be constructed by the management agencies.

Recreation use is increasing in the Dolores River Basin and in the entire Four-Corners Region. Designation of the Dolores River is expected to accelerate the rate of recreation use. Fishing, rafting, hiking, camping, and riding are expected to increase substantially on the Dolores River. Without adequate controls and well-planned developments, the very qualities that make the Dolores unique could be destroyed by the users attracted to the area. The projections of recreation use developed by the Study Team indicate that the limited carrying capacity of the River and its corridor will be exceeded by 1980.

Five major and two minor public recreation sites would be developed to accommodate anticipated use of the River below McPhee Dam. As currently planned, the five major sites will be developed in conjunction with the Dolores River Project. The sites are: (1) Bradfield Ranch, (2) Dove Creek Pumping Station, (3) Slick Rock, (4) Little Gypsum Valley, and (5) one mile upstream of Bedrock. These sites will have minimum basic development, probably consisting of sanitation facilities, river access and boat launch/recovery sites, tables, fireplaces, and parking areas. About 52 miles of hiking and riding trails will also be developed below McPhee Dam. Though a part of the Dolores Project, these developments would also serve to meet recreation development needs of the Wild and Scenic River proposal.

If the River is designated as proposed, some additional facilities will be needed at three points. One point is at Little Gypsum Valley where the site planned as part of the Dolores Project would be enlarged to accommodate Wild and Scenic River recreation use. Two primitive sites will be located in the proposed Wild River section. These will be addressed specifically in the Coordinated Management Plan. These sites will be limited to boat recovery areas, fireplaces, and sanitation facilities. Approximately 36.5 miles of trails would also be needed, with the trails tentatively to be located between Disappointment Creek and Little Gypsum Valley and in side canyons off Slick Rock Canyon.

The development costs relate only to the additional sites to be developed if the recommendation is adopted. It should be clear, however, that the five sites proposed in conjunction with the Dolores Project must be provided.

Each site would serve as a visitor information center. Each site will be designed to accommodate up to 80 to 100 people at one time. In addition to these sites it will be necessary to provide hiking and riding trail access along 36.5 miles of river, since there is insufficient water for boat access throughout the recreation season. Where the proposed trail crosses private land, easements will be acquired. This development proposal is conceptual in nature and subject to refinement by the administering agencies.

The Wild and Scenic Rivers Act (Sec. 9(a)(iii)) states that "... 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 appropriations under the mining laws and from operation of the mineral leasing laws ..." Because of the high mineral potential and canyon width, it is proposed that, for purposes of the Dolores River designation, the withdrawn area be modified by a provision in any legislation which includes the River in the National System. The provision should consist of the following (or similar language):

> Notwithstanding the provisions of section 9(a)(iii) of the Wild and Scenic Rivers Act, the detailed boundaries of the area to be withdrawn from appropriation under the mining laws and from operation of the mineral leasing laws, shall be established as part of the management plan developed pursuant to section 3(b) of the Wild and Scenic Rivers Act.

The purpose of this provision is to allow for the determination of the most logical location of the withdrawal boundary; generally this will be along the top of the canyon rims.

At present there 10 active surface and subsurface mines within the River corridor. Most of these mines and the great majority of the 4,000 claims in the area are for uranium. A closely associated mineral, vanadium, is produced in great quantities in the basin. Minerals management will be an integral part of the Coordinated Management Plan. These points will be considered:

- Determine the extent and grade of mineral reserves in the visual corridor and associated lands.

- Determine the type of mining most feasible for obtaining the mineral reserves.

- Compare the feasibility and acceptability of deep mining from the canyon rim rather than into the canyon walls or along the river.

- If necessary to mine within the corridor or canyon walls, determine what controls are necessary to prevent adverse impacts while allowing economic mining.

The study should be made jointly by the U.S. Department of the Interior, Colorado Geological Survey, and the Energy Research and Development Administration.

Scenic and access easements on 23 miles of private land adjoining the River are expected to cost $220,000. Development of recreation facilities are estimated to cost about $453,000. Operation and maintenance costs for recreation are estimated to be about $40,000 annually. The administering agencies estimate that annual administration of the proposed National Wild and Scenic River System will be $50,000 per year. An additional cost, but not a Federal expense, is the added cost of mineral production which may be imposed to prevent adverse impacts on the Wild, Scenic, and Recreational Rivers' values. This is estimated to be about $100,000 annually if current economic conditions continue and the highest practicable level of mineral development occurs.

The total estimated costs of the proposed designation is $693,000 for development and acquisition and $90,000 annually for operation, maintenance, and administration.

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Management Recommendations for the West Dolores

Inclusion of the West Dolores in the National Wild and Scenic River System would provide for the statutory preservation of the natural and scenic values of the river and its immediate area. Approximately 22,400 acres would be included in the visual corridor (Maps 1 and 2) which is about 1 mile wide. About 30 percent of land in the corridor is privately owned; the remainder is National Forest. Detailed boundary locations should be determined in the preparation of the Management Plan for the West Dolores.

If designated, the West Dolores RECREATIONAL RIVER would be administered by the Forest Service. The Management Plan for the West Dolores should have the same goals as those stated earlier in this chapter for the Main Stem of the Dolores River. The Colorado Division of Wildlife should be especially involved in the preparation of this Management Plan. Mineral development would be allowed in accord with the 1872 mining laws, the Secretary of Agriculture's 1872 Act Use Regulations (1974), and Section 8 - Wild and Scenic Rivers Act. Mining claims on National Forest lands (approximately 1,000) will, as the need arises, be examined for validity as part of normal ongoing operations.

Existing land uses, including grazing and other agricultural activities, will be continued with minimum impact. New land uses and development would be regulated through acquisition of scenic easements. Public use easements would be acquired to provide public access to a continuous corridor along the West Dolores.

The corridor width required for this purpose would range from 100 to 200 feet on both sides of the river centerline. If necessary to construct or relocate fences to insure continuation of existing agricultural or other land uses, this would be done at Government expense.

A conceptual development plan prepared by the study team calls for the development of four additional camping/picnicking areas. These would all be located on National Forest land, and no privately owned land would be required.

The total cost of including the West Dolores RECREATIONAL RIVER in the National Wild and Scenic Rivers System would be about $430,000. This cost includes $103,000 for scenic easements on 10.5 miles of privately owned land and $327,000 for the development of recreation facilities. Annual costs are $20,000 for the operation and maintenance of the recreation facilities and $45,000 for administration.

The Colorado Department of Natural Resources will participate in the administration, operation, and development of the West Dolores River should it be included in the National Wild and Scenic Rivers System. The Department of Natural Resources offers such assistance as may be subsequently authorized by the Colorado General Assembly or by the Governor. The State cannot commit itself to joint funding, either through direct cost-shares or in-kind participation, at this time. If the West Dolores River is designated a component of the National Wild and Scenic Rivers System, the Forest Service and the Colorado Department of Natural Resources should jointly prepare a detailed management plan which will give consideration to, among other items, administrative arrangements for river area management and cost-sharing for easements, developments, and operation and maintenance.

APPENDIX A

WILD AND SCENIC RIVERS ACT AND GUIDELINES

Wild and Scenic Rivers Act as Amended through Public Law 93-621 (January 3, 1975)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) this Act may be cited as the "Wild and Scenic Rivers Act". 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 without expense to the United States, 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, and that segment of the Wolf River, Wisconsin, which flows through Langlade County. National wild and scenic rivers system. 82 STAT. 906 82 STAT. 907

(b) A wild, scenic or recreational river area eligible to be included in the system is a free-flowing stream and the related adjacent land area that possesses one or more of 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: Eligibility for inclusion.

(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 primitive and shorelines largely undeveloped, 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.

National wild and scenic rivers.

SEC. 3 (a) The following rivers and the land adjacent thereto are hereby designated as components of the national wild and scenic rivers system:

(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; 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.

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(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. Said agreement may also include provision for State or local governmental participation as authorized under subsection (e) of section 10 of this Act.

(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*, (i) 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 mile 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 $2,000,000 for the acquisition of lands and interests in lands and not more than $809,000 for development. . Appropriation.

(b) The agency charged with the administration of each component of the national wild and scenic rivers system designated by subsection (a) of this section shall, within one year from the date of this Act, establish detailed boundaries therefor (which boundaries shall include an average of not more than three hundred and twenty acres per mile on both sides of the river); determine which of the classes outlined in section 2, subsection (b), of this Act best fit the river or its various segments; and prepare a plan for necessary developments in connection with its administration in accordance with such classification. Said boundaries, classification, and development plans 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. Publication in Federal Register.

82 STAT. 908

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 lands 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.).

Contents.

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. No river or portion of any river shall be added to the national wild and scenic rivers system subsequent to enactment of this Act until the close of the next full session of the State legislature, or legislatures in case more than one State is involved, which begins following the submission of any recommendation to the President with respect to such addition as herein provided.

(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.

Publication in Federal Register.

Potential additions. Designation.

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, including the tributaries and headwaters on national forest lands.

(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.

Studies and reports.

(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.

(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.

Appropriations.

(3) 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 $2,175,000.

(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.

Land acquisition.

SEC. 6. (a) 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, and 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.

(b) If 50 per centum or more of the entire acreage within a federally administered wild, scenic or recreational river area is owned 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.

(c) Neither the Secretary of the Interior nor the Secretary of Agriculture may acquire lands by condemnation, for the purpose 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 in 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.

(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 of 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.

Right of use and occupancy.

(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 of 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, 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. "Improved property."

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 approval of this Act. 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. Water resources projects. Restrictions.

(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 in 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—

49 Stat. 863.
16 USC 791a.

(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); and

(ii) 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 approval 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.

(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.

(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.

Mining and mineral leasing laws.

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 or 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.

Administration.

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.

16 USC 1131 note.

(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.

Cooperative agreements with State or local governments.

(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.

Assistance in financing State and local projects.

16 USC 4601-4 note.

16 USC 4601-4601-3.

SEC. 11. (a) The Secretary of the 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. He shall also, in accordance with the authority contained in the Act of May 28, 1963 (77 Stat. 49), provide technical assistance and advice to, and cooperate with, States, political subdivisions, and private interests, including nonprofit organizations, with respect to establishing such wild, scenic and recreational river areas.

(b) The Secretaries of Agriculture and of Health, Education, and Welfare shall likewise, in accordance with the authority vested in them, assist, advise, and cooperate with State and local agencies and private interests with respect to establishing such wild, scenic and recreational river areas.

Administration and management policies. Review.

SEC. 12. (a) The Secretary of the Interior, the Secretary of Agriculture, and heads of other Federal agencies shall review administrative and management policies, regulations, contracts, and plans affecting lands under their respective jurisdictions which include, border upon, or are adjacent to the rivers listed in subsection (a) of section 5 of this Act in order to determine what actions should be taken to protect such rivers during the period they are being considered for potential addition to the national wild and scenic rivers system. 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 Secretary of the Interior and with the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.

Fish and wildlife. Jurisdiction under State and Federal laws.

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.

Compensation for water rights.

(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. 82 STAT. 917

(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. 82 STAT. 918

(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.

Easements and rights-of-way.

(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.

Claim and allowance as charitable contribution or gift. 76 Stat. 1034. 68A Stat. 410.

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.

Definitions.

SEC. 15. As used in this Act, the term—

(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.

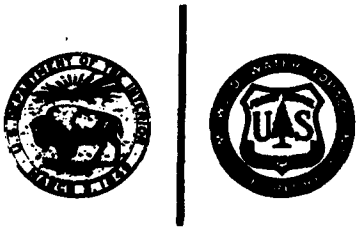
Sec. 16. (a) There are hereby authorized to be appropriated, including such sums as have heretofore been appropriated, the following amounts for land acquisition for each of the rivers described in section 3(a) of this Act:

Clearwater, Middle Fork, Idaho, $2,909,800;
Eleven Point, Missouri, $4,906,500;
Feather, Middle Fork, California, $3,935,700;
Rio Grande, New Mexico, $253,000;
Rogue, Oregon, $12,447,200;
St. Croix, Minnesota and Wisconsin, $11,768,550;
Salmon, Middle Fork, Idaho, $1,237,100; and
Wolf, Wisconsin, $142,150.

(b) The authority to make the appropriations authorized in this section shall expire on June 30, 1979.

INT: 3620-75

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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.

February 1970

PURPOSE

The following criteria supplement those listed in Section 2 of the Wild and Scenic Rivers Act, which states that rivers included in the National Wild and Scenic Rivers System shall be free-flowing streams which possess outstandingly remarkable scenic, recreational, geological, fish and wildlife, historic, cultural and other similar values.

These guidelines are intended to define minimum criteria for the classification and management of free-flowing river areas proposed for inclusion in the national system by the Secretary of the Interior or the Secretary of Agriculture, and for State rivers included in the system by the Secretary of the Interior.

In reading these guidelines and in applying them to real situations of land and water it is important to bear one important qualification in mind. There is no way for these statements of criteria to be written so as to mechanically or automatically indicate which rivers are eligible and what class they must be. It is important to understand each criterion; but it is perhaps even more important to understand their collective intent. The investigator has to exercise his judgment, not only on the specific criteria as they apply to a particular river, but on the river as a whole, and on their relative weights. For this reason, these guidelines are not absolutes. There may be extenuating circumstances which would lead the appropriate Secretary to recommend, or approve pursuant to Section 2(a)(ii), a river area for inclusion in the system because it is exceptional in character and outstandingly remarkable even though it does not meet each of the criteria set forth in these guidelines. However, exceptions to these criteria should be recognized only in rare instances and for compelling reasons.

The three classes of river areas described in Section 2(b) of the Wild and Scenic Rivers Act are as follows:

"(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 primitive and shorelines largely undeveloped, 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."

GENERAL CHARACTERISTICS

The Wild and Scenic Rivers Act, Section 10(a), states that, "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."

In order to qualify for inclusion in the national system, a State free-flowing river area must be designated as a wild, scenic, or recreational river by act of the State legislature, with land areas wholly and permanently administered in a manner consistent with the designation by any agency or political subdivision of the State at no cost to the Federal Government, and be approved by the Secretary of the Interior as meeting the criteria established by the Wild and Scenic Rivers Act and the guidelines contained herein. A river or related lands owned by an Indian tribe cannot be added to the national system without the consent of the appropriate governing body.

In evaluating a river for possible inclusion in the system or for determining its classification, the river and its immediate land area should be considered as a unit, with primary emphasis upon the quality of the experience and overall impressions of the recreationist using the river or the adjacent riverbank. Although a free-flowing river or river unit frequently will have more than one classified area, each wild, scenic, or recreational area must be long enough to provide a meaningful experience. The number of different classified areas within a unit should be kept to a minimum.

Any activity, use, or development which is acceptable for a wild river is also acceptable for scenic and recreational river areas, and that which is acceptable for a scenic river is acceptable for a recreation river area. Activity and development limitations discussed below should not necessarily be interpreted as the desired level to which development or management activity should be planned. Hunting and fishing will be permitted, subject to appropriate State and Federal laws.

- The Wild and Scenic Rivers Act provides that rivers must be in a free-flowing natural condition, i.e., a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes which are without impoundment, diversion, straightening, rip-rapping or other modification of the waterway. However, low dams, diversion works, and other minor structures will not automatically preclude the river unit from being included in the National Wild and Scenic Rivers System, providing such structures do not unreasonably diminish the free-flowing nature of the stream and the scenic, scientific, geological, historical, cultural, recreational, and fish and wildlife values present in the area.

- The river or river unit must be long enough to provide a meaningful experience. Generally, any unit included in the system should be at least 25 miles long. However, a shorter river or segment that possesses outstanding qualifications may be included in the system.

- There should be sufficient volume of water during normal years to permit, during the recreation season, full enjoyment of water-related outdoor recreation activities general-

ly associated with comparable rivers. In the event the existing supply of water is inadequate, it would be necessary to show that additional water can be provided reasonably and economically without unreasonably diminishing the scenic, recreational, and fish and wildlife values of the area.

● The river and its environment should be outstandingly remarkable and, although they may reflect substantial evidence of man's activity, should be generally pleasing to the eye.

● The river should be of high quality water or susceptible of restoration to that condition. A concept of nondegradation whereby existing high water quality will be maintained to the maximum extent feasible will be followed in all river areas included in the national system.

All rivers included in the national system should meet the "Aesthetics--General Criteria" as defined by the National Technical Advisory Committee on Water Quality in the Federal Water Pollution Control Administration's Water Quality Criteria, April 1, 1968. Water quality should meet the criteria for fish, other aquatic life, and wildlife, as defined in that document, so as to support the propagation of those forms of life which normally would be adapted to the habitat of the stream. Where no standards exist or where existing standards will not meet the objectives of these criteria, standards should be developed or raised to achieve those objectives. Wild river areas can be included in the national system only if they also meet the minimum criteria for primary contact recreation, except as these criteria might be exceeded by natural background conditions. Scenic or recreation river areas which qualify for inclusion in the system in all respects except for water quality may be added to the system provided adequate and reasonable assurance is given by the appropriate Federal or State authority that the water quality can and will be upgraded to the prescribed level for the desired types of recreation, and support aquatic life which normally would be adapted to the habitat of the stream at the prescribed level of water quality. At such time as water quality fully meets the criteria, it may be desirable to change the classification of a river.

● New public utility transmission lines, gas lines, water

lines, etc., in river areas being considered for inclusion in the national system are discouraged. However, where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are indicated, the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site in accordance with the general guidelines described in the Report of the Working Committee on Utilities prepared for the President's Council on Recreation and Natural Beauty, December 1968.

- Mineral activity subject to regulations under the Act must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment. Specific controls will be developed as a part of each management plan.

CRITERIA FOR RIVER DESIGNATION

The following criteria for classification, designation, and administration of river areas are prescribed by the Act. These criteria are not absolutes, nor can they readily be defined quantitatively. In a given river, a departure from these standards might be more than compensated by other qualities. However, if several "exceptions" are necessary in order for a river to be classified as wild, it probably should be classified as scenic. If several "exceptions" are necessary in order for a river to be classified as scenic, it probably should be classified as recreational.

Wild River Areas

The Wild and Scenic Rivers Act states that "these represent vestiges of primitive America," and they possess these attributes:

1. "Free of impoundments"
2. "Generally inaccessible except by trail"
3. "Watersheds or shorelines essentially primitive"
4. "Waters unpolluted"

- Classification criteria.

Despite some obvious similarities, the "wildness" associated with a wild river area is not synonymous with the "wildness"

involved in wilderness classification under the Wilderness Act of 1964. One major distinction, in contrast to wilderness, is that a wild river area also may contain recreation facilities for the convenience of the user in keeping with the primitive setting.

1. An "impoundment" is a slack water pool formed by any man-made structure. Except in rare instances in which esthetic and recreational characteristics are of such outstanding quality as to counterbalance the disruptive nature of an impoundment, such features will not be allowed on wild river areas. Future construction of such structures that would have a direct and adverse effect on the values for which that river area was included in the national system, as determined by the Secretary charged with the administration of the area, would not be permitted. In the case of rivers added to the national system pursuant to Sec.2(a)(ii), such construction could result in a determination by the Secretary of the Interior to reclassify or withdraw the affected river area from the system.

2. "Generally inaccessible" means there are no roads or other provisions for overland motorized travel within a narrow, incised river valley, or if the river valley is broad, within 1/4 mile of the riverbank. The presence, however, of one or two inconspicuous roads leading to the river area will not necessarily bar wild river classification.

3. "Essentially primitive" means the shorelines are free of habitation and other substantial evidence of man's intrusion. This would include such things as diversions, straightening, rip-rapping, and other modifications of the waterway. These would not be permitted except in instances where such developments would not have a direct and adverse effect on the values for which that river area was included in the national system as determined by the Secretary charged with the administration of the area. In the case of rivers added to the national system pursuant to Section 2(a)(ii), such construction could result in a determination by the Secretary of the Interior to reclassify or withdraw the affected river area from the system. With respect to watersheds, "essentially primitive" means that the portion of the watershed within the boundaries has a natural-like appearance. As with shorelines, developments within the boundaries should emphasize a natural-

like appearance so that the entire river area remains a vestige of primitive America. For the purposes of this Act, a limited amount of domestic livestock grazing and pasture land and cropland devoted to the production of hay may be considered "essentially primitive." One or two inconspicuous dwellings need not necessarily bar wild river classification.

4. "Unpolluted" means the water quality of the river at least meets the minimum criteria for primary contact recreation, except where exceeded by natural background conditions, and esthetics as interpreted in the Federal Water Pollution Control Administration's Water Quality Criteria, April 1, 1968. In addition, the water presently must be capable of supporting the propagation of aquatic life, including fish, which normally would be adapted to the habitat of the stream. Where no standards exist or where existing standards will not meet the objectives of these criteria, standards should be developed or raised to achieve those objectives.

● Management objectives.

The administration of a wild river area shall give primary emphasis to protecting the values which make it outstandingly remarkable while providing river-related outdoor recreation opportunities in a primitive setting.

To achieve these objectives in wild river areas, it will be necessary to:

1. Restrict or prohibit motorized land travel, except where such uses are not in conflict with the purposes of the Act.

2. Acquire and remove detracting habitations and other nonharmonious improvements.

3. Locate major public-use areas, such as large campgrounds, interpretive centers or administrative headquarters, outside the wild river area. Simple comfort and convenience facilities, such as fireplaces, shelters, and toilets, may be provided for recreation users as necessary to provide an enjoyable experience, protect popular sites, and meet the management objectives. Such facilities will be of a design and

location which harmonize with the surroundings.

4. Prohibit improvements or new structures unless they are clearly in keeping with the overall objectives of the wild river area classification and management. The design for any permitted construction must be in conformance with the approved management plan for that area. Additional habitations or substantial additions to existing habitations will not be permitted.

5. Implement management practices which might include construction of minor structures for such purposes as improvement of fish and game habitat; grazing; protection from fire, insects, or disease; rehabilitation or stabilization of damaged resources, provided the area will remain natural appearing and the practices or structures will harmonize with the environment. Such things as trail bridges, an occasional fence, natural-appearing water diversions, ditches, flow measurement or other water management devices, and similar facilities may be permitted if they are unobtrusive and do not have a significant direct and adverse effect on the natural character of the area.

Scenic River Areas

The Wild and Scenic Rivers Act states that scenic rivers:

1. Are "free of impoundments"
2. Are "accessible in places by road"
3. Have "shorelines or watersheds still largely primitive and shorelines largely undeveloped"

● Classification criteria.

1. An "impoundment" is a slack water pool formed by any manmade structure. Except in rare instances in which esthetic and recreational characteristics are of such outstanding quality as to counterbalance the disruptive nature of an impoundment, such features will not be allowed on scenic river areas. Future construction of such structures that would have a direct and adverse effect on the values for which that river area was included in the national system as determined by the Secretary charged with the administration of the area, would not be permitted. In the case of rivers added to the national

system pursuant to Section 2(a)(ii), such construction could result in a determination by the Secretary of the Interior to to reclassify or withdraw the affected river area from the system.

2. "Accessible in places by road" means that roads may occasionally bridge the river area. Scenic river areas will not include long stretches of conspicuous and well-traveled roads closely paralleling the riverbank. The presence, however, of short stretches of conspicuous or longer stretches of inconspicuous and well-screened roads or screened railroads will not necessarily preclude scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads, consideration should be given to the type of use for which such roads were constructed and the type of use which would occur within the proposed scenic river area.

3. "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. A modest amount of diversion, straightening, rip-rapping, and other modification of the waterway would not preclude a river from being considered for classification as a scenic river. Future construction of such structures would not be permitted except in instances where such developments would not have a direct and adverse effect on the values for which that river area was included in the national system as determined by the Secretary charged with the administration of the area.

In the case of rivers added to the national system pursuant to Section 2(a)(ii), such construction could result in a determination by the Secretary of the Interior to reclassify or withdraw the affected river area from the system. "Largely primitive" with respect to watersheds means that the portion of the watershed within the boundaries of the scenic river area should be scenic, with a minimum of easily discernible development. 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 substantially adverse effect on the natural-like appearance of the river or its immediate environment.

4. "Largely undeveloped" means that small communities or any concentration of habitations must be limited to relatively short reaches of the total area under consideration for designation as a scenic river area.

● Management objectives.

A scenic river area should be managed so as to maintain and provide outdoor recreation opportunities in a near natural setting. The basic distinctions between a "wild" and a "scenic" river area are degree of development, type of land use, and road accessibility. In general, a wide range of agricultural, water management, silvicultural and other practices could be compatible with the primary objectives of a scenic river area, providing such practices are carried on in such a way that there is no substantial adverse effect on the river and its immediate environment.

The same considerations enumerated for wild river areas should be considered, except that motorized vehicle use may in some cases be appropriate and that development of larger scale public-use facilities within the river area, such as moderate size campgrounds, public information centers, and administrative headquarters, would be compatible if such structures were screened from the river.

Modest facilities, such as unobtrusive marinas, also would be possible if such structures were consistent with the management plans for that area.

Recreational River Areas

The Wild and Scenic Rivers Act states that recreational rivers:

1. Are "readily accessible by road or railroad"
2. "May have some development along their shoreline"
3. May have "undergone some impoundment or diversion in the past"

● Classification criteria.

1. "Readily accessible" means the likelihood of paralleling roads or railroads on one or both banks of the river, with the possibility of several bridge crossings and numerous

river access points.

2. "Some development along their shorelines" means that lands may be developed for the full range of agricultural uses and could include small communities as well as dispersed or cluster residential developments.

3. "Undergone some impoundment or diversion in the past" means that there may be water resources developments and diversions having an environmental impact greater than that described for wild and scenic river areas. However, the degree of such development should not be to the extent that the water has the characteristics of an impoundment for any significant distance.

Future construction of impoundments, diversions, straightening, rip-rapping, and other modification of the waterway or adjacent lands would not be permitted except in instances where such developments would not have a direct and adverse effect on the values for which that river area was included in the national system as determined by the Secretary charged with the administration of the area. In the case of rivers added to the national system pursuant to Section 2(a)(ii), such construction could result in a determination by the Secretary of the Interior to reclassify or withdraw the affected river area from the system.

● Management objectives.

Management of recreational river areas should be designed to protect and enhance existing recreational values. The primary objectives will be to provide opportunities for engaging in recreation activities dependent on or enhanced by the largely free-flowing nature of the river.

Campgrounds and picnic areas may be established in close proximity to the river, although recreational river classification does not require extensive recreational developments. Recreational facilities may still be kept to a minimum, with visitor services provided outside the river area.

Adopted:

Harrison Loesch 2-2-70
Department of the Interior (Date)

Edward P Cliff 2-3-70
Department of Agriculture (Date)

SUMMARY 1/

Attributes and management objectives of the three river classifications for inclusion in the National Wild and Scenic River System

	Wild	Scenic	Recreation
Attributes	1. Free-flowing. Low dams, diversion works or other minor structures which do not inundate the natural riverbank may not bar consideration as wild. Future construction restricted.	1. Free-flowing. Low dams, diversion works or other minor structures which do not inundate the natural riverbank may not bar consideration. Future construction restricted.	1. May have undergone some impoundment or diversion in the past. Water should not have characteristics of an impoundment for any significant distance. Future construction restricted.
	2. Generally inaccessible by road. One or two inconspicuous roads to the area may be permissible.	2. Accessible by roads which may occasionally bridge the river area. Short stretches of conspicuous or longer stretches of inconspicuous and well-screened roads or railroads paralleling river area may be permitted.	2. Readily accessible, with likelihood of paralleling roads or railroads along river banks and bridge crossings.
	3. Shorelines essentially primitive. One or two inconspicuous dwellings and land devoted to production of hay may be permitted. Watershed natural-like in appearance.	3. Shoreline largely primitive. Small communities limited to short reaches of total area. Agricultural practices which do not adversely affect river area may be permitted.	3. Shoreline may be extensively developed.
	4. Water quality meets minimum criteria for primary contact recreation except where such criteria would be exceeded by natural background conditions and esthetics 2/ and capable of supporting propagation of aquatic life normally adapted to habitat of the stream.	4. Water quality should meet minimum criteria for desired types of recreation except where such criteria would be exceeded by natural background conditions and esthetics 2/ and capable of supporting propagation of aquatic life normally adapted to habitat of the stream, or is capable of and is being restored to that quality.	4. Water quality should meet minimum criteria for desired types of recreation except where such criteria would be exceeded by natural background conditions and esthetics 2/ and capable of supporting propagation of aquatic life normally adapted to habitat of the stream or is capable of and is being restored to that quality.
Management objectives	1. Limited motorized land travel in area.	1. Motorized vehicles allowed on land area.	1. Optimum accessibility by motorized vehicle.
	2. No unharmonious or new habitations or improvements permitted.	2. No unharmonious improvements and few habitations permitted.	2. May be densely settled in places.
	3. Only primitive-type public use provided.	3. Limited modern screened public use facilities permitted, i. e. campgrounds, visitor centers, etc.	3. Public use areas may be in close proximity to river.
	4. New structures and improvement of old ones prohibited if not in keeping with overall objectives.	4. Some new facilities allowed, such as unobtrusive marinas.	4. New structures allowed for both habitation and for intensive recreation use.
	5. Unobtrusive fences, gauging stations and other management facilities may be permitted if no significant adverse effect on natural character of area.	5. Unobtrusive fences, gauging stations and other management facilities may be permitted if no significant adverse effect on natural character of area.	5. Management practice facilities permitted.
	6. Limited range of agriculture and other resource uses permitted.	6. Wide range of agriculture and other resource uses may be permitted.	6. Full range of agriculture and other resource uses may be permitted.

1/ To be used only in conjunction with the text.

2/ Federal Water Pollution Control Administration's Water Quality Criteria, April 1, 1968.

February 1970

GPO 864-100

APPENDIX B

LIST OF DATA SOURCES

A study team consisting of the Colorado Water Conservation Board representing the Colorado Department of Natural Resources, the Bureau of Outdoor Recreation representing the Department of the Interior, and the Forest Service representing the Department of Agriculture, was responsible for the conduct of the Dolores Wild and Scenic Rivers Study and the preparation of this report.

It must be made clear, however, that although this small group was responsible, neither the study nor the resultant report could have been completed without the whole-hearted cooperation of many other State and Federal agencies and bureaus, private organizations, and private individuals.

Many of these joined forces and formed a steering committee that provided coordination and guidance for the study team, participated in meetings and field examinations with the study team, and provided the study team with invaluable information, technical data and professional insight.

Information, technical data, professional opinions and advice were also provided by a group of State and Federal bureaus and agencies, private organizations and private citizens unable (because of travel and financial constraints or work pressures) to participate on the steering committee.

A listing of these sources of help follows. The study team wishes to express its heartfelt gratitude to them for the help they provided and also extends a sincere apology for any names that were unintentionally omitted.

Steering Committee

Group 1 - State Agencies

Colorado Department of Natural Resources
Colorado Division of Wildlife
Colorado Division of Parks and Outdoor Recreation
Colorado Division of Planning
Colorado State Historical Society

Group 2 - Federal Agencies

Bureau of Outdoor Recreation
Bureau of Land Management
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
National Park Service
Bureau of Mines

Economic Research Service
Forest Service
Soil Conservation Service

Group 3 - Organizations

Southwestern Water Conservation District
The Wilderness Society
Western River Guides Association
Colorado White Water Association
Federal Timber Purchasers Association
Colorado Trout Unlimited
University of Colorado Wilderness Study Group
Rocky Mountain River Expeditions
Colorado Cattlemen's Association

Group 4 - Individuals

Joseph Hartt
Dave Herrick
David Sumner
George Kelly
Earl Perry
Preston Ellsworth

Non-Steering Committee Participants

Federal Agencies

Environmental Protection Agency
Army Corps of Engineers
Bureau of Indian Affairs
The President's Advisory Council on Historic Preservation
U. S. Energy Research and Development Administration

Organizations

American Canoe Association
American Rivers Conservation Council
Upper Colorado River Commission
Four Corners Regional Commission

Public input was obtained through a series of three public information meetings held in Denver, Grand Junction, and Cortez on March 14, 26, and 27, 1975, respectively. Another series of four public meetings was held in these same locations, as well as at Norwood, during the week of July 7, 1975. Public response was solicited at these meetings, and all comments received were considered in the preparation of the report and environmental statement.

APPENDIX C

The Dolores Project: An Overview

The Dolores Project, located in Dolores and Montezuma Counties in southwestern Colorado, was authorized by Congress in 1968 as part of the Colorado River Storage Project. It will be constructed by the U. S. Bureau of Reclamation to regulate the Dolores River for irrigation, municipal and industrial purposes, fish and wildlife enhancement and recreation, plus flood control. The Dolores Water Conservancy District, which includes parts of Dolores and Montezuma Counties, is the contractual agency for the project; the Ute Mountain Indian Tribal Council is also a sponsor.

The principal storage feature will be the 4,470-acre McPhee Reservoir, fronted by a dam to be constructed 11 miles downstream from the town of Dolores. Total capacity will be approximately 381,000 acre-feet; an inactive pool of 152,000 acre-feet will provide flat water recreation. Most of the stored water will be diverted out of the Dolores River Basin for irrigation in the Montezuma Valley in the San Juan River Basin immediately to the south and west. A 178-mile system of canals and laterals, plus seven pumping plants, will distribute this water, and will be constructed as part of the Project. Two smaller reservoirs will also be built: Monument Creek (84 acres) to provide the town of Dove Creek with municipal and industrial storage, and Dawson Draw (294 acres) in Montezuma Valley for fish and wildlife management purposes.

Table 1 gives a breakdown of Dolores Project water allocations. Plans for supplying irrigation water to new lands (mostly in the Dove Creek area where dry farmers need water in order to diversify their crops) are based on sprinkler systems to insure efficient water use and to minimize adverse effects on downstream water quality.

The Bureau of Reclamation is continuing work on the Definite Plan Report and Draft Environmental Statement. Both should be completed in early calendar year 1976.

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TABLE 1 -- Dolores Project Water Allocations

DOLORES PROJECT

IRRIGATED LAND

(Acres)

	Supplemental	Full	Total
MONTEZUMA VALLEY	26,300	----	26,300
TOWAOC	----	7,500	7,500
DOVE CREEK	----	27,860	27,860
TOTAL	26,300	35,360	61,660

WATER

(Acre-Feet)

IRRIGATION	90,900
CORTEZ MUNICIPAL & INDUSTRIAL	6,200
DOVE CREEK MUNICIPAL & INDUSTRIAL	600
DOLORES WATER CONSERVANCY DISTRICT	900
TOWAOC MUNICIPAL & INDUSTRIAL	1,000
FISH, WILDLIFE & ESTHETIC RELEASES BELOW McPHEE DAM	25,400
FUTURE FISH AND WILDLIFE ENHANCEMENT	800
UTE MOUNTAIN UTE FUTURE FISH & WILDLIFE ENHANCEMENT	800
TOTAL	126,600

APPENDIX D

Nearby Rivers Offering Similiar Recreational Opportunities

The following series of sketches is included to provide comparative information on recreational opportunities offered by rivers within a 150-mile radius of the Dolores. Emphasis is on white water boating, one of the recreational uses of the Dolores below McPhee Dam. Basic comparative parameters include: a) length of river segment, b) duration of float trip, c) duration of season, d) recreational use, e) difficulty, and f) scenic, archaeological and other features.[1/]

1. San Juan River, Utah. This 30-mile run is considered easy by most boatmen, and is usually made in three days. There are several intermediate rapids on this reach, but the San Juan's unique "sand waves" provide a high level of recreational enjoyment. Running as high as four feet, these waves create a roller-coaster-like ride, while offering minimal threat of danger. The San Juan also ranks high in geologic and archaeological interest. After meandering in a gentle valley for a few miles, the river drops into a gorge which reaches a maximum depth of 800 feet. Numerous pre-Columbian Indian (Anasazi) ruins may be seen en route.

   Commercial operators have run the San Juan since the 1930's. The river now supports heavy recreational use - approximately 2,500 visitor days annually, with a season that runs from May to September (inclusive). The San Juan is under a permit system which was initiated by BLM in 1973.

2. Colorado River, Westwater Canyon, Utah. Westwater Canyon was seldom run until the late 1960's, but it is now one of the most popular trips in the region; visitor days in 1974 totaled 6,750. The run is 17 1/2 miles long and is normally made in one or two days, with put-in at Westwater Ranger Station and take out at Rose Ranch. The commercial operation here is substantial, as is private use; in addition, various Colorado public school systems are running the river for student seminars. Permits and reservations are required.

   Attractions in Westwater are about evenly divided between scenery, history, geology and river-running challenge. The canyon is often considered a miniature Grand Canyon, with a similar geology on a

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1/ The bulk of this information was provided to the Study Team by Earl Perry, Conservation Chairman of the Colorado Whitewater Association, Lakewood, Colorado.

less grand scale - with layers of red sandstone giving way to about 200 feet of basement rock, mostly dark gneiss and schist. The heavy volume and high velocity of the Colorado has bored tall potholes and flutings in the rock.

Difficulty depends greatly on flow. Below 7,000 cfs it is an intermediate, heavy water challenge; above 13,000 cfs Westwater is for experts only. This canyon can be run from late March through November, but is best May through September.

3. Colorado River, Cisco to Moab, Utah. This is a lazy run, 46 miles in length with only a few minor rapids; at high water, these produce large and simple tail waves. Most float parties make the run in two or three days. Permits are required. 1975 is the first year use data is being compiled and the data is not as yet available.

The run is through a spacious red rock gorge, paralleled most of the way by Utah State Highway 128. The Fisher Towers and La Sal Mountains are visible in the southeast, and Arches National Park borders the last eight miles on the west. This is a good family or beginner's trip.

4. Colorado River, Cataract Canyon, Utah. This large, steep, dangerous reach of the Colorado in Canyonlands National Park may be reached from two launch points. One put-in is on the Colorado at the potash docks 20 miles downriver from Moab; the other is on the Green River, which joins the Colorado in the Park, at the town of Green River, Utah. Length of the run from below Moab is 112 miles and normally takes three to five days, and 170 miles or four to six days from Green River. Take out is at Hite on Lake Powell.

Cataract Canyon itself is only 15 miles long, but the two approaches take boaters through quiet, scenic canyon country before the heavy water begins to kick up. The Green above the confluence is a long, entrenched meander with walls of Navajo and Wingate sandstone. Through lower Labyrinth and Stillwater Canyon there are a number of interesting geologic formations, and riparian benches with tamarisk, sage, cottonwood and deer. The 60-mile stretch of the Colorado above the confluence is characterized by dark, red rock near the river and the white rim above. Power boat use on these reaches is considerable, particularly the annual Memorial Day Friendship Cruise at which time 300 to 400 boats make a three-day run from Green River to Moab.

Cataract Canyon begins about 2 1/2 miles below the confluence of the two rivers at Spanish Bottoms. Trails here lead off to some of the more choice and remote sections of Canyonlands National Park, but most boaters head into the rapids which are severe. The first of these, Brown Betty, is also known as "the Graveyard of the Colorado" in honor of the lives it has taken, Others follow Mile Long, Big Drop, and Satan's Gut. Below 15,000 cfs, the run is intermediate;

above 40,000 cfs it is for experts only, and at 70,000 the canyon is a continuous, gigantic rapid until swallowed by Lake Powell. Between 25 and 30 miles of tedious rowing on flat water completes the trip.

Cataract Canyon can be run by permit only; restrictive Park Service policies and dangerous waters limit the private use of this run, but commercial operation is substantial. Four thousand and seventy-eight people made the run in 1974 during a season that begins in March and ends in November. Primary use is from May to September.

5. Green River, Desolation and Gray Canyons, Utah. There are two launch points for this run - the most popular at Ouray, the preferred at Sand Wash. The normal trip covers 127 miles to the town of Green River, but since the first 60 of these are flat and notorious for their mosquitoes, many people opt for cutting off 35 miles and starting at Sand Wash. The longer trip usually runs about five days, the shorter about three.

From Ouray down, the Green moves in broad curves through alluvial shore lines with tamarisk and cottonwood; gradually the river entrenches itself in the rock of Tavaputs Plateau, and at Jack Creek, 58 miles downstream the rapids begin. Jack Creek is also an area slated for oil shale development. Desolation Canyon is far from desolate: a deep (2,700 feet), spacious cut which supports one of the largest mule deer herds in Utah. The rapids, especially at high water, are large, but not difficult. Numerous side canyons, several with Anasazi pictographs, are popular for day hikes.

Recreational use of this reach of the Green is moderate; passenger days in 1974 were 12,947. Permits are required.

6. Lower Animas River, Colorado. Beginning at Durango about 55 miles east of the town of Dolores, this river is becoming increasingly popular for short half-day or full-day family trips.

White water rapids occur in the first mile of the river below the Highway 160 bridge in Durango. Below this white water stretch there is quiet water with short stretches of easy rapids and rocks. About five miles below town the river enters a dry shale canyon country with rounded canyon walls and a predominent pinyon, juniper and oakbrush vegetative cover. There are scattered cottonwoods and willows along the banks.

In most years the river can be run by skilled boatmen from May through July. The river is also run by amateurs using a variety of craft. One aluminum row boat can be seen impaled on a rock just below Durango.

The River is becoming increasingly popular especially for one-half day commercial trips. The trips are advertised in the local newspaper and information concerning the trips is available at motels in the area.

7. Piedra River, Colorado. Only kayakers or hikers can traverse this stream which is located in the San Juan Range about 45 miles east of Durango. Its length is only about 30 miles and it is a mountain stream with almost continuous rapids; normal spring crest is about 1,500 cfs, but in heavy snowpack years it boils to 5,000 cfs. Kayakers must time their trips carefully in the spring to catch the run-off and so far very few have; only five kayakers are known to have run the Piedra, and because of its difficulty and short season, use is unlikely to increase.

   The upper portion (15 miles) cuts two vertical walled sandstone gorges and contain a series of intermediate to expert rapids; lower down is a third major gorge which can be run only at high water and is extremely difficult.

   Portaging is impossible, unless a party ropes up the sheer canyon wall.

8. Conejos River, Colorado. The 45-mile Conejos is rarely used by boaters, despite the fact that it runs through a scenic, forested gorge. Its volume and steep gradient make it impractical to run at either high or low water stages. Along its lower reaches, a road parallels the Conejos. Best estimate is that one or two parties run this annually.

9. Rio Chama, El Vado Dam to Abiquiu Dam, New Mexico. This 30-mile run follows a wilderness canyon, triple-tiered with palisades and heavily wooded with ponderosa pine. Wildlife is abundant - especially deer, coyotes and raptors. Trout fishing is excellent.

   With the closing of the headgates of Cochiti Dam on the Rio Grande, this is now New Mexico's only overnight wilderness river trip. Most parties take two leisurely days, and scenery rather than white water is the main attraction, even though there are some good intermediate rapids. Normally the Rio Chama crests in mid-May between 800 and 1,200 cfs - allowing for a boating season of about 45 days. In good water years, when run-off peaks at 3,500 cfs, the river can be run from April into late August.

10. Rio Chama, Abiquiu Dam to Confluence with the Rio Grande. Abiquiu Dam, a flood control structure of the Army Corps of Engineers, controls flow on this segment of the Rio Chama, with spring peak between 1,500 and 4,000 cfs. The normal run covers 30-35 miles and is a one day trip.

    Boatmen consider this a "training river," as the challenges are modest and not dangerous. At flows over 2,500 cfs, sand waves develop, and there are three irrigation dams - two of which create runable rapids, one which must be portaged. This reach of the Rio Chama is rich in history, with many settlements dating back to the 1600's and 1700's. Geology is generally dull; farming and ranching occupy the floodplain, but these activities are largely screened from the river by thick coppices of willow.

Recreational use is moderate; in 1974, there were 30-40 visitor days here.

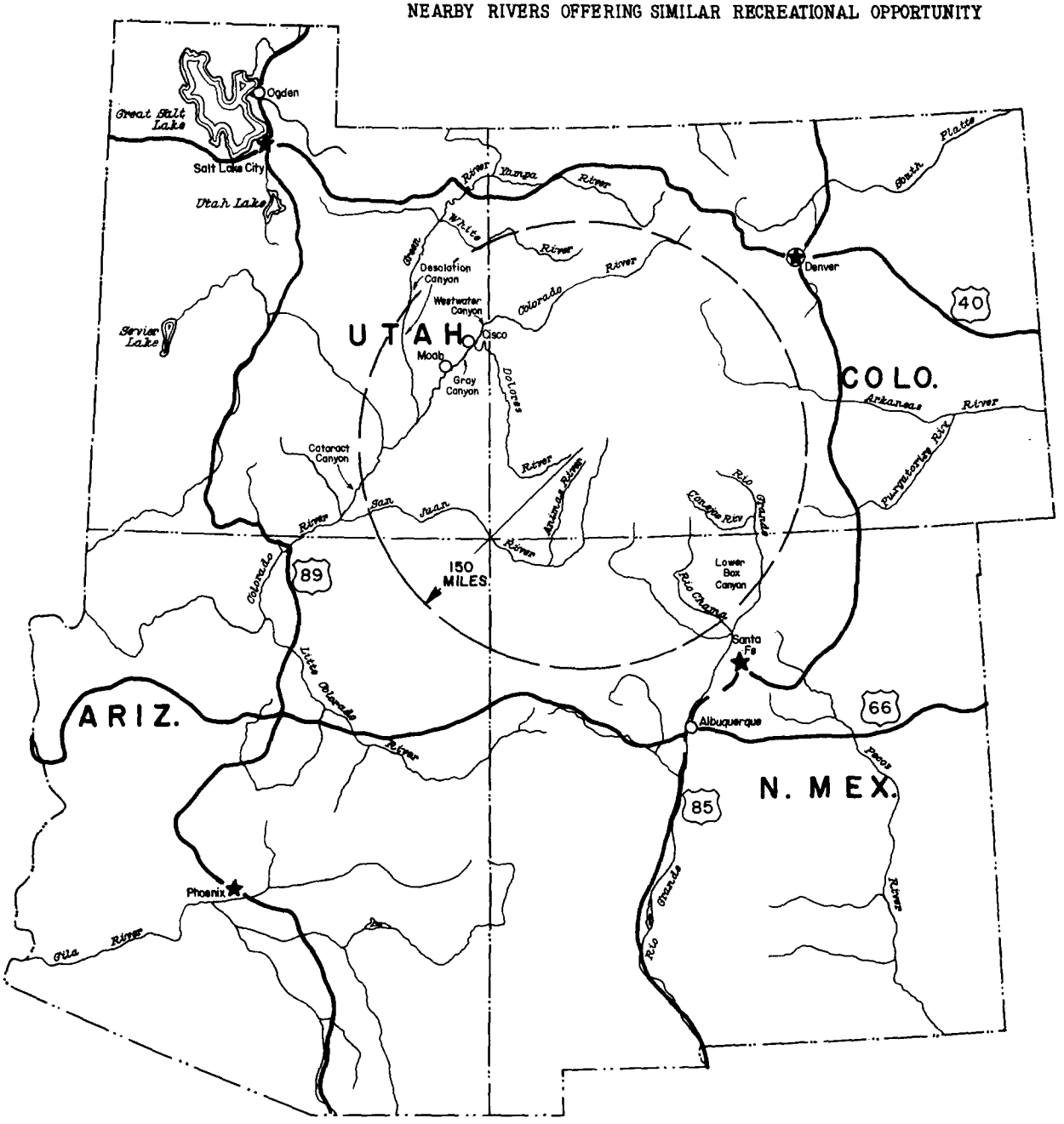
11. Rio Grande, Lower Box Canyon (or Taos Box), New Mexico. Near the Colorado-New Mexico border the Rio Grande cuts through a level, lava plain, carving a gorge up to 700 feet deep. Upstream from the Arroyo Hondo Bridge, the river is fearsome and un-runable; below is a 20-mile stretch of almost solid expert white water. Most of the rapids result from talus slides off the canyon walls; these are extraordinarily steep runs (for example, Powerline Cascade drops 12 vertical feet in 25 to 30 river feet). Kayakers consider this to be one of the finest technical white water runs in the West, but it is not for beginners or for leisure floating. The lower Box is usually run at 1,500 to 4,500 cfs; over 4,000 cfs, the hydraulics make it almost impossible to stop on the lower, steepest four miles here. The gorge is strikingly scenic, and trout fishing is excellent (though seldom mixed with boating).

    Commercial use in the Lower Box is limited as the run demands small, nearly indestructible and very expensive rafts. Private use by kayakers is high. Total visitor days in 1974 were 500.

12. Rio Grande, Pilar Rapids, New Mexico. This brief run, only five miles long, begins at the town of Pilar about 25 miles south of Taos. It is another technical piece of water; rapids are continuous and difficult, and a parallel road makes it possible for one to shoot this water as many as four times in a day. Scenery is desolate and fishing poor, but the rapids compensate for this; an annual river race has been held here since the mid-1950's. Visitor days run about 500 yearly.

Conclusion: From the foregoing it is obvious that an abundance of river-running recreational opportunities exist within a 150-mile radius of the Dolores. If the Dolores River is unique, it is so because of the unique and rich combination of qualities which bring together many of the best features of other rivers in the region. Scenery, geologic interest, historic and archaeological sites, wildlife, a short but challenging white water season, placid flat water, and ecological diversity are all to be found along the Dolores. Dolores Canyon is an intermediate to expert run; Slick Rock Canyon is a beginner's trip. Also of note is the fact that the Dolores is among the longest of the river segments noted; the 105-mile McPhee Dam-to-Bedrock stretch is exceeded only by reaches on the Colorado and Green Rivers in Utah. Finally, the Dolores is intermediate in size, larger than the Piedra and Conejos, but smaller than the Colorado and the Green. Partisans maintain that Slick Rock Canyon is second to none in desert river scenery in the West.

DOLORES RIVER WILD AND SCENIC RIVER STUDY
UTAH AND COLORADO
NEARBY RIVERS OFFERING SIMILAR RECREATIONAL OPPORTUNITY



U.S.D.A. FOREST SERVICE 1975

APPENDIX E

Outline and Application of Principles and Standards Procedures to Alternative Actions

INTRODUCTION

In 1971, the Water Resources Council (WRC) conceived an analytical process for developing and evaluating alternative plans for water and related land resource uses. This procedure was tested under a variety of conditions around the Nation. The adopted process was published in the Federal Register, Volume 38, Number 174, on September 10, 1973 as an Executive Order.

According to the Principles and Standards, planning for the use and development of the Nation's resources is undertaken to serve two major, co-equal, objectives: National Economic Development (NED) and Environmental Quality (EQ). In most cases the objectives can be served by complementary actions; however, in some cases trade offs which allow less than maximum satisfaction of goals must be made. In some cases outright conflicts among objectives occur, and satisfaction of one precludes the others. Because of these aspects, a number of alternatives must be developed, analyzed, evaluated, and tested. The end result is identification of the one preferred plan for NED and the one preferred EQ plan. From these it may be possible to select an optimum or compromise plan which has a satisfactory combination of both economic and environmental features. Both objectives are equal in importance and are treated with equal weight in the analysis. Each alternative is measured in terms of satisfaction of the objective for which it was formulated and its effects on the other objective. Additionally, the beneficial and adverse effects of each alternative are compared in a system of accounts which includes national economic development, environmental quality, regional development, and social well-being. The procedure is designed to present a range of acceptable and relevant alternatives together with a full display of all effects and interrelationships to decision-makers. The planners present facts and analyses of facts, while reserving options and decisions for appropriate officials.

APPLICATION OF WRC PLANNING PROCESS

Specification of Objectives.--The first step in the process is identification of the components of the major objectives. The components must be of concern to the Nation, and they should be related to the use and management of the resources in the planning setting. In addition, they

have to be defined so that the type, quantity, and quality of effect are evident. Finally, the components should be those which can be substantially influenced through the management and development alternatives available to the planners.

National Economic Development Components.--The NED objective can be served in two basic ways: (1) increasing economic values by increasing output or production of goods and services and (2) increasing economic efficiency in the production of goods and services.

The description of the Dolores Basin in Chapter III established that, economically, the area is largely resource oriented. Major goods and services produced in the broad area containing the River are agricultural products, timber, minerals and outdoor recreation. National economic development can be served by increasing production of any of these components, provided that the share of national demand allocated to the Dolores River area exceeds the current or projected supply (production). More efficient production of these goods or services will also contribute to the NED objective.

The components of NED identified in the Dolores River Basin are increased or more efficient:

(1) output of outdoor recreation services and uses

(2) production of agricultural products

(3) production of timber

(4) production of mineral resources

(5) hunting opportunities

Environmental Quality Components.--The components of EQ identified in the Dolores River Basin are:

(1) preserve and protect areas of natural beauty and river segments with wild, scenic, or recreational river characteristics

(2) preserve and protect areas with historic, archaeologic, and cultural value

(3) preserve and protect endangered or threatened wildlife or vegetation

(4) preserve or enhance air and water quality

(5) preserve freedom of choice to future resource users by avoiding irreversible or irretrievable effects

Second Level Specification of Components.--A second level specification was made to determine which components are relevant to the Dolores River Study Segments, the potential wild and scenic river area, and the action available to planners under authority of this study.

NED components which were identified in the second level specification are:

(1) outdoor recreation uses

  (a) kayaking, white-water rafting, or other boating

  (b) fishing

  (c) hiking, climbing, or walking for pleasure

  (d) camping

  (e) picnicking

(2) more efficient production of range livestock products through improved irrigation water management and systems improvements

(3) increased production of minerals to meet national demands

  (a) uranium

  (b) vanadium

  (c) other minerals (precious, base, and non-metallic)

(4) increased use of geothermal resources to meet energy demands

Several components of NED were eliminated in the second level specification:

(1) Increased production of agriculture through land use changes was eliminated, since most land in the corridor with cropland capability is now being utilized.

(2) Increased agricultural production through application of irrigation water to lands in the corridor was eliminated, since there is no surplus water.

(3) Increased or more efficient timber production was eliminated since there are no commercial forest lands available in the corridor.

(4) Increased hunting opportunity was eliminated, since the corridor is currently utilized to optimum capacity.

EQ components which were identified in the second level specification are:

(1) preserve and protect 33 miles of Wild River characteristics on the Main Dolores, beginning at the Little Gypsum Valley Bridge and ending one mile above the Highway 90 Bridge.

(2) preserve and protect 41 miles of Scenic River characteristics on the Main Dolores, beginning at the Bradfield Ranch and ending at the Disappointment Creek confluence.

(3) preserve and protect 35 miles of Recreational River characteristics of the West Dolores segment; and on the Main Dolores, the 11-mile subsegment beginning one mile below the proposed McPhee Dam and ending at the Bradfield Ranch Bridge, and the 20-mile subsegment beginning at the Disappointment Creek confluence and ending at the Little Gypsum Valley Bridge.

(4) identify and protect prehistoric Indian cultural artifacts and sites in the river corridor.

(5) provide recreation interpretation and enjoyment through management of historic, archaeologic, and cultural resources.

(6) avoid irreversible and irretrievable commitment of resources and preserve freedom of choice on 140 miles of the Dolores River and West Dolores River eligible for inclusion in the National Wild and Scenic Rivers System.

Several components of EQ were eliminated in the second level specification:

(1) Preservation and protection of endangered species of wildlife or vegetation were eliminated from analysis because actions to provide protection are beyond the direct authority provided by the Wild and Scenic Rivers Act and is thus not an alternative available to the planners. However, statutes, regulations, and policies will be recognized in management plans for designated segments to provide for protection and preservation of endangered and threatened species.

(2) Preservation of air and water quality were eliminated as components, since improvement of air or water quality is not a direct purpose of the Wild and Scenic Rivers Act. As above, statutes, regulations, and policies will be recognized in management plans for designated segments to provide for protection of water and air quality and to safeguard against degradation.

Table 1 is a comparison of demand, supply, and identification of need for the NED components.

Table 1

DEMAND, SUPPLY, AND NEED FOR COMPONENTS OF NED OBJECTIVE

COMPONENT OF NED	UNIT	1975 DEMAND	1975 SUPPLY	1975 NEED	1980 DEMAND	1980 SUPPLY	1980 NEED	1990 DEMAND	1990 SUPPLY	1990 NEED
Boating (all types)	RD 1/	2,500	6,900	None	5,300	6,900	None	14,400	6,800	7,500
Fishing	RD	26,000	27,000	None	61,600	69,700	None	77,200	69,700	7,500
Hiking-Walking	RD	100,000	6,300	93,300	214,600	68,800	145,800	443,600	69,000	374,600
Camping	RD	170,300	17,300	153,000	201,400	53,500	147,900	263,400	53,500	209,900
Picnicking	RD	39,500	8,600	30,900	84,700	26,600	58,100	175,100	26,600	148,500
Livestock	AUMS	27,300	27,100	200	28,600	28,000	600	34,500	33,400	1,100
Uranium	Tons	2,000/ 4,000	2,000/ 4,000	-	4,900	2,000/ 4,000	2,900/ 900	12,250	2,000/ 4,000	10,254/ 8,250
Vanadium	Tons	11,500/ 14,000	11,500/ 14,000	-	12,000	11,500/ 14,000	0/ 500	20,000	11,500/ 14,000	6,000/ 8,100
Other Minerals	Tons	Unquantified	Presently None	Unquantified	Unquantified	Presently None	Unquantified	Unquantified	Presently None	Unquantified
Geothermal Resources	BTUS	Unquantified	None developed	Unquantified	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Note - Other minerals are known to occur in the formations present in the corridor. Exploration shows high potential but supply is unquantified. Geothermal resources occur in West Dolores area but presently undeveloped and quantity is undefined. Uranium-Vanadium reserves are expanding as more becomes known as result of exploration. Current production is 32,030 pounds of Uranium and 185,380 pounds of Vanadium annually.

1/ A recreation day is participation in the activity by one person for all or any part of a day.

Assumptions for Component Need Specification

(1) Assumptions related to derivation of demand and supply for the NED components are:

(a) Boating demand is based on extrapolation of current (1975) usage. The boating or white water floating demand is expected to reach allowable capacity by 1980. Capacity or supply is computed on the assumption of no classification of any segment. After 1980, demand will equal supply.

(b) Fishing demand is derived from Colorado Division of Wildlife studies for the Dolores River Project (McPhee Reservoir). Supply includes the downstream fishing which would be created by McPhee Reservoir releases plus existing fishing in the West Dolores River.

(c) Hiking and walking demand is derived from historic use data and is projected using historic growth rates. Supply is computed on the basis of miles of trail and estimated use for hiking on undeveloped National Forest and national resource lands. The supply does not include opportunities for hiking in undeveloped areas or off-trail use.

(d) Camping demand is based on historic use data from the San Juan National Forest. Supply is based on the capacity of existing developed public sites added to the capacity of sites which will be developed in conjunction with McPhee Reservoir.

(e) Picnicking demand and supply assumptions are identical to Camping.

(f) Livestock demands are the proportional share of the national demand developed in the 1972 Office of Business Economics - Economic Research Service (OBERS) Series C projections for the Colorado-Dolores Water Resources Sub-region. Demand was assumed to equal supply in 1973. Supply is based on the assumption that the demand for irrigation water and cropland is a derived demand induced by the demand for livestock products and that most land within the Dolores River corridor, which has cropland capability, is currently being used for this purpose.

(g) The demands for uranium and vanadium resources are based on projections of population growth, energy and minerals use, and economic growth developed by the U.S. Geological Survey, Bureau of Mines, and the Energy Research and Development Administration. Supply is based on published reports of these agencies. It is assumed that in the Dolores River corridor the demand for these resources is equal to or greater than the supply.

(2) Assumptions related to derivation of need for EQ components are:

(a) There is a national need for the beneficial esthetic, environmental and spiritual effects associated with preservation of free-flowing streams that have outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

(b) Eligible segments were evaluated for their wild, scenic, or recreational character. It is assumed that the greatest contribution to the EQ components is provided by wild river designation; the next greatest, by scenic river designation; and the least by recreational river designation, providing in each case that the river segments meet minimum classification criteria.

(c) Preservation of archaeological and historic resources of man's cultural heritage may be adversely affected by publicity and increased recreation use which may result from designating the Dolores as a National Wild and Scenic River.

(d) The demand for use of wild, scenic, or recreational rivers will exceed the carrying capacity of the eligible segments by 1980.

Formulation of Alternatives and Options.--Alternative plans are developed by arranging component needs that are essentially complementary - that is, the satisfaction of one component need does not preclude satisfaction of, or add to, the cost of other needs. Actions to satisfy the complementary needs are the nucleus of an alternative plan.

Table 2 is the array for NED component needs with relevant means of meeting each. Table 3 is the array and relevant means for satisfying EQ component needs.

Using this array of complementary components, a range of alternative plans was developed. The No-Action plan - which visualizes continuation of current types and rates of use - is the base for all comparisons.

Table 2

COMPLEMENTARY COMPONENT NEEDS AND MEANS, NED OBJECTIVE

COMPONENT NEED	UNIT	MEANS OF MEETING NEED	COMPLEMENTARY ARRAY A	COMPLEMENTARY ARRAY B
Boating	RD	Develop launching sites, access, parking	Develop boating	Additional development non-complementary
Fishing	RD	Maintain stream flow and quality, stocking, provide access	Develop fishing	Additional development non-complementary
Hiking (if a a component need - if not so state)	RD	Maintain or develop trails - provide sanitation	Develop hiking	Additional development non-complementary
Camping	RD	Develop campsites, provide sanitation and access	Develop camping	Additional development non-complementary
Picnicking	RD	Develop picnic sites, provide sanitation and access	Develop picnicking	Additional development non-complementary
Livestock Production	AVMS	Improve irrigation efficiency - upgrade systems	Improve efficiency	Improve efficiency
Uranium Production	Tons	Prospect for, mine and process uranium	Additional development non-complementary	Provide uranium -
Vanadium Production	Tons	Prospect for, mine and process vanadium	Additional development non-complementary	vanadium
Other minerals (precious base and non-metalic)	Tons	Prospect for, mine and process other minerals	Additional development non-complementary	Provide other minerals
Geothermal Resources		Prospect for, test, and develop geothermal steam power production	Additional development non-complementary	Develop geothermal resources

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Table 3

COMPLEMENTARY COMPONENT NEEDS AND MEANS, EQ OBJECTIVES

COMPONENT NEED	UNIT	MEANS OF MEETING NEED	COMPLEMENTARY ARRAY A	COMPLEMENTARY ARRAY B
Preserve and protect wild river segments	Miles	Designate 33 miles as wild; provide appropriate recreation and use facilities	Designate wild segments; develop for appropriate use	May be imcompatible with archeologic site protection
Preserve and protect scenic river segments	Miles	Designate 41 miles as scenic; provide appropriate recreation and use facilities	Designate scenic segments, develop for use	May be imcompatible with archeologic site protection
Preserve and protect recreational river segments	Miles	Designate 66 miles as recreation; provide appropriate recreation and use facilities	Designate recreational segments; develop for use	May be imcompatible with archeologic site protection
Identify and protect archeologic and historic resources	Sites	Inventory and manage estimated 500 to 1,000 sites	May conflict with historic site preservation and protection	Identify and protect all sites
Interpret and recreation use of archeologic and historic sites	RD	Inventory sites, provide information and interpretive services, access, and accommodations	Develop sites for use	Imcompatible with site preservation
Preserve freedom of choice on eligible segments	Miles	Include 140 miles of eligible stream segments in the national wild and scenic river system	Designate as wild, scenic, or recreational river as appropriate	May be conflicting with historic-cultural site protection

The beneficial and adverse effects which are in addition to those associated with No-Action are shown in Tables 4 and 5. The effects are displayed for subsegments of each of the potentially eligible major segments. Two segments - the Main Stem from Rico to its source, and the Dolores from the San Miguel confluence to the State border - were judged to be ineligible. The planners believe that this finding removed these two segments from being influenced by alternatives available in the planning setting. The No-Action alternative is held to be the only one available for ineligible rivers or segments thereof.

Alternatives for fulfillment of the EQ objective have been increased by including less restrictive classification options for the potentially wild and scenic river segments. The alternatives which provide the greatest amount of component need satisfaction are displayed in Table 6. It should be noted that the economic plans also contribute to environmental needs, while the environmental plans contain significant economic benefits. The selected plan provides a good balance between maximization of the two objectives.

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF NED ALTERNATIVES

West Dolores River Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan B		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
1. NED Components										
Boating	RD	None	-	-	None	-	-			
Fishing	RD	27,000	$5,520	$202,500	None	$40,500	-			
Hiking - Developed Trail	RD	6,750	3,770	20,250	27,500	$38,707	$48,250			
Camping - Developed Sites	RD	17,280	4,440	56,160	43,200	22,000	79,920			
Picnicking - Developed Sites	RD	4,320	5,000	12,960	12,600	16,712	20,880			
Livestock Production	AUM	10,845	Unquantified	20,000	None	-	-			
Uranium	Lb	None	-		None	-	-	None in this area	-	-
Vanadium	Lb	None			None	-	-	None in this area	-	-
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	Presently none - good potential, but amounts and value are unknown	-	-	None, but potential uses may be restricted	-	-	Mineral development may occur, but none positively known	-	-
Interpretation and Use of Cultural Sites and Areas	RD	None presently identified	-	-	None	-	-	None	-	-
Geothermal	Megawatt	Potential exists but undeveloped and amounts unknown	-	-	None	-	-	None	-	-

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF N.E.D. ALTERNATIVES

West Dolores River Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Effect of N.E.D. Plan A on Components		Effect of N.E.D. Plan B on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
2. EQ Component						
Designate National Recreation River	Miles	None	None	Non-designation will not assure free-flowing stream and preservation of scenic and recreational values thru long-term stream protection. Private land values likely to be degraded by various developments. Development impacts would reduce the density of flora and fauna, and alter the eco-system.	None	Same as N.E.D. Plan A. However, additional degradation is expected to occur to water quality, flora, fauna, recreational and scenic values if mining occurs.
Protect historic and cultural area	Sites	A few additional sites may be discovered and protected under existing federal and state statutes and authorities. (Inventories to be completed.)	None	Recreational and other developments are likely to destroy sites and artifacts. Increased recreation use will likely damage sites and artifacts.	None	Same as N.E.D. Plan A. However, mineral exploration and extraction likely to result in increased damage.
Preserve freedom of choice	Alternatives	None	None	Long-term preservation of freedom of choice to future users of the resources is not assured.	Mineral developments may provide additional national security and preserve options in international affairs. Geothermal developments may preserve choices in petroleum and coal resource areas.	Mineral developments result in a greater loss of freedom of choice. to future users of the resource.

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF NED ALTERNATIVES

Dolores River - McPhee to Bradfield Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan B		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
1. NED Components										
Boating	RD	1,150	$ 8,470	$23,000	None	-	-			
Fishing	RD	7,600	12,480	45,600	None	-	-			
Hiking - Developed Trails	RD	1,800	2,855	3,600	13,560	$16,670	$27,170			
Camping - Developed Sites	RD	None	-	-	None	-	-			
Picnicking - Developed Sites	RD	18,000	26,150	36,000	None	-	-			
Livestock Production	AUM	3,795	-	7,000	None	-	-			
Uranium	Lb	None	-	-	None	-	-	None in this area	-	-
Vanadium	Lb	None	-	-	None	-	-	None in this area	-	-
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	None known - Potential slight	-	-	None	-	-	None in this area	-	-
Interpretation and Use of Cultural Sites and Areas	RD	None	-	-	None	-	-	None	-	-
Geothermal	Mega-watt	None	-	-	None	-	-	None	-	

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF N.E.D. ALTERNATIVES

McPhee Dam to Bradfield Ranch Bridge Sub-Segment

Component / Need	Unit	Amount Satisfied Without a Plan	Effect of N.E.D. Plan A on Components		Effect of N.E.D. Plan B on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
2. EQ Component						
Designate National Recreational River	Miles	None	None	Non-designation will not assure free-flowing stream and preservation of scenic and recreational values thru long-term stream protection. Private land values likely to be degraded by subdivisions, industrial, commercial, and recreational developments. Development impacts would reduce the density and diversity of flora and fauna populations. Alteration of the eco-system is probable.	None	Same as N.E.D. Plan A. However, additional degradation is expected to occur to water quality, flora, fauna, eco-systems, recreational values and scenic qualities if mining occurs.
Protect historic and cultural areas	Sites	An unknown number of additional sites may be discovered and protected under existing federal and state statutes.	None	Subdivision, industrial, commercial, and recreational developments are likely to destroy sites and artifacts. Increased recreational use will likely result in damage to sites and artifacts.	None	Same as N.E.D. Plan A. However, mineral exploration and extraction is likely to result in damage or destruction of sites and artifacts.
Preserve freedom of choice	Alternatives	None	None	Long-term preservation of freedom of choice to future users of the resources is not assured.	Mineral developments may provide additional national security and preserve options in international affairs. Nuclear or geothermal developments may preserve choices in petroleum and coal resource areas.	Mineral developments result in a greater loss of freedom of choice to future users of the resources.

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF NED ALTERNATIVES

Dolores River - Bradfield Ranch to Disappointment Creek Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan B		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
1. NED Components										
Boating	RD	1,400	$ 4,440	$ 49,000	900	$ 5,880	Net loss	None	$ 25,000	-
Fishing	RD	30,400	6,220	228,000	None	45,600 User value loss	None	None	100,000	-
Hiking - Developed Trails	RD	50,280	61,270	150,840	12,000	41,030	Net loss	None	68,500	-
Camping - Developed Sites	RD	17,000	7,730	55,250	19,200	8,780	$26,200	None	44,800	-
Picnicking - Developed Sites	RD	4,320	4,980	12,960	21,600	27,930	$38,880	None	28,500	-
Livestock Production	AUM	2,710	-	5,000	None	-	-	None	-	-
Uranium	Lb/Ton	6,215 lbs	43,300	50,950	None	13,650*	None	375 tons	521,910	$614,020
Vanadium	Lb/Ton	55,780 lbs	27,200	32,000	None	7,800	None	1,563 tons	105,290	123,870
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	None known	-	-	None	-	-	None	-	-
Interpretation and Use of Cultural Site and Areas	RD	Unknown but present on significant numbers	-	-	None	-	-	None	-	-
Geothermal	Mega-watt									

*Added Costs

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF N.E.D. ALTERNATIVES

Bradfield Ranch Bridge to Disappointment Creek Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Effect of N.E.D. Plan A on Components		Effect of N.E.D. Plan B on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
2. EQ Component						
Designate National Recreational River	Miles	None	None	Non-designation will not assure free-flowing stream and preservation of scenic and recreational values thru long-term stream protection. Private land values likely to be degraded by subdivisions, industrial, commercial, and recreational developments. Development impacts would reduce the density and diversity of flora and fauna populations. Alteration of the eco-system is probable. Largely primitive value lost.	None	Same as N.E.D. Plan A. However, additional degradation is expected to occur to water quality, flora, fauna, eco-systems, recreational values and scenic qualities if mining occurs. Greater loss of primitive values.
Designate Nat'l. Scenic River	Miles	None	None	Same as above - with additional loss of scenic characteristics.	None	Same as above.
Protect historic and cultural areas	Sites	An unknown number of additional sites may be discovered and protected under existing federal and state statutes.	None	Subdivision, industrial, commercial, and recreational developments are likely to destroy sites and artifacts. Increased recreational use will likely result in damage to sites and artifacts.	None	Same as N.E.D. Plan A. However, mineral exploration and extraction is likely to result in damage or destruction of sites and artifacts.
Preserve freedom of choice	Alternatives	None	None	Long-term preservation of freedom of choice to future users of the resources is not assured. Largely primitive values will be lost if developments occur.	Mineral developments may provide additional national security and preserve options in international affairs. Nuclear or geothermal developments may preserve choices in petroleum and coal resource areas.	Mineral developments result in a greater loss of freedom of choice to future users of the resources. Mineral developments would also result in irreversible damage to the largely primitive nature of area.

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF NED ALTERNATIVES

Dolores River - Disappointment Creek to Little Gypsum Valley Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan B		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
1. NED Components										
Boating	RD	1,150	$ 4,440	$ 23,000	None	-	-	None	17,250	
Fishing	RD	4,000	819	24,000	None	-	-	None	18,000	
Hiking - Developed Trails	RD	None	-	-	25,320	$ 31,130	$50,640	None	37,980	
Camping - Developed Sites	RD	9,600	4,360	21,600	9,600	4,190	21,600	None	32,400	
Picnicking - Developed Sites	RD	None	-	-	7,200	9,300	14,400	None	10,800	
Livestock Production	AUM	7,320	-	13,500	None	-	-	None		
Uranium	Lb/Ton	25,815 lb	179,900	211,660	None	$ 56,700	-	37.5 tons	$783,940	$922,280
Vanadium	Lb/Ton	129,600 lb	63,200	74,385	None	18,145	-	192 tons	187,000	220,000
Other Minerals - (Precious, Base, and Nonmetallic)	Lb/Ton	Amounts Unknown - No commerical deposits known	Unknown	Unknown	None	-	-	Unknown	Unknown	Unknown
Interpretation and Use of Cultural Sites and Areas	RD	None known	Effects unknown until inventories are completed.							
Geothermal		None	-	-	None	-	-	None	-	-

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF N.E.D. ALTERNATIVES

Disappointment Creek to Little Gypsum Valley Bridge Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Effect of N.E.D. Plan A on Components		Effect of N.E.D. Plan B on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
2. EQ Component						
Designate National Recreational River	Miles	None	None	Non-designation will not assure free-flowing stream and preservation of scenic and recreational values thru long-term stream protection. Private land values likely to be degraded by subdivisions, industrial, commercial, and recreational developments. Development impacts would reduce the density and diversity of flora and fauna populations. Alteration of the eco-system is probable. Essentially primitive characteristics of six miles of canyon may be lost.	None	Same as N.E.D. Plan A. However, additional degradation is expected to occur to water quality, flora, fauna, eco-systems, recreational values and scenic qualities if mining occurs. Essentially primitive characteristics of six miles of canyon will likely be lost.
Protect historic and cultural areas	Sites	An unknown number of additional sites may be discovered and protected under existing federal and state statutes.	None	Subdivision, industrial, commercial, and recreational developments are likely to destroy sites and artifacts. Increased recreational use will likely result in damage to sites and artifacts.	None	Same as N.E.D. Plan A. However, mineral exploration and extraction is likely to result in damage or destruction of sites and artifacts.
Preserve freedom of choice	Alternatives	None	None	Long-term preservation of freedom of choice to future users of the resources is not assured. Essentially primitive nature of six miles of canyon may be lost.	Mineral developments may provide additional national security and preserve options in international affairs. Nuclear or geothermal developments may preserve choices in petroleum and coal resource areas.	Mineral developments result in a greater loss of freedom of choice to future users of the resources. Essentially primitive nature of six mile canyon will likely be lost.

Table 4

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF NED ALTERNATIVES

Dolores River - Little Gypsum Valley
Bridge to Bedrock Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan B		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
1. NED Components										
Boating	RD	900	$ 3,480	$45,000	1,400	$ 4,500	$ 1,000			
Fishing	RD	700	140	6,300	None	2,100	None			
Hiking - Developed Trails	RD	10,000	21,000	42,500	40,200	49,400	57,900			
Camping - Developed Sites	RD	9,600	4,360	43,200	16,800	7,700	16,200			
Picnicking - Developed Sites	RD	None	None	None	3,600	4,700	7,200			
Livestock Production	AUM	2,440	-	4,500	None	-	-	None	-	-
Uranium	Lb/Ton	No known reserves	Unknown	Unknown	None	-	-	35 tons Potential	$422,200	$496,700
Vanadium	Lb/Ton	No known reserves	Unknown	Unknown	None	-	-	79 tons	42,600	50,200
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	None known	-	-	None	-	-	None	-	-
Interpretation and Use of Cultural Sites and Areas	RD	None known	-	-	Effects unknown until inventories are complete.					
Geothermal	Mega-watt	None	-	-	None	-	-	None	-	-

Table 4
COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF N.E.D. ALTERNATIVES

Little Gypsum Valley to Bedrock Sub-Segment

Component / Need	Unit	Amount Satisfied Without a Plan	Effect of N.E.D. Plan A on Components: Beneficial Effect	Effect of N.E.D. Plan A on Components: Adverse Effect	Effect of N.E.D. Plan B on Components: Beneficial Effect	Effect of N.E.D. Plan B on Components: Adverse Effect
2. EQ Component						
Designate National Recreational River	Miles	None	None	Non-designation will not assure free-flowing stream and preservation of scenic and recreational values thru long-term stream protection. Private land values likely to be degraded by subdivisions, industrial, commercial, and recreational developments. Development impacts would reduce the density and diversity of flora and fauna populations. Alteration of the eco-system is probable. Largely pristine environmental qualities lost.	None	Same as N.E.D. Plan A. However, additional degradation is expected to occur to water quality, flora, fauna, eco-systems, recreational values and scenic qualities if mining occurs. Loss of pristine, primitive and scenic environmental qualities due to mining.
Designate Natl. Scenic River	Miles	None	None	Same as above - with additional loss of scenic characteristics.	None	Same as above.
Designate Natl. Wild River	Miles	None	None	Same as above - with additional loss of wild characteristics.	None	Same as above.
Protect historic and cultural areas	Sites	An unknown number of additional sites may be discovered and protected under existing federal and state statutes.	None	Subdivision, industrial, commercial, and recreational developments are likely to destroy sites and artifacts. Increased recreational use will likely result in damage to sites and artifacts.	None	Same as N.E.D. Plan A. However, mineral exploration and extraction is likely to result in damage or destruction of sites and artifacts.
Preserve freedom of choice	Alternatives	None	None	Long-term preservation of freedom of choice to future users of the resources is not assured. Largely pristine environmental qualities lost.	Mineral developments may provide additional national security and preserve options in international affairs. Nuclear or geothermal developments may preserve choices in petroleum and coal resource areas.	Mineral developments result in a greater loss of freedom of choice to future users of the resources. Greater loss of largely pristine environmental qualities due to mining.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

West Dolores River Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Additional Effects of EQ Plan A on Components		Additional Effects of EQ Plan E on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
1. EQ Component						
Preserve wild river area	Miles	None	Not present in West Dolores			
Preserve scenic river area	Miles	None	Not present in West Dolores			
Preserve recreational river area	Miles	None	Maintain and protect 35 miles of free-flowing river and enhance values and recreation use.	None	None	None
Identify & protect historic & cultural sites	Sites	A presently unknown number of sites may be protected under existing authorities.	An additional number of sites would likely be protected at an undetermined cost.	Designation as Natl. Rec. River may attract more use, resulting in vandalism of sites.	Identification & protection of sites assured. Less hazard of damage.	Without designation of river, protection will be about same as currently; would result in loss of management and funds which designation would bring (opportunity costs).
Preserve freedom of choice	Alternatives	None	Maintain scenic, recreation & geologic values present. Preserves free-flowing river. Avoids irretrievable commitments.	Restricts immediate use of resources.	Preserves options for future use of cultural sites.	Prohibits interpretive and other use of these sites.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

West Dolores River Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan E		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
2. NED Components										
Boating	RD	None	-	-	None					
Fishing	RD	27,000	$5,520	$202,500	13,000	$ 4,110	$37,500			
Hiking - Developed Trails	RD	6,750	3,770	20,250	27,500	38,700	48,250			
Camping - Developed Sites	RD	17,280	4,440	56,160	5,780	7,370	None			
Picnicking - Developed Sites	RD	4,320	5,000	12,960	1,620	3,270	None			
Livestock Production	AUM	10,845	Unquanti-ified	20,000	None	-	-			
Uranium	Lb	None	-	-						
Vanadium	Lb	None	-	-						
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	Presently none - Good potential but amounts and value unknown	-	-						
Interpretation and Use of Cultural Sites and Areas	RD	None presently known	-	-						
Geothermal	Mega-watt	Potential exists but undeveloped	-	-						

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

McPhee Dam to Bradfield Ranch Bridge Sub-Segment (Approx.)

Component Need	Unit	Amount Satisfied Without a Plan	Additional Effects of EQ Plan A on Components		Additional Effects of EQ Plan E on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
1. EQ Component						
Preserve wild river area	Miles	None	Not present in this sub-segment			
Preserve scenic river area	Miles	None	Not present in this sub-segment			
Preserve recreational river area	Miles	None	Maintain and protect 11 miles of free-flowing river and preserve and enhance values and recreation use.	None	None	None
Identify and protect historic & cultural sites	Sites	Preliminary survey indicates 37 sites, several of which may be protected under existing authority.	An additional number of sites would be protected at an undetermined cost.	Designation as Nat. Rec. River may attract more use, resulting in damage or vandalism of sites.	Identification and protection of sites assured. Less hazard of damage.	Without designation protection will be about the same as currently; would result in loss of management & funds which desig. would bring (oppor. costs).
Preserve freedom of choice	Alter-natives	None	Maintain scenic recreation & geologic values present. Preserves free-flowing river; avoids irretrievable commitments.	Restricts immediate use of resources.	Preserves options for future use of archeologic sites.	Prohibits interpretive and other uses of these sites.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Dolores River - McPhee Dam to Bradfield Ranch Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan E		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
2. NED Components										
Boating	RD	1,150	$ 8,470	$23,000	None	None	Maintains present values	None		
Fishing	RD	7,600	12,480	45,600	None	None	"	None		
Hiking - Developed Trails	RD	1,800	2,855	3,600	-120	$11,500	"	None		
Camping - Developed Sites	RD	None	-	-	None	None	"	None	Site selection limited	
Picnicking - Developed Sites	RD	18,000	36,000	36,000	-2,150	4,300	"	None		
Livestock Production	AUM	3,795	-	7,000	None	None	"	None		
Uranium	Lb/Ton	None	-	-	None	-	-	None		
Vanadium	Lb/Ton	None	-	-	None	-	-	None		
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	None	-		None	May limit future sites and increase costs	-	None		
Interpretation and Use of Cultural Sites and Areas	RD	None	-	-	Probably some increase but unquantified	-		None	-	-
Geothermal	Megawatt	None	-	-	None	-	-			

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Bradfield Ranch Bridge to Disappointment Creek Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Additional Effects of EQ Plan A on Components		Additional Effects of EQ Plan D on Components		Additional Effects of EQ Plan E on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
1. EQ Component								
Preserve wild river area	Miles	None	Not present in this sub-segment					
Preserve scenic river area	Miles	None	Maintain and protect 41 miles of free-flowing river and preserve and enhance values and rec. use.	None	Not a feature of Plan A-2		None	None
Preserve recreational river area	Miles	None	Not a feature of Plan A-1		Maintain and protect 41 miles of free-flowing river and preserve & enhance values and rec. use.	Loss of scenic river qualities and use experience	None	None
Identify and protect historic and cultural site	Sites	An unknown number of additional sites and areas may be protected under existing federal and state statutes.	An additional number of sites would be protected at an undetermined cost. (Inventory incomplete.)	Designation as Natl. Rec. River may attract more use, resulting in damage or vandalism of sites.	Same as A-1	Same as A-1	Identification and protection of sites assured. Less hazard of damage.	Without designation of river, protection will be about the same as currently; would result in loss of mgmt. & funds which desig. would bring (oppor. costs).
Preserve freedom of choice	Alternatives	None	Maintain scenic, rec. & geologic values present. Preserves free-flowing river; avoids irretrievable commitments in river area.	Restricts immediate use of resources.	Same as A-1	Same as A-1	Preserves options for future use of archeologic sites.	Prohibits interpretive and other uses of these sites.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Dolores River - Bradfield Ranch to Disappointment Creek Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan D			Additional Effects of Plan E		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
2. NED Components													
Boating	RD	1,400	$ 4,440	$ 49,000	None	-	-	722	$ 4,670	Net loss due to lower unit value	None	-	-
Fishing	RD	30,400	6,220	228,000	None	-	-	None	-	-	None	-	-
Hiking - Developed Trails	RD	50,280	61,270	150,840	None	-	-	8,510	36,150	Net loss due to lower unit value	None	-	-
Camping - Developed Sites	RD	17,000	7,730	55,250	None	-	-	15,900	7,260	$18,800	None	-	-
Picnicking - Developed Sites	RD	4,320	4,980	12,960	None	-	-	22,300	28,800	40,270	None	-	-
Livestock Production	AUM	2,710	-	5,000	None	-	-	None	-	-	None	-	-
Uranium	Lb/Ton	6,215 lbs	43,300	50,950	None	$13,650*	-	None	$13,650*		None	Production sites limited	
Vanadium	Lb/Ton	55,780 lbs	27,200	32,000	None	8,900	-	None	8,900		None	Production sites limited	
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	None known	-	-	None	-	-				None	May limit exploration and sites available	
Interpretation and Use of Cultural Sites and Areas	RD	Unknown, but significant numbers of sites present	-	-	Unknown	Possible loss for scientific uses	Unknown, could be significant	Unknown	Unknown losses	Unknown benefits	None Not a feature of B	None	None
Geothermal	Megawatt	None	-	-	None	-	-	None	-	-	None	-	-

*Added Costs

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Disappointment Creek to Little Gypsum Valley Bridge Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Additional Effects of EQ Plan A on Components		Additional Effects of EQ Plan E on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
1. EQ Component						
Preserve wild river area	Miles	None	Not present in this sub-segment			
Preserve scenic river area	Miles	None	Not present in this sub-segment			
Preserve recreational river area	Miles	None	Maintain & protect 20 miles of free-flowing river and preserve & enhance values and rec. use.	None	None	None
Identify and protect historic & cultural sites	Sites	An unknown number of additional sites and areas may be protected under federal & state statutes.	An additional number of sites would be protected at an undetermined cost.	Designation as Natl. Rec. River may attract more use, resulting in damage or vandalism of site.	Identification and protection of sites assured. Less hazard of damage.	Without designation protection will be about the same as currently; would result in loss of mgt. & funds which desig. would bring. (opportunity costs).
Preserve freedom of choice	Alter-natives	None	Maintain scenic, recre-ational, & geologic values present. Preserves free-flowing river; avoids irre-trievable commitments in river area.	Restricts immediate use of resources.	Preserves options for future use of archeologic sites.	Prohibits interpretive and recreational uses of these sites.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Dolores River - Disappointment Creek to Little Gypsum Valley Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan E		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value
2. NED Components										
Boating	RD	1,150	$ 4,440	$ 23,000	None	-	-	None	-	-
Fishing	RD	4,000	819	24,000	1,920	$ 2,370	$11,520	None	-	-
Hiking - Developed Trails	RD	None	-	-	30,234	36,970	60,500	None	-	-
Camping - Developed Sites	RD	9,600	4,360	21,600	13,330	6,130	30,000	None	May limit sites	-
Picnicking - Developed Sites	RD	None	-	-	8,600	11,115	17,200	None	May limit sites	-
Livestock Production	AUM	7,320	-	13,500	None	-	-	None	None	-
Uranium	Lb/Ton	28,815 lb	179,900	211,660	None	56,700 *	None	None	May limit production	-
Vanadium	Lb/Ton	129,600 lb	63,200	74,385	None	18,145	None	None	May limit production	-
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	Amounts unknown - No commercial deposits known	-	-	None	Production site limits - May increase costs	None	None	May limit production	-
Interpretation and Use of Cultural Sites and Areas	RD	None known			Effects unknown until inventories are completed.					
Geothermal	Mega-watt	None	-	-	None	-		None	-	-

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Little Gypsum Valley Bridge to Bedrock Sub-Segment

Component Need	Unit	Amount Satisfied Without a Plan	Additional Effects of EQ Plan A-1 on Components		Additional Effects of EQ Plan A-2 on Components		Additional Effects of EQ Plan D on Components		Additional Effects of EQ Plan E on Components	
			Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect	Beneficial Effect	Adverse Effect
1. EQ Component										
Preserve wild river area	Miles	None	Maintain and protect 33 miles of free-flowing river and wild river characteristics	None	Not a feature of Plan A-2		Not a feature of Plan A-3		None	None
Preserve scenic river areas	Miles	None	Not a feature of Plan A-1		Maintain and protect 33 miles of free-flowing river for scenic values.	Loss of Wild River values	Not a feature of Plan A-3		None	None
Preserve recreational river area	Miles	None	Not a feature of Plan A-1		Not a feature of Plan A-2		Maintain and protect 33 miles of free-flowing river for recreation values.	Loss of Wild and Scenic values	None	None
Identify and protect historic and cultural sites	Sites	An unknown number of sites may be protected under existing federal and state statutes.	An additional number of sites would be protected at an undetermined cost.	None	Same as Plan A	Designation as a Natl. Scenic River may attract more use and result in damage or vandalism of sites.	Same as Plan A	Designation as a Rec. River will attract more use and will result in damage or vandalism of sites.	Identification & protection of sites assured for scientific purposes. Less hazard of damage.	Without designation of river, protection about as currently; would result in loss of mgt. & funds whic desig. would bring (opportunity costs).
Preserve freedom of choice	Alternatives	None	Maintains wild, scenic, & rec. values. Maintains scenic, rec. & geologic values in present condition. Avoids irretrievable commitments of resources & preserves free-flowing river.	Restricts immediate use of resources	Same as Plan A	Some loss of options due to mineral development. Same as Plan A.	Same as Plan A	Some environmental restrictions imposed on minerals development. Same as A.	None in this alternative.	Prohibits interpreti and recreational uses of these sites.

Table 5

COMPONENT NEEDS SATISFIED WITHOUT A PLAN AND BENEFICIAL AND ADVERSE EFFECTS OF EQ ALTERNATIVES

Dolores River - Little Gypsum Valley
Bridge to Bedrock Subsegment

Component Need	Unit	Amount Provided Without National Designation	Annual Estimated Cost	Annual Estimated Value	Additional Effects of Plan A			Additional Effects of Plan C			Additional Effects		Plan D	Additional Effects of Plan E		
					Amount	Annual Cost	Annual Value	Amount	Annual Cost	Annual Value	Amount		Annual	Amount	Annual Cost	Annual Value
2. NED Components																
Boating	RD	900	$ 3,480	$45,000	None	-	-	1,337	$ 6,060	$ 11,295				None	-	-
Fishing	"	700	140	6,300	336	$17	$ 020	None	-	-				None	-	-
Hiking - Developed Trails		10,000	21,000	42,500	None	-	-	38,400	47,210	2,655			lo.	ne	-	-
Camping - Developed Sites	"	9,600	4,360	43,200	None	-	-	16,000	7,210	40,130	28,760	12.5		ne	-	-
Picnicking - Developed Sites	RD	None	-	-	None	-	-	3,440	4,470					ne	-	-
Livestock Production	AUM	2,440	-	4,660	None	-	-	None						None	-	-
Uranium	Lb/Ton	No known reserves	-	-	None	Prohibits exploration	-	None	May li. sites					None	-	-
Vanadium	Lb/Ton	No known reserves	-	-	None	and use on 1/4-mile	-	None	May limit sites	-	ne		-	None	-	-
Other Minerals - (Precious, Base, and Nonmetallic)	Ton	No known reserves	-	-	None	area on either side of riverbank	-	None	May lim sites	-	None	-	-	None	-	-
Interpretation and Use of Cultural Sites and Areas	RD	Inventory incomplete	-	-		Unknown until inventories are completed.					-			None - Use and recreation development prohibited.		
Geothermal	Mega-watt	None	-	-	None	-	-	None	-	-	None	-	-	None	-	-

Table 6

SUMMARY OF ECONOMIC AND OTHER BENEFITS AND COSTS
FOR TWO DOLORES RIVER ALTERNATIVES

WEST DOLORES RIVER

Measurement	No Designation	Designated National Wild and Scenic River
	Effects	Effects
Recreation Use: Recreation days	55,350	103,250
Value of recreation use	$291,870	$377,620
Annual cost of recreation use	$ 18,840	$ 96,300
Fee title acquisition		
Annual Cost	None	None
Access and scenic easements		
Miles	None	10.5
Easements costs (annual)	None	$ 8,300
Mineral claim clearance		
Number of claims	None	None
Annual cost of clearance	None	None
Added annual production costs		
Minerals	None	Unquantified - higher potentially
Livestock	None	Uquantified - expected to be higher
Administration - Annual costs	$ 55,350	$103,240
Total Annual Costs	$ 74,190	$207,840
Total Annual Benefits	$291,870	$372,600

(Table 6 - Continued)

SUMMARY OF ECONOMIC AND OTHER BENEFITS AND COSTS
FOR TWO DOLORES RIVER ALTERNATIVES

DOLORES RIVER BETWEEN McPHEE DAM AND BEDROCK

Measurement	No Designation	Designated National Wild and Scenic River
	Effects	Effects
Recreation Use: Recreation days	167,900	220,050
Value of recreation use	$809,850	$931,850
Annual cost of recreation use	$173,490	$220,800
Fee title acquisition - acres	10	None
Annual Cost	Included in recreation cost	None
Access and scenic easements		
Miles	None	21.8
Annual easement cost	None	$ 17,200
Mineral claim clearance		
Number of claims	None	3,999
Annual cost of clearance	None	$154,560
Added annual production costs		
Minerals	None	$ 96,300
Livestock	None	Unquantified-Expected to be Higher
Administration - Annual Costs	$168,400	$220,200
Total Annual Costs	$341,890	$709,060
Total Annual Benefits	$834,850	$954,020

TABLE E - 8 - EFFECTS OF ALTERNATIVE PLANS FOR THE DOLORES RIVER

ACCOUNT	COMPONENTS	MEASUREMENT OF EFFECTS OF ALTERNATIVE PLANS							
		NO ACTION	NED A	NED B	EQ A	EQ B	EQ C	EQ D	EQ E
NATIONAL ECONOMIC DEVELOPMENT	OUTDOOR RECREATION								
	BOATING (Annual recreation days)	4,600	6,900	4,600	4,600	4,600	5,940	7,760	4,600
	FISHING (Annual recreation days)	69,700	69,700	69,700	84,955	44,955	84,955	84,955	69,700
	HIKING-WALKING (Annual recreation days)	68,830	187,410	68,830	126,445	92,195	164,845	197,925	68,830
	CAMPING (Annual recreation days)	53,480	142,280	53,480	72,590	49,530	88,590	117,250	53,480
	PICNICKING (Annual recreation days)	26,640	71,640	26,640	34,710	28,770	38,150	62,245	26,640
	SUB-TOTAL ANNUAL BENEFITS	$1,102,000	$1,512,000	$1,102,000	$1,310,000	$1,224,000	$1,495,000	$1,545,000	$1,102,000
	SUB-TOTAL ANNUAL COSTS	$ 192,000	$ 569,000	$ 575,000	$ 350,000	$ 264,000	$ 415,000	$ 532,000	$ 192,000
	AGRICULTURAL PRODUCTION (A.U.M.)	27,110	27,110	27,110	27,110	27,110	27,110	27,110	27,110
	SUB-TOTAL ANNUAL BENEFITS	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
	SUB-TOTAL ANNUAL COSTS	unquantified	unquantified	unquantified	unquantified	unquantified	unquantified	unquantified	unquantified
	TIMBER PRODUCTION	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
	MINERAL PRODUCTION								
	URANIUM (Annual pounds)	32,030	32,030	895,000	32,030	32,030	32,030	32,030	32,030
	VANADIUM (Annual pounds)	185,380	185,380	3,853,380	185,380	185,380	185,380	185,380	185,380
	OTHER MINERALS (Tons)	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN
	GEOTHERMAL RESOURCES (Megawatts)	Potential exists - but unquantified	Unquantified Potential	Unquantified Potential	Unquantified Potential	Unquantified Potential	Unquantified Potential	Unquantified Potential	Unquantified Potential
	SUB-TOTAL ANNUAL BENEFITS	$ 368,595	$ 368,595	$2,795,665	$ 368,595	$ 368,595	$ 368,595	$ 368,595	$ 368,595
	SUB-TOTAL ANNUAL COSTS	$ 313,306	$ 409,600	$2,376,315	$ 409,600	$ 409,600	$ 409,600	$ 409,600	$ 409,600
	HUNTING OPPORTUNITIES (Annual participation)	78,000	78,000	78,000	78,000	78,000	78,000	78,000	78,000
	GRAND TOTAL ANNUAL BENEFITS	$1,520,595	$1,930,595	$3,947,000	$1,728,595	$1,642,595	$1,913,595	$1,963,595	$1,520,595
	GRAND TOTAL ANNUAL COSTS	$ 505,606	$ 978,600	$2,951,315	$ 759,600	$ 673,600	$ 824,600	$1,134,000	$ 601,600
	NET ANNUAL BENEFITS	$1,014,989	$ 951,995	$ 995,685	$ 968,995	$ 968.995	$1,088,995	$ 829,595	$ 918,995
ENVIRONMENTAL QUALITY	PRESERVATION OF AREAS OF NATURAL BEAUTY	Natural beauty will be preserved on about 70,000 acres of public land under multiple use management	Natural beauty will be preserved on about 69,000 acres of public land under multiple use management. Beauty may be impaired on about 1,000 acres of intensive recreation development	Natural beauty will be preserved on about 10,000 acres of public land under multiple use management. Scenic values may be degraded by mining on 60,000 acres	National Wild & Scenic River designation will preserve beauty on about 78,000 acres of public and private lands	National Wild & Scenic River designation will preserve beauty on about 56,400 acres of public and private land. About 19,700 acres of public land will be protected by multiple use management	National Wild & Scenic River designation will preserve beauty on about 78,000 acres of public and private land	National Wild & Scenic River designation will preserve beauty on about 78,000 acres of public and private land	Natural beauty will be preserved on about 70,000 acres of public land under multiple use management. Some private land may be acquired by federal agencies and protected.
	PRESERVATION OF FREE FLOWING STREAM	NONE GUARANTEED	NONE	NONE	140 miles	105 miles	140 miles	140 miles	NONE
	PRESERVATION OF HISTORIC & CULTURAL RESOURCES	Federal & State laws protect sites-some damage to areas on private land could occur	Developments & recreation site construction and higher levels of use will cause damage to sites and artifacts	Developments & mineral exploration & extraction likely to damage or destroy sites or artifacts	National designation will attract more visitors and may result in increased damage & vandalism	National designation will attract more visitors and may result in increased damage & vandalism	National designation will attract more visitors and may result in increased damage & vandalism	National designation will attract more visitors and may result in increased damage & vandalism	Identification and protection of sites is assured. Management specifically for these resources will reduce damage and enhance values.
	PROTECTION OF ENDANGERED OR THREATENED SPECIES								
	WILDLIFE	Migratory peregrin falcons will be protected and habitat preserved.	Migratory falcons could be harassed and portions of habitat disturbed	Mining could disturb migratory falcons and destroy habitat	Migratory falcons could be disturbed. Habitat will be preserved	Migratory falcons could be disturbed. Habitat will be preserved	Migratory falcons could be harassed/disturbed by increased use. Habitat preserved	Migratory falcons could be harassed or disturbed & some habitat could be damaged	Migratory falcons will be protected & habitat preserved.
	VEGETATION	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN	NONE KNOWN
	PRESERVATION OF AIR QUALITY	High Quality maintained	High Quality maintained	Dust and other pollutants could lower quality	High Quality preserved	High Quality preserved	High Quality preserved	High Quality preserved	High Quality preserved
	PRESERVATION OF WATER QUALITY	State standards will be met	State standards met but some local degradation could occur	State standards could be lowered-degradation likely	State standards will be met	State standards will be met	State standards met Some local degradation could occur	State standards met with local degradation likely	State standards will be met
	PRESERVATION OF FREEDOM OF CHOICE	Many options preserved	Options on developed sites lost	Options on mined areas lost but national security enhanced	Maintain scenic, recreation wildlife options - lose development choices	Maintain scenic, recreation, wildlife options - lose development choices	Maintain scenic, recreation, wildlife options - lose development choices	Maintain scenic, recreation, wildlife options - lose development choices	Preserve cultural site options foregoes development and use
	AVOID IRREVERSIBLE OR IRRETRIEVABLE EFFECTS	Some loss of scenic and recreation values on private land	Loss of Scenic and Wildlife values on developed sites and private land	Mineral development would affect scenic wildlife & Recreation values	NONE	NONE	NONE	NONE	Prohibits interpretive and other utility uses
REGIONAL DEVELOPMENT	REGIONAL INCOME GENERATED								
	MINING	$2,152,900	$2,174,400	$2,373,300	$2,153,175	$2,153,075	$2,153,150	$2,153,200	$2,152,900
	AGRICULTURE	$ 49,700	$ 53,500	$ 49,750	$ 51,500	$ 50,800	$ 51,300	$ 51,800	$ 49,700
	SERVICES (Recreation & Tourism)	$ 546,500	$ 727,200	$ 557,600	$ 630,600	$ 600,600	$ 623,600	$ 644,100	$ 546,500
	TRADE AND MANUFACTURING	$ 66,400	$ 79,200	$ 70,000	$ 72,200	$ 70,100	$ 71,700	$ 73,100	$ 66,400
	TOTAL	$2,815,500	$3,034,300	$3,050,650	$2,907,475	$2,874,575	$2,899,750	$2,922,200	$2,815,500
	VALUE ADDED								
	MINING	$3,036,900	$3,066,800	$3,347,800	$3,037,260	$3,037,130	$3,037,230	$3,037,320	$3,036,900
	AGRICULTURE	$ 88,400	$ 94,500	$ 88,475	$ 91,300	$ 90,250	$ 91,000	$ 91,700	$ 88,400
	SERVICES (Recreation & Tourism)	$ 770,500	$1,019,700	$ 787,700	$ 886,300	$ 842,100	$ 876,700	$ 904,900	$ 770,500
	TRADE AND MANUFACTURING	$ 104,900	$ 126,800	$ 110,100	$ 114,900	$ 111,400	$ 114,100	$ 116,550	$ 104,900
	TOTAL	$4,000,700	$4,307,800	$4,334,075	$4,129,760	$4,080,880	$4,119,030	$4,150,470	$4,000,700
	EMPLOYMENT - Man Years								
	MINING	124	126	137	124	124	124	124	124
	AGRICULTURE	5	6	5	5	5	5	5	5
	SERVICES (Recreation & Tourism)	84	115	85	99	93	97	101	84
	TRADE AND MANUFACTURING	8	9	8	9	8	9	9	8
	TOTAL	221	256	235	237	230	235	239	221
SOCIAL WELL BEING	EDUCATION, CULTURAL, & RECREATIONAL OPPORTUNITIES	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account above	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account	Diversity of recreation limited but activities shown above in NED Account will provide some opportunity	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account	Diversity of recreation opportunity enhanced by provision of activities shown in NED Account	Diversity of recreation limited to that of no Action. Education & Cultural opportunities greatly enhanced by preservation and management of archeologic sites
	LIFE, HEALTH, AND SAFETY	This plan is neutral for this component	This plan is neutral for this component	This plan in neutral for this component	The plan is neutral for this component	The plan is neutral for this component	The plan is neutral for this component	The plan is neutral for this component	The plan is neutral for this component
	INCOME DISTRIBUTION	There is insufficient data to assess the income distribution effects of the Alternative Plans.							
	MINING								
	AGRICULTURE								
	SERVICES (Recreation & Toursim)								
	TRADE AND MANUFACTURING								
	EMERGENCY PREPAREDNESS	Strategic materials and scarce fuels will be available	Strategic materials and scarce fuels will be less available due to higher cost	Strategic materials and scarce fuels will be developed and used to maximum	Availability of strategic materials & scarce fuels will be restricted. Higher cost will limit production	Availability of strategic materials & scarce fuels will be restricted. Higher cost will limit production	Strategic materials & scarce fuels will be less available due to higher cost	Strategic materials and scarce fuels will be less available due to higher cost	Minor restrictions on availability of strategic materials and scarce fuels in archeologic areas
	FREEDOM OF TRAVEL	No restrictions on regional transportation system	No restrictions on regional transportation Access may be improved	No restrictions on regional transportation Access may be improved	Minor restrictions on regional transportation Access across river will be limited	Minor restrictions on regional transportation Access across river will be limited	Minor restrictions on regional transportation	Minor restrictions on regional transportation	Little restriction on regional transportation

APPENDIX F

PARADOX VALLEY UNIT
COLORADO RIVER BASIN SALINITY CONTROL PROJECT
BUREAU OF RECLAMATION
U.S. DEPARTMENT OF THE INTERIOR

PARADOX VALLEY UNIT, COLORADO

Introduction

Paradox Valley, located in Montrose County of southwestern Colorado, has been identified as a significant natural contributor to salinity in the Colorado River Basin. The Bureau of Reclamation is conducting a basin-wide program to minimize salinity levels in the Colorado River system. The ultimate objective would be to limit any further increases in salinity while the Upper Basin States - parts of Utah, Arizona, New Mexico, Wyoming, and Colorado - continue to develop their water resources. Title II of the Colorado River Basin Salinity Control Act (Public Law 93-320) of June 24, 1974, authorized the Secretary of the Interior to construct, operate, and maintain four salinity control units, referred to as units, in the Colorado River Basin in order to control salinity. The units include Las Vegas Wash, Nevada; Crystal Geyser, Utah; Grand Valley, Colorado; and Paradox Valley, Colorado.

Studies conducted over the last three years by the Bureau of Reclamation have indicated that the Dolores River picks up approximately 200,000 tons of salt annually in Paradox Valley from a natural source and discharges the salt into the Colorado River northeast of Moab, Utah. The salinity of the Colorado River has been increasing, particularly in the Lower Basin states - parts of Arizona, California, Utah, Nevada, and New Mexico - as a result of man's use and reuse of the river. About 10 million tons of salt are now carried by the river each year, posing economic problems for water users because of lower crop yields and increased treatment costs. The total costs of salinity in the Lower Basin were about $53 million in 1973 and could reach $124 million annually by the year 2000 if corrective measures are not taken and if development continues.

PARADOX VALLEY DESCRIPTION

Paradox Valley, about 24 miles in length from northwest to southeast and about 3 to 5 miles wide, is crossed near its midpoint by the Dolores River. The surrounding walls of brilliantly-colored sandstone and shale layers are quite steep and rugged, while the floor itself is relatively flat. Economic activity consists of about 3,600 acres of privately irrigated cropland in the northwestern half of the valley, livestock grazing, mining and oil exploration, and a lumber mill in the town of Paradox. The climate of the valley is generally semiarid, typically hot and dry during the summer and cold and dry during the winter. The average precipitation at the town of Paradox is 10.8 inches per year. Much of this precipitation occurs during the summer, primarily from thunderstorms of brief duration.

Paradox Valley is one of five major collapsed salt anticlines (elongated swells) in southwestern Colorado and southeastern Utah. The region is about 100 miles long and is marked by the protruding mass of the La Sal Mountains situated prominently over its center. Paradox Valley, lying along the axis of one of the largest anticlines, has been formed by the erosion of faulted

and uplifted sandstone and shale formations, exposing a residual gypsum cap which covers about 15,000 feet of nearly pure salt and salt-rich shale.

Briefly stated, the emergence of distant mountainous uplifts on each side of the area has placed intense lateral pressures on the intervening sedimentary formations, resulting in warping and fracturing along weak zones. Under these pressures and the weight of the overlying formations, a deeply buried layer of salt (Paradox Member) from an ancient inland sea has flowed upward into the fractured area of the fold to create an elongated swell known as an anticline. As this has taken place, the Dolores River has remained in its original streambed and, in conjunction with weathering and erosion, has removed the upper materials to form the valley. These geological processes are still active today in the valley.

Ground water comes into contact with the top of the salt formation, where it becomes nearly saturated, and surfaces as salt brine in the channel of the Dolores River near the middle of the valley The effect of the brine varies considerably, depending upon the amount of water in the river. High riverflows mix with and considerably dilute the brine; consequently, the salt content of the stream may increase from 250 milligrams per liter (mg/l) as it enters the valley to 450 mg/l as it exits the valley. With low riverflows, however, the salinity of the river increases from 1,000 mg/l to as high as 166,000 mg/l (approximately five times as saline as sea water) as it crosses Paradox Valley.

POSSIBLE CONTROL MEASURES

The Bureau of Reclamation is studying possible methods of controlling the movement of brine ground water. Several of the alternatives involve drilling a series of wells along the river near mid-valley. Prior tests have indicated that pumping from the wells would reduce the water pressure and prevent most of the brine from surfacing in the riverbed. The brine from the wells could then be piped to one or more solar evaporation ponds for evaporation. Another alternative would be to inject the brine away from ground water movement into the salt dome at mid-valley or into deep wells outside the area. Appropriate sites for injection have not yet been identified, and this way of disposal may only be a short term alternative to solar evaporation.

Another measure being considered involves routing the Dolores River across the valley in a lined channel and allowing the groundwater to surface and evaporate in the natural flood plain. The required facilities would be designed to accomodate the high spring floods of the river.

Before these and other plans can be adequately assessed, additional research must be conducted to acquire more information about the sources, behavior, and chemical composition of the ground water. While

investigations are being conducted, coordination will be maintained with appropriate state agencies and the Paradox Valley Unit Advisory Team, a local interest group. The selection of a final plan will be based upon considerations of effectiveness, economics, and environmental impacts.

ECONOMIC DATA

In terms of June 1975 prices, construction costs would be nearly $20 million, and total annual costs would be $1.6 million. The cost for removing one ton of salt would be $9.00. The control facilities in Paradox Valley would remove up to 180,000 tons of salt per year, thereby decreasing the salinity at Imperial Dam by about 16 mg/l annually. This salinity reduction would affect the water users in the Lower Colorado River Basin in terms of increased crop yields, reduced soil leaching requirements, reduced management costs, lower water treatment costs, less pipe corrosion, and reduced use of soap and detergents.

Unit Paradox Valley

Present salt loading of Dolores River (tons per year)	200,000
Estimated reduction in salt	180,000
Effect of reduction at Imperial Dam (mg/l)	16
Cost effectiveness (5.625 percent over a 100 year period)	
Construction cost (Jan 1975 prices)	$19,460,000
Interest during construction	2,006,000
Less preauthorization costs	-449,000
Total investment	$21,017,000
Annual equivalent of investment	1,187,000
Annual OM&R	438,000
Total annual cost	$1,625,000
Cost per ton of salt removed	$9.00

APPENDIX G

FEDERAL RESERVED WATER RIGHTS

Federal reserved water right claims beyond the scope of the Indian water right claims are currently being litigated in Colorado. Insofar as National Forest lands are concerned, the United States claims that amount of water which is reasonably necessary to fulfill the purposes of the National Forests, but the claim does not include any water appropriated by water users prior to the date of the Forest reservations. The National Forest reservation which included the lands adjacent to the West Dolores and the Dolores River above Rico was made on June 13, 1905. The National Forest reservation which included the lands adjacent to the Dolores River below the proposed McPhee Damsite was made on March 2, 1907. Much of the water in the Dolores River system was appropriated prior to these dates. The National Forest reserved water right claims are, therefore, not expected to have a significant effect on water users in the area.

The federal reserved right claim includes both diverted and storage type uses and instream flows and lake levels. It has not yet been quantified, pending direction to do so as a part of the litigation.

APPENDIX H

Related habitat type and status of mammals found within the Dolores River Basin

Common name	River Bottom	Salt Flats	Cropland	Pinon Juniper	Ponderosa, Spruce, Fir Forests
Mule Deer	C	C	C	C	C
Elk	C		C	C	C
Mountain Lion	C			UC	C
Black Bear	UC				C
Coyote	C	C	C	C	C
Bobcat	C			C	
Ringtail				UC	
Gunnison Prairie Dog	UC	C	C		
Beaver	C				
Muskrat	C			UC	
Cottontail Rabbit	C	C	C		
Pika					C (Talus slopes)
Black-tailed Jackrabbit		C	C		
Yellow-bellied Marmot					C
Striped Skunk	C	C		UC	
Raccoon	C				
Gray Fox	C			C	
Porcupine	C	C			C
Bushy-tailed Woodcat	C			C	

C = Common
UC = Uncommon

Related habitat type and status of mammals found within the Dolores River Basin

Common name	River Bottom	Salt Flats	Cropland	Pinon Juniper	Ponderosa, Spruce, Fir Forests
Meadow Vole	C				C
Deer Mouse	C	C	C		
Pocket Gopher	C				UC
Rock Squirrel	C		UC	C	
Colo. Chipmunk	C			C	
Least Chipmunk	C				
Golden-mantled Ground Squirrel	C		UC	C	
Abert's Squirrel				UC	C
Red Squirrel					C
Short-tailed Weasel	C				C
Marten					UC
Mink	UC				
Badger	C				

C = common
UC = uncommon

Habitat Preference by Species

Species	River Bottom	Canyon	Crop-land	Salt Flats	Pinon Juniper	Ponderosa, Spruce, Fir Forests
Turkey Vulture	X	X	X	X	(X)	(X)
Osprey	(X)					(X)
Bald Eagle	X		X	X	X	
Golden Eagle	X	X	X	X	X	X
Red-Tailed Hawk	X	(X)	X	X	X	X
Ferruginous Hawk			X	(X)	(X)	
Rough-Legged Hawk	X		X	X	X	X
Goshawk	(X)		X	X	X	(X)
Cooper's Hawk	X		X	X	X	(X)
Sharp-shinned Hawk	(X)	X	(X)	(X)	X	(X)
Peregrine Falcon	(X)	(X)				
Merlin			X	X	(X)	
American Kestrel	X	(X)	X	X	X	
Marsh Hawk	X		X	X	(X)	
Great Horned Owl	(X)		X	X	(X)	(X)
Total Observed Species	8	3	12	11	8	3
Total Assumed Present	13	6	13	13	13	9

X = Actual Sightings
(X) = Not actually sighted, but assumed to be present.

Seasonal occurrence and status of waterfowl and shorebirds found on impoundments in the Dolores River Basin

Species	Seasonal Occurrence	Resident Status	Inventoried Status
Common Loon	Sp, F	M	UC
Horned Grebe	Sp, F	M	C
Western Grebe	Sp, F	M	C
Great Blue Heron	Sp, S, F	M	UC
Black Crown Night Heron	Sp, S, F	M	UC
Canada Goose	Sp, F, W	R - M	C
Snow Goose	Sp, F	M	C
Mallard	Sp, S, F, W	R - M	C
Gadwall	Sp, S, F, W	R - M	C
Green-winged Teal	Sp, S, W	R - M	C
Blue-winged Teal	Sp, S	R - M	C
Cinnamon Teal	Sp, S	R - M	C
American Widgeon	W	R - M	C
Shoveler	Sp	R - M	C
Ring-necked Duck	Sp	M	C
Red Headed Duck	Sp, F	M	C
Canvasback Duck	Sp, F	M	C
Ruddy Duck	Sp, F	M	C

Sp - Spring
S - Summer
F - Fall
W - Winter

R - Resident
M - Migratory

C - Common
UC - Uncommon

Seasonal occurrence and status of waterfowl and shorebirds found on impoundments in the Dolores River Basin

(continued)

Species	Seasonal Occurrence	Resident Status	Inventoried Status
Buffle-head	Sp, F	M	C
Common Merganser	Sp, S, F	M	C
Coot	Sp, S, F, W	R - M	C
Killdeer	Sp, S, F, W	R	C
Franklin's Gull	Sp, S, F, W	R - M	C
Belted Kingfisher	Sp, S, F	M	C

Sp - Spring
S - Summer
F - Fall
W - Winter

R - Resident
M - Migratory

C - Common
UC - Uncommon

Seasonal occurrence and resident status of passerines and upland game birds found in the Dolores River Basin

Species	Seasonal Occurrence	Resident Status
Ring-necked Pheasant		R
Turkey		R
Rock Dove		R
Band-tailed Pigeon	S	M
Morning Dove	Sp, S, F	M
Common Nighthawk	Sp, S, F	M
Common Flicker		R
Downy Woodpecker		R
Lewis Woodpecker		R
Cassin's Kingbird	S	M
Western Kingbird	S	M
Say's Phoebe		R - M
Western Flycatcher	S	M
Ash-throated Flycatcher	S	M
Western Wood Pewee	S	M
Violet-green Swallow	Sp, F	M
Tree Swallow		R
Bank Swallow		R
Rough-winged Swallow		R
Barn Swallow		R
Cliff Swallow		R

Seasonal occurrence and resident status
of passerines and upland game birds
found in the Dolores River Basin
(continued)

Species	Seasonal Occurrence	Resident Status
Purple Martin	Sp, F	M
White-throated Swift		R
Steller's Jay		R
Black-billed Magpie		R
Common Crow		R
Common Raven		R
Scrub Jay		R
Pinon Jay		R
House Wren	S	M
Robin		R - M
Mountain Bluebird		R
Starling		R
Solitary Vireo	S	M
Warbling Vireo	S	M
Yellow Warbler	S	M
Yellow-throat	S	M
Yellow-breasted Chat		R - M
Western Meadowlark		R
Yellow-headed Blackbird	Sp, S, F	M
Red-winged Blackbird	Sp, S, F	M
Brewer's Blackbird	Sp, S, F	M
Common Grackle	Sp, S, F	M

Seasonal occurrence and resident status
of passerines and upland game birds
found in the Dolores River Basin
(continued)

Species	Seasonal Occurrence	Resident Status
Brown-headed Cowbird	Sp, S, F	M
Western Tanager	S	M
Black-headed Grosbeak	S	M
Evening Grosbeak	S	M
Blue Grosbeak	S	M
Lark Bunting	S	M
Lazuli Bunting	S	M
Indigo Bunting	S	M
Pine Siskin		R
American Goldfinch	S	M
Rufous-sided Towhee		R
Green-tailed Towhee	S	M
Grey-headed Junco		R
Oregon Junco		R
House Sparrow		R
Savannah Sparrow		R
Vesper Sparrow		R - M
Lark Sparrow		R - M
Chipping Sparrow		R - M
Song Sparrow		R
Brewer's Sparrow	S	M

Seasonal occurrence and resident status
of passerines and upland game birds
found in the Dolores River Basin
(continued)

Species	Seasonal Occurrence	Resident Status
House Finch		R
Bewick's Wren	S	M
Lesser Goldfinch	S	M
Blue-grey Gnatcatcher		R
Empidonax	S	M
Horned Lark		R
Mockingbird	S	M

Sp - Spring
S - Summer
F - Fall
W - Winter

R - Resident
M - Migrant

Inventory status of passerines and upland gamebirds in terrestrial zones in the Dolores River Basin

Species	River Bottom	Crop-land	Pinon Juniper	Salt Flats	Spruce Fir Ponderosa Forests
Ring-necked Pheasant	C	C			
Turkey	C		C		
Rock Dove	C	C		C	
Band-tailed Pigeon	C	C			
Morning Dove	C	C	C	C	C
Common Nighthawk	C		C		
Common Flicker	C		C		
Downy Woodpecker	UC				
Lewis Woodpecker	C	C	C		
Cassin's Kingbird	C				
Western Kingbird	C				
Say's Phoebe	C				
Western Flycatcher	C				
Ash-throated Flycatcher	C				
Western Wood Pewee	C				
Violet-green Swallow	C	C			
Tree Swallow	C				
Bank Swallow	C		C		
Rough-winged Swallow	C		C		
Barn Swallow	C	C			
Cliff Swallow	C		C		

Inventory status of passerines and upland gamebirds in terrestrial zones in the Dolores River Basin (continued)

Species	River Bottom	Crop-land	Pinon Juniper	Salt Flats	Spruce Fir Ponderosa Forests
Purple Martin	UC				
White-throated Swift	C	C	C		
Steller's Jay	C	C	C	C	C
Black-billed Magpie	C	C	C	C	C
Common Crow	C	C	C	C	C
Common Raven	C	C	C	C	C
Scrub Jay	C		C		
Pinon Jay	C		C	C	
House Wren	C				
Robin	C	C	C	C	C
Mountain Bluebird	C	C			C
Starling	C	C	C	C	C
Solitary Vire	C				
Warbling Vireo	UC				
Yellow Warbler	UC				
Yellow-throat	C				
Yellow-breasted Chat	C				
Western Meadowlark	C	C		C	
Yellow-headed Blackbird	C	C		C	
Red-winged Blackbird	C	C		C	
Brewer's Blackbird	C	C			

Inventory status of passerines and upland gamebirds in terrestrial zones in the Dolores River Basin (continued)

Species	River Bottom	Crop-land	Pinon Juniper	Salt Flats	Spruce Fir Ponderosa Forests
Common Grackle	C	C		C	
Brown-headed Cowbird	C	C			
Western Tanager	C				
Black-headed Grosbeak	C				
Evening Grosbeak	C				
Blue Grosbeak	UC				
Lark Bunting	C				
Lazuli Bunting	C				
Indigo Bunting	R				
Pine Siskin	C	C		C	
American Goldfinch	C				
Rufous-sided Towhee	C				
Bullock's Oriole	C				
Grey-headed Junco	C		C	C	
Oregon Junco	C		C	C	
House Sparrow	C	C	C	C	
Savannah Sparrow	UC				
Vesper Sparrow	UC				
Lark Sparrow	C				
Chipping Sparrow	C				

Inventory status of passerines and upland gamebirds
in terrestrial zones in the Dolores River Basin
(continued)

Species	River Bottom	Crop-land	Pinon Juniper	Salt Flats	Spruce Fir Ponderosa Forests
Song Sparrow	C			C	
Brewer's Sparrow	UC				
House Finch	C				
Bewick's Wren	C				
Lesser Goldfinch	C				
Blue-grey Gnatcatcher	UC				
Empidonax	R				
Horned Lark		C		C	
Mockingbird	R				

C - Common
UC - Uncommon
R - Rare

Species list, Occurrence and Status of Raptors in the Dolores River Basin

Species	Seasonal Occurrence	Status
Turkey Vulture (Cathartes cura)	S m	C
Osprey (Pandion haliaetus)	m	UC*
Bald Eagle (Haliaetus teucocephalus)	m W	C
Golden Eagle (Aquila chrysaetus)	S M W	C
Red-Tailed Hawk (Buteo jamaicensis)	S M W	C
Ferruginous Hawk (Buteo regalis)	S M W	UC
Rough-Legged Hawk (Buteo pagopus)	m W	C
Goshawk (Accipter gentilis)	m W	UC
Cooper's Hawk (Accipter cooperii)	S M W	C
Sharp Shinned Hawk (Accipter strigtuss)	S M W	C
Peregrine Falcon (Falcon peregrinus)	s m w	R*
Prarie Falcon (Falco mexicanus)	S m w	UC
Merlin (Falco columbarius)	m w	UC
American Kestrel (Falco sparverius)	S M w	C

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Species list, Occurrence and Status of Raptors in the Dolores River Basin

Species	Seasonal Occurrence	Status
Marsh Hawk (Circus cyaneus)	S M W	C
Great Horned Owl (Bubo virginianus)	S M W	C

C - common
UC - uncommon
R - rare

S - Summer resident
M - Migrant
W - Winter resident

* Not actually observed, but assumed to be present.

Upper case letters - major time of occurrence

Lower case letters - occasional

Scientific Name	Common Name
Grasses - Can be Found	
Agropyron spp.	Wheatgrass
" cristatum	Crested wheatgrass
" dasystachyum	Thickspike wheatgrass
" intermedium	Intermediate wheatgrass
" scribneri	Scribner or spreading wheatgrass
" smithii	Western wheat or Colorado bluestem
" subsecundum	Bearded wheatgrass
" trachycaulum	Slender wheatgrass
Agrostis spp.	Bentgrass
" alba	Redtop bentgrass
" scabra	*Ticklegrass
Alopecurus spp.	Meadow or alpine foxtail
Blepharoneuron tricholepis	Pine dropseed
Bouteloua spp.	Grama grass
" gracilis	Blue grama
Bromus spp.	Bromegrass
" anomalus	Nodding brome
" carinatus (B. polyanthus, B. marginatus, etc.)	Mountain brome
" inermis	Smooth Brome
" tectorum	Cheatgrass brome, Downy brome
Buchloc spp.	Buffalograss
Calamgrostis spp.	Reedgrass
" canadensis	Bluejoint reedgrass
" purpurascens	Purple pinegrass
Danthonia intermedia	Timber danthonia
" parryi	Parry danthonia
Deschampsia caespitosa	Tufted hairgrass
Distichlis spp.	Saltgrass
" stricta	Inland saltgrass
Elymus spp.	Wildrye
" ambiguus	Colorado wildrye
" canadensis	Canada wildrye
" cinereus (condensatus)	Giant wildrye
" glaucus	Blue wildrye
Festuca spp.	Fescue
" arizonica	Arizona fescue
" brachyphylla	Alpine fescue
" idahoensis	Idaho fescue
" ovina	Sheep fescue
" thurberi	Thurber fescue
Helictotrichon spp.	
" mortonianum	Alpine oat

Scientific Name	Common Name
Grasses - Can be Found (Cont.)	
Hesperochloa kingi	Spike fescue
Hilaria jamesii	Galleta grass
Hordeum spp.	Barley
" brachyantherum	Meadow barley
Koeleria cristata	Junegrass
Melica spp.	Oniongrass
Muhlenbergia spp.	Muhly
" montana	Mountain muhly
" richardsonis	*Mat muhly
" torreyi	*Ring muhly
Oryzopsis spp.	Ricegrass
" hymenoides	Indian ricegrass
Panicum spp.	Panicum; Witchgrass
Phleum spp.	Timothy
Poa spp.	Bluegrass
" alpina	Alpine bluegrass
" ampla	Big bluegrass
" canbyi	Canby bluegrass
" compressa	Canada bluegrass
" cusicki	
" fendleriana	Mutton bluegrass
" pratensis	Kentucky bluegrass
" rupicola	Timberline bluegrass
" secunda	Sandberg bluegrass
Sitanion hystrix	Squirreltail
Sporobolus spp.	Dropseed
Stipa spp.	Needlegrass
" columbiana	Subalpine needlegrass
" comata	Needleandthread
" lettermani	Letterman needlegrass
" neomexicana	
" richardsoni	Richardson needlegrass
" viridula	Green needlegrass
Trisetum spp.	Trisetum
" spicatum	Spike trisetum

* Indicates plants commonly photographed because of their flower.

Scientific Name	Common Name
Grasses - May possibly be Found	
Agropyron griffithsi	Griffiths wheatgrass
" spicatum	Bluebunch wheatgrass
Andropogon spp.	Broomsedge; Bluestem; Turkeyfoot
" gerardi (A.furcatus)	Big bluestem
" halli	Sand bluestem
" scoparius	Little bluestem
Aristida spp.	Threeawn grass
" fendleriana	Fendler threeawn
" longiseta	Red threeawn
Bouteloua curtipendula	Sideoats grama
" hirsuta	Hairy grama
" ciliatus	Fringed brome
" japonicus	Japanese brome
" pumpellianus	Pumpelly brome
Buchloe spp.	Buffalograss
Calamovilfa longifolia	Prairie sandgrass
Danthonia californica	California danthonia
" spicata	Poverty danthonia
Eragrostis spp.	Lovegrass
" Trichodes	Sand lovegrass
Melica spp.	Showy oniongrass
Muhlenbergia cuspidata	Stonyhills muhly
" filiculmis	Slimstem muhly
Panicum virgatum	Switchgrass
Poa interior	Inland bluegrass
" reflexa	Nodding bluegrass
Redfieldia spp.	Blowoutgrass
" flexuosa	Blowoutgrass
Sporobolus cryptandrus	Sand dropseed
" heterolepis	Prairie dropseed
Stipa spartea	Porcupinegrass

Scientific Name	Common Name
Grass-like	
Carex spp.	Sedge
" albonigra	
" aquatilis	Water sedge
" arapahoensis	Arapaho sedge
" aurea	Golden sedge
" brevipes	
" capillaris	
" chalciolepis	Bronzescale sedge
" drummondiana	Drummond sedge
" ebenea	Ebony sedge
" egglestoni	
" eleocharis	Needleleaf sedge
" elynoides	
" festivella	Ovalhead sedge
" filifolia	Threadleaf sedge
" foenea	Silvertop sedge
" geyeri	Elk sedge
" heliophila	Sun sedge
" lanuginosa	Woolly sedge
" microptera	Smallwing sedge
" nebraskensis	Nebraska sedge
" nigricans	Black alpine sedge
" nova	
" obtusata	
" petasata	Liddon sedge
" phaeocephala	Dunhead sedge
" praegracilis	
" pseudoscirpoidea	
" raynoldsii	Raynolds sedge
" rostrata	Beaked sedge
" scopulorum	Cliff sedge
" tolmiei	Tolmie sedge
Juncus spp.	Rush
" balticus	Baltic rush
" drummondii	Drummonds rush
" parryi	Parrys rush
Kobresia myosuroides (Elyna) (K. bellardi)	Kobresia
Luzula spp.	Woodrush
" spicata	Spike woodrush

Scientific Name	Common Name
Forbs - Can be Found	
Achillea spp.	*Yarrow; Milfoil
" lanulosa	*Western Yarrow
Aconitum spp.	Monkshood
" columbianum	Columbia monkshood
Actinea (see Hymenoxys)	
Agastache spp.	Gianthyssop; Horsemint
Agoseris spp.	Agoseris; Mountain dandelion
Allium spp.	*Wild onion
Anaphalis spp.	Pearleverlasting
Androsace	Rockjasmine
Aremone spp.	*Anemone
Angelica spp.	Aneglica or wild parsnip
Antennaria spp.	*Pussytoes
Aplopappus spp. (Haplopappus)	*Goldenweed
Apocynum	Dogbane
Aquilega spp.	*Columbine
" coerulea	*Colorado columbine
Arabis spp.	Rockcress
Arenaria spp.	*Sandwort
" fendleri	*Tuber starwort
" obtusiloba	
Arnica spp.	Arnica
Aster spp.	*Aster
Astragalus spp.	*Milkvetch; Loco
Balsamorhiza spp.	Balsamroot
" incana	Hoary balsamroot
" saggitata	Arrowleaf balsamroot
Besseya spp.	Kittentails
Calochortus spp.	*Mariposa lily
Caltha spp.	*Marshmarigold
Campanula spp.	*Harebell
Castilleja spp.	*Paintbrush
Cerastium spp.	*Chickweed
Chaenactis spp.	*Chaenactis; False yarrow
Chrysopsis spp.	*Goldaster
" villosa	*Hairy goldaster
Cirsium spp.	*Thistle
Cogswellia (Lomatium)	Biscuit root
Comandra spp.	Comandra
Crepis spp.	Hawksbeard
Delphinium spp.	*Larkspur
Dodecatheon spp.	*Shootingstar
Draba spp.	Draba
Dryas octopetala	*Alpine avens; Mt. Washington dryad
Echinacea spp.	Echinacea
Epilobium (Chamaenerion)	*Willoweed; Fireweed

* Indicates plants commonly photographed because of their flower.

Scientific Name	Common Name
Forbs - Can Be Found - (Contd)	
Erigeron spp.	*Fleabane or wild daisy
" flagellaris	*Trailing daisy
Eriogonum spp.	*Buckwheat
Eritrichum spp.	
Erysimum spp.	Erysimum
Erythronium spp.	Fawnlily
Euphorbia spp.	Euphorbia
Fragaria spp.	*Strawberry
Gaillardia spp.	Gaillardia
Galium boreale	Northern bedstraw
Gentiana spp.	*Gentian
Geranium spp.	*Geranium
Geum (Sieversia) spp.	*Avens
Gilia spp.	Gilia
" aggregata	*Skyrocket gilia
Hedysarum spp.	Sweetvetch
Helenium hoopesii	*Sneezeweed
Helianthella spp.	Little sunflower
Heracleum lanatum	Cowparsnip
Heuchera spp.	Alumroot
Hymenoxys spp.	Actinea
" acaulis	
" grandiflora	
" richardsoni	
Iris missouriensis	*Rocky Mountain Iris or Blue flag
Lathyrus spp.	Peavine
" leucanthus	Aspen peavine
Lesquerella spp.	Bladderpod
Ligusticella (see Pdistera)	
Ligusticum spp.	Ligusticum
" porteri	Osha or loveroot
Linum spp.	*Flax
Lloydia spp.	*Alplily
Lomatium spp.	Lomatium
Lupinus spp.	*Lupine
Madia spp.	Tarweed
Mertensia spp.	*Bluebell
Oenothera spp.	Eveningprimrose; Sundrops
Osmorhiza spp.	Sweetanise; Sweetroot
" occidentalis	Sweetanise
Oxytropis spp. (Aragallus)	*Crazyweed
Pedicularis spp.	Lousewort
" groendlandica	*Elephanthead
Penstemon spp.	*Penstemon; Beardstongue

* Indicates plants commonly photographed because of their flower.

Scientific Name	Common Name
Forbs - Can Be Found - (Cont)	
Perideridia spp.	Phacelia
Phacelia spp.	*Phlox
Phlox spp.	*Polemonium; Jacob's Ladder; Skypilot
Polemonium spp.	Knotweed
Polygonum spp.	*Bistort
" bistortoides	*Cinquefoil
Potentilla spp. (Herbaceous)	False carrot
Pseudocymopteris spp.	Scurfpea
Psoralea spp.	*Bracken fern
Pteridium spp.	*Pasqueflower; Anemone
Pulsatilla spp.	*Buttercup
Ranunculus spp.	*Coneflower or niggerhead
Rudbeckia spp.	Dock
Rumex spp.	Saxifrage
Saxifraga spp.	*Stonecrop
Sedum spp.	*Kings Crown
" integrifolium	*Queens crown
" rhodanthum	Wormleaf stonecrop
" stenopetalum	Selaginella
Selaginella densa	Groundsel
Senecio spp.	*Sibbaldia or Falsestrawberry
Sibbaldia procumbens	*Moss silene
Silene acaulis	Goldenrod
Solidago spp.	*Rock goldenrod
" petradoria	Globemallow
Sphaeralcea (Malvastrum)	*Starwort
Stellaria spp. (Alsine)	Swertia
Swertia spp.	Alpinebog swertia
" perennis	Elkweed
" radiata	
(Frasera speciosa)	
Taraxacum officinale	*Common dandelion
Thalictrum spp.	Meadowrue
Thermopsis spp.	*Goldenbanner
Thlaspi spp.	Pennycress
Townsendia spp.	Townsendia; Easter daisy
Trifolium spp.	Clover
" dasyphyllum	Whiproot clover
" gymnocarpon	Hollyleaf clover
" nanum	Dwarf clover
" parryi	*Parry clover
" repens	White clover
Valeriana spp.	Valerian
Veratrum californicum	*Falsehellebore or skunk cabbage
Vicia spp.	Vetch
Viguierra multiflora	*Showy goldeneye; or many flowered sunflower
Viola spp.	*Violet
Wyethia spp.	*Mulesear wyethia
Zygadenus spp.	*Deathcamas

Scientific Name	Common Name
Forbs - May Be Found	
Trifolium brandegei	Brandegee clover
Woody - Can Be Found	
Acer glabrum	Rocky Mountain maple
Amelanchier spp.	Serviceberry
Amorpha spp.	Amorpha
Arctostaphylos spp.	Manzanita; Kinnikinnick
Artemisia spp.	Sagebrush
" cana	*Silver sage
" dracunculoides	*Falsetarragon sagebrush
" frigida	*Fringed sage
" gnaphalodes	*Cudweed sagewort
" ludoviciana	Louisiana sagebrush
" Scopulorum	*Alpine sagebrush
" tridentata	*Big sagebrush
Atriplex spp.	Saltbush
" canescens	Fourwing saltbush
" confertifolia	Shadscale saltbush
Nuttallii gardneri	Garner saltbush
Berberis spp.	Barberry
Ceanothus spp.	Ceanothus
Cercocarpus spp.	Mountain Mahogany
" montanus	True mountainmahogany
Chrysothamnus spp.	*Rabbitbrush
" depressus	Dwarf rabbitbrush
" nauseosus	Rubber rabbitbrush
" parryi	Parry rabbitbrush
" vaseyi	Vasey rabbitbrush
" viscidiflorus	Douglas rabbitbrush
Cornus spp.	Dogwood
Crataegus spp.	Hawthorn
Eurotia spp.	Winterfat
Fendlera rupicola	Cliff fendlerbush
Holodiscus spp. (Sericotheca)	Rockspirea
Jamesia spp.	Jamesia
Juniperus spp.	Juniper
" communis	Common juniper
" osteosperma (J. utahensis)	Utah juniper
" scopulorum	Rocky Mountain juniper
Gutierrezia sarothrae	*Broom snakeweed
Lonicera spp.	Honeysuckla
Mahonia spp.	Mahonia
Opuntia spp.	Pricklypear
Peraphyllum spp.	Squawapple
Potentilla fruticosa	* Shrubby cinquefoil

Scientific Name	Common Name
Woody - Can be Found - (Contd)	
Prunus spp.	Chokecherry
" virginiana (P. melanocarpa)	Common chokecherry
Purshia tridentata	Bitterbrush
Quercus gambeli	Gambel Oak
Rhus spp.	Sumac
" glabra	Smooth sumac
" trilobata	Skunkbush sumac
Ribes spp.	Currant; Gooseberry
Rosa spp.	Rose
Salix spp.	Willow
Sambucus spp.	Elderberry
Symphoricarpos spp.	Snowberry
Tetradymia spp.	*Horsebrush
Vaccinium spp.	Whortleberry
Yucca spp.	*Yucca; Soapweed
Juniperus monosperma	One-seed juniper
Juniperus scopulorm	Rocky Mountain juniper
Woody - May be Found	
Cercocarpus ledifolius	Curlleaf mountain mahogany
Eurotia lanata	Common winterfat
Physocarpus spp. (Opulaster)	Ninebark
Woody - Can Be Found (Trees)	
Abies concolor	White fir
Abies lasiocarpa	Sualpine fir (Corkbark fir)
Acer glabrum	Rocky Mountain Maple
Acer negundo	Boxelder
Picea engelmann	Engelmann spruce
Picea pungens	Blue spruce
Pinus edulis	Pinyon
Pinus flexilis	Limber pine
Pinus ponderosa	Ponderosa
Populus acuminate	Lanceleaf cottonwood
Populus angustifolia	Narrow leaf cottonwood
Populus tremuloides	Aspen
Pseudotsuga mensiesii	Douglas-fir

* Indicates plants commonly photographed because of their flower.

Scientific Name	Common Name
Lower Montane Forest	
Pinus ponderosa	*Ponderosa pine
Quercus gambelii	*Gambel oak
Poa fendleriana	*Mutton grass
Mahonia repens	Oregon grape
Koelaria cristata	Junegrass
Purshia tridentata	Bitterbrush
Lotus wrightii	Lotus
Corallorhiza maculata	Coral root orchid
Pinyon - Juniper Woodland	
Pinus edulis	*Pinyon pine
Juniperus osteosperma	*Utah juniper
Mahonia repens	Oregon grape
Opuntia fragilis	
Ericgonum alatum	Winged eriogonum
Brushland - Mountain Shrub	
Quercus gambelii	*Gambel oak
Artimesia tridentata	*Big sagebrush
Rhus trilobata	Skunkbush sumac
Agropyron smithii	Western wheatgrass
Bouteloua gracilis	Blue grama grass
Sitanion hystrix	Squirrel tail grass
Sporobolus cryptandrus	Sand dropseed grass
Chrysothamnus nauseosus	Rabbitbrush
Riparian Community	
Populus angustifolia	*Narrowleaf cottonwood
Salix exigua	*Willow
Coleogyne ramosissima	*Blackbrush
Alnus tenuifolia	Thinleaf alder
Rosa nutkana	Wild rose
Acer negundo	Boxelder
Betula occidentalis	Rocky Mountain birch
Convolvulus arvensis	Bindweed
Epilobium hornemanni	Dwarf fireweed
Clematis legusticifolia	Virgin's bower
Atriplex confertifolia	Shadscale

* A dominant plant in either the superstory or in the substory.

Scientific Name	Common Name
Swamp Areas	
Typha angustifolia	*Cattail
Typha latifolia	*Cattail
Carex spp.	*Sedges
Juncus spp.	*Rushes
Equisetum laevigatum	Horsetail
Eleocharis macrostachya	Spikesedge
Tris missouriensis	Iris
Thalictrum fendleri	Meadow rue

Slickrock Canyon is a transition zone. Vegetation changes from the more mesic types (excluding riparian and swampy area communities) to a generally more zeric type. This area includes the following communities:

Pinyon-juniper woodland

Brushland - Mountain shrub

Riparian

Swamp area

and the drier

Semidesert

Semidesert	
Hilaria jamesii	*Galleta grass
Bouteloua gracilis	*Blue grama grass
Yucca angustissima	Narrowleaf yucca
Opuntia phaeacantha	Prickly-pear cactus
Sarcobatus vermiculatus	Greasewood
Atriplex confertifolia	Shadscale
	Salt cedar

* A dominant plant in either the superstory or in the substory.

NOTICES

List A

State lists of endangered and threatened species of the continental United States

State	Status	Family	Species
Colorado	Endangered	Boraginaceae	Cryptantha weberi
Colorado	Endangered	Brassicaceae	Arabis oxylobula
Colorado	Endangered	Brassicaceae	Braya humilis ssp. ventosa
Colorado	Endangered	Brassicaceae	Eutrema penlandii
Colorado	Endangered	Brassicaceae	Lesquerella pruindsa
Colorado	Endangered	Cactaceae	Sclerocactus glaucus
Colorado	Endangered	Caryophyllaceae	Stellaria irrigua
Colorado	Endangered	Fabaceae	Astragalus deterior
Colorado	Endangered	Fabaceae	Astragalus detritalis
Colorado	Endangered	Fabaceae	Astragalus lutosus
Colorado	Endangered	Fabaceae	Astragalus microcymbus
Colorado	Endangered	Fabaceae	Astragalus naturitensis
Colorado	Endangered	Fabaceae	Astragalus osterhoutii
Colorado	Endangered	Fabaceae	Astragalus schmollae
Colorado	Endangered	Fabaceae	Oxytropis obnapiformis
Colorado	Endangered	Fabaceae	Trifolium lemmonii
Colorado	Endangered	Hydrophyllaceae	Phacelia formosula
Colorado	Endangered	Onagraceae	Gaura neomexicana ssp. coloradensis
Colorado	Endangered	Polygonaceae	Eriogonum ephedroides
Colorado	Endangered	Ranunculaceae	Aquilegia micrantha var. mancosana

List A (Continued)

State	Status	Family	Species
Colorado	Threatened	Boraginaceae	Cryptantha elata
Colorado	Threatened	Boraginaceae	Cryptantha stricta
Colorado	Threatened	Boraginaceae	Mertensia viridis var. cana
Colorado	Threatened	Brassicaceae	Arabis gunnisoniana
Colorado	Threatened	Brassicaceae	Draba exunguiculata
Colorado	Threatened	Brassicaceae	Parrya nudicaulis
Colorado	Threateded	Brassicaceae	Rorippa coloradensis
Colorado	Threatened	Cactaceae	Sclerocactus mesae-verdae
Colorado	Threatened	Cyperaceae	Carex microptera var. crassinervia
Colorado	Threatened	Fabaceae	Astragalus wetherillii
Colorado	Threatened	Fumariaceae	Corydalis caseana ssp. caseana
Colorado	Threatened	Poaceae	Phippsia algida
Colorado	Threatened	Polygonaceae	Eriogonum brandegei
Colorado	Threatened	Polygonaceae	Eriogonum saurinum
Colorado	Threatened	Polygonaceae	Eriogonum viridulum
Colorado	Threatened	Ranunculaceae	Aquilegia chrysantha var. rydbergii
Colorado	Threatened	Saxifragaceae	Sullivantia purpusii

APPENDIX I

Geology and Mineral Resources

of

the Dolores River Basin, Colorado

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Description of the Dolores River Basin

Summary

The Dolores River heads on the north slope of Hermosa Peak and Graysill Mountain in the San Juan Mountains of southwestern Colorado and flows in a canyon with a general northwestward course for approximately 200 miles through the Canyonlands country into the Colorado river. The drainage basin is underlain by sedimentary rocks ranging in age from Pennsylvanian to Cretaceous except for a few tertiary strata and intrusive bodies in the headwaters area.

Geology

The uppermost part of the Dolores drainage basin is on the southwestern slopes of the San Juan Mountains but most of it is in the Canyon Lands Section of the Colorado Plateaus Physiographic Province. In it, the Dolores and other streams have eroded the country into a series of relatively flat-topped tabular blocks separated by deep narrow canyons.

Strata exposed in the basin are as follows:

Oligocene (?)

Telluride Conglomerate - red to light-gray arkosic conglomerate, conglomeratic sandstone, sandstone, and mudstone. It rests unconformably in the older rocks and is overlain by volcanic rocks. It is 900 to 1,000 feet thick.

Upper Cretaceous

Mesa Verde Group - yellowish-gray, thick-bedded sandstone beds separated by light-gray shale. Beds are both marine and nonmarine in origin and are about 1,200 feet thick.

Mancos Shale - dark gray to black, soft, fissile marine shale with thin sandstone beds. The upper beds intertongue with and grade vertically into the lower part of the Mesa Verde Group. Thickness is about 4,000 feet.

Upper and Lower Cretaceous

Dakota Sandstone - yellowish-brown to gray quartzitic fluvial sandstone and conglomeratic sandstone in thick beds with thin lenticular beds of gray claystone, impure coal and carbonaceous shale. Thickness of the formation varies from 50 to 225 feet.

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Lower Cretaceous

Burro Canyon Formation - lenticular light-brown fluvial quartzose sandstone and conglomerate with siltstone, shale, and mudstone. About 150 feet thick but varies from a few feet to more than 200 feet.

Upper Jurassic

Morrison Formation - fluvial and lacustrine sandstone and mudstone alluvial deposits about 600 feet thick, although total thickness ranges from 450 to 950 feet.

Junction Creek Sandstone - pink or reddish orange fine-to-coarse grained, poorly sorted, cross-bedded eolian sandstone about 275 feet thick. It merges northward with the upper part of the Summerville Formation.

Wanakah Formation - greenish-gray to reddish-brown limy siltstone, thinly-bedded fine-grained quartz sandstone and a dark gray bituminous limestone 25 to 100 feet thick. It is the lateral equivalent of the Summerville Formation to the north.

Entrada Sandstone - pale to greenish-gray massive sandstone with large low-grade vanadium-uranium deposits at some localities. It ranges from 70 to 440 feet in thickness and averages about 150 feet.

Triassic

Navajo Sandstone - white, gray, or yellowish-gray, fine-grained, well-sorted, highly cross-bedded eolian sandstone. More than 400 feet thick to the west but thins to an irregular wedge edge near the Dolores River.

Kayenta Formation - gray, purplish-gray irregularly bedded fluvial sandstone and siltstone with some mudstone, conglomerate, and limestone. Thickness varies from zero to 240 feet. These beds are found only in the lower Dolores River Canyon.

Windgate Sandstone - reddish-brown to buff, fine-grained, massive, thick-bedded, prominently cross-bedded eolian sandstone. It is present in the Dolores River Canyon but is thin and wedges out eastward. To the west it attains a thickness of 350 feet.

Chinle Formation - red, reddish-brown, and orange-red siltstone with lenses of red sandstone and shale, limestone pebble, and shale pellet conglomerate. It is terrestrial in origin. Thickness increases from a few feet southward to 600 feet.

Dolores Formation - bright red to reddish orange fluvial siltstone, sandstone and shale with a few thin layers of limestone shingle conglomerate about 400 feet thick. It is the approximate lateral equivalent to parts of the Windgate, Sandstone and Chinle Formation.

Moenkopi Formation - chocolate-brown, ripple-bedded shale, brick-red sandy mudstone, brown sandstone and arkosic conglomerate with local gypsum beds. Thickness ranges from 0 to more than 1,000 feet.

Permian

Cutler Formation - a continental sequence of grayish- to purplish-red fluvial micaceous sandstone, siltstone, and arkosic conglomerate. Total thickness ranges from 0 to 3,000 feet.

Permian or Pennsylvanian

Rico Formation - light gray, fossiliferous, cherty marine limestone, reddish-brown fine-to-medium-grained fluvial sandstone, and reddish-brown, gray-green or purple micaceous and gypsiferous siltstone about 300 feet thick.

Pennsylvanian

Hermosa Formation - gray and light-brown, thick-bedded, fossiliferous, cherty marine limestone and dolomite, gray fine-grained micaceous crossbedded sandstone and siltstone, dark-gray shale, and gypsum. It is about 1,800 feet thick at Rico.

The mountainous portions of the basin are underlain by the Hermosa Formation and younger strata up through the Mancos Shale intruded by stocks and laccoliths of microgranogabbro to adamellite, dikes and sills of intermediate composition and lamprophyre dikes. The Telluride Conglomerate unconformably overlies the Mancos Shale on Mount Wilson and a few of the higher peaks.

In the southern part of the basin, the mesas between the streams are underlain mostly by the Dakota Sandstone or the Burro Canyon Formation. In the central part, much of the area is underlain by the Mancos Shale with the higher areas underlain by the Mesa Verde Formation. In the northern portion, the Dakota Sandstone and the Morrison Formation are at the surface.

The western part of the San Juan Mountains is a broad dome formed in Laramide time. The relatively flat-lying sedimentary rocks of the Plateau Province rise gently but steadily eastward toward the San Juan dome. A few miles east of the Dolores River drainage basin, the strata bend upward along the San Juan monoclinal fold on the flank of the dome.

The principal tectonic feature of the basin is the Paradox fold and fault zone that lies southwest of and parallel to the Uncompahgre Uplift. It consists of four prominent northwest trending anticlines, the Paradox Valley, Gypsum Valley, Dolores and Dove Creek anticlines and the intervening synclines. These folds and a number of roughly parallel faults die out to the southeast and merge with the general rise of strata toward the San Juan Mountains. At least two of the folds, the Paradox Valley and Gypsum Valley anticlines, have intrusive cores of salt from the Paradox Member of the Hermosa Formation.

Mineral Deposits

The mineral deposits are discussed separately for three portions of the basin.

Headwaters basin

The headwaters basin above Rico, Colorado, is a mountainous area with great topographic relief. Altitudes range from about 8,800 feet on the Dolores River at Rico to more than 12,000 feet at the headwaters drainage divides. Mt. Wilson at the head of Slate Creek attains an altitude of 14,246 feet.

The exposed stratigraphic section includes the Hermosa Formation up through the Telluride Conglomerate. These sedimentary rocks are overlain by the San Juan Tuff and the Silverton volcanic series on the higher ridges of Mt. Wilson and nearby peaks and were intruded by stocks and laccoliths ranging in composition from microgranogabbro to adamellite, by numererous dikes and sills of intermediate composition and by several lamprophyre dikes. The sedimentary rocks are nearly flat-lying with a gentle rise toward the San Juan monocline except where they have been disturbed by the intrusion of the igneous rocks.

Leasable Minerals

The lands underlain by the Dakota sandstone are valuable for coal, parts of the headwaters basin are valuable for oil and gas and geothermal resources, and a small area near Rico is valuable for potassium and sodium.

Coal.---In this area the Dakota Sandstone consists of an upper sandstone member, a middle carbonaceous shale member and a lower conglomeratic sandstone member. Lentincular beds of coal, most of them less than five feet thick are present in the middle member. The coal is bituminous in rank. Formerly, the coal was mined on the south side of the Dolores River just east of Barlow Creek and on the north side of the river just east of Coal Creek. This coal was used in making coke for smelting operations at Rico and for household heating. Remains of the coke ovens can be seen along the Dolores River between Coal Creek and Coke Oven Creek.

Geothermal Resources.---Lands designated valuable for geothermal resources were placed in this category because of the Dunton Hot Spring in the canyon of the West Dolores, NW¼SW¼ sec. 33, T. 41 N., R. 11 W. reported to flow 20 gallons of water per minute at a temperature of 110° F. and the Iron Spring or Railroad Spring, NW¼NE¼ sec. 25, T. 40 N., R. 11 W., 3/4 miles north of Rico, reported to flow 25 to 30 gallons per minute of water at a temperature of 82° F. There has been no development of these resources.

Oil and Gas.---Sedimentary rocks suitable for the occurrence of oil and gas are present, but to date there has been no production and very little exploration.

Potassium.---Disseminated deposits of alunite formed by the alteration of a monzonite porphyry are present at Calico Peak on the divide between the headwaters basin and the West Dolores River basin. Resources are estimated at 6,000,000 tons, 17.1 percent alunite.

Sodium.---Layers of salt and potash minerals are interbedded with anhydrite, limestone, dolomite and shale in the Paradox Member of the Hermosa Formation. These beds underlie the extreme southwest corner of the headwaters basin at considerable depth. The potash does not extend this far eastward but salt probably is present. Little or nothing is known concerning its thickness.

Nonmetallic Minerals

Gypsum.---A bed of gypsum 15 to 30 feet thick is present in the lower part of the Hermosa Formation at Newman Hill in the Rico district.

Sulfur.---The Rico Argentine Mining Co., in October 1955, began operating a one and one-half million dollar sulfuric acid plant at Rico. The plant has a capacity of 200 tons of acid per day made from pyrite obtained from nearby deposits. A by-product is red hematite.

Metallic Minerals

Calico Peak District.---Aluminum might be recovered from the alunite deposits discussed as a source of potassium.

Mt. Wilson Area.---This area is on the boundary between the headwaters basin and the West Dolores River basin. Since most of the mining activity has been in the West Dolores River basin, it is discussed under that heading.

Rico District.---Since the first claim was staked in 1879, Rico has been an active mining district. Silver, largely from Newman Hill southeast of the town was the chief product in the early days. Since 1900 lead and zinc have been the principal products. Gold and copper also have been produced and silver has remained an important by-product. The production of the Rico district from 1879 to 1968 has been about 14,500,000 ounces of silver, 83,000 ounces of gold, 84,000 tons of lead, 83,000 tons of zinc and 5,600 tons of copper.

The Rico Mining District is in the Rico Mountains, a small group isolated from the main range of the San Juan Mountains and carved from a low structural dome roughly circular in outline and 12 to 15 miles across. The town of Rico on the Dolores River lies near the center of the dome. Rocks involved in the folding include Precambrian greenstone and metadiorite, the Precambrian Uncompahgre Quartzite, the Leadville Limestone of Mississippian age, and overlying sedimentary strata up to those of Jurassic age. These rocks were intruded by sills and dikes of hornblende latite porphyry throughout the central part of the dome. One of the sills is 525 feet thick. Somewhat later the Rico stock of monzonite about two miles long in an East-West direction and one mile wide was intruded west of the river at Rico. The invaded rocks were metamorphosed for 1.7 miles east of the stock. Faulting followed the doming and igneous activity. The major faults trend east-west parallel to the long direction of the stock. A horst block containing the Precambrian rocks is on an eastward prolongation of the stock and is the highest structural element. Long blocks and wedge-shaped slices between the main faults drop step-like away from the horst. Dip of the strata decreases progressively away from the center of the dome. The major faults are normal and with one exception have a steep dip.

Production has been from the northeast, east and southeast sides of the stock and from several types of ore deposits. A large part of the early-day production came from the "Enterprise blanket" and other blanket deposits in the lower part of the Hermosa Formation on Newman Hill. These were replacement deposits in the residual debris from solution of a 15- to 3-foot gypsum bed where broken by fissures. They were exhausted before the year 1900. Massive sulfide replacement deposits in limestones of the Hermosa Formation have been the major source of ore in the 20th century and accounts for practically all of the current production of base metals and the by-products, silver and gold. Contact-metamorphic deposits of sulfides and iron oxides in limestones of the Ouray and Leadville Limestones and to a lesser extent of the Hermosa

Formation were productive of base-metal sulfides and by-products of silver and gold during the 1920'a and in World War II but are not now productive. They consisted or irregular pods scattered through masses of specularite, magnetite and chlorite in marbleized and serpentinized limestone. Fissure veins along fractures and small faults, especially in sandstones and arkoses of the Hermosa Formation, are widespread. Most of them are too small to be mined profitably except where they intersect breccia zones, limestone beds, or gypsum beds and widen to form large irregular bodies.

The principal ore minerals, pyrite, sphalerite, galena, and chalcopyrite, are present in all of the deposits. Most of the silver taken from Newman Hill before 1900 was from the silver minerals argentite, proustite, polybasite, and pearceite, but most of the silver currently produced is from finely disseminated argentiferous tetrahedrite-tennantite. Native gold is a small but significant by-product. The gangue minerals are quartz, rhodochrosite, rhodonite, fluorite, calcite, sericite, and locally, barite.

In the past there have been two lead smelters and numerous mills in the Rico district, and at present there is a plant producing sulfuric acid from pyrite. Antimony and arsenic could be recovered from the high-grade silver ores.

West Dolores Basin

The bed of the West Dolores River rises from 7,380 feet at its mouth to over 12,000 feet at its source. Peaks along the drainage divide reach elevations between 13,000 feet and 14,300 feet. For about eight miles the stream flows through mountainous country and then for the next 22 miles flows in a canyon less than one mile wide and from 1,200 to 1,500 feet deep between mesas whose surfaces slope southwestward at a rate of about 200 feet per mile.

The mesas are underlain by rocks of the Dakota and Burro Canyon Formations. In the canyons of the West Dolores River and its tributaries, the Morrison Formation, Junction Creek Sandstone, Wanakah Formation, Entrada Sandstone, the Dolores Formation and the Cutler Formation are exposed.

A large Tertiary intrusive body underlies Black Mesa and the southern slopes of Groundhog Mountain. Smaller intrusives are present at Middle Peak and Mt. Wilson. The sedimentary rocks are cut by dikes and small silts of trachybasaltic lamprophyre.

The Calico Peak anticline trends west northwest across the southern part of the basin and the parallel Groundhog syncline lies several miles to the north. Structure in the extreme southwest portion of the basin consists of a southwest plunging syncline. A large number of north-northwest trending faults and a few northeast trending faults cut the sedimentary rocks in the eastern part of the basin.

Leasable Minerals

About two-thirds of the area is valuable for coal and slightly more is valuable for oil and gas. Roughly the eastern half is valuable for geothermal resources and the western two-thirds is valuable for potassium and sodium.

Coal.---Lenticular beds of bituminous coal are present in the Dakota Sandstone. Beds are usually less than 5 feet thick. Development probably will come only after the better fields in the Durango and other nearby areas are exhausted.

Geothermal Resources.---The lands valuable for geothermal resources are a westward extension of the Dunton-Rico area discussed under the headwaters basin. There has been no development.

Oil and Gas.---Sedimentary rocks suitable for the occurrence of oil and gas are present. To date, there has been no production and very little exploration.

Potassium.---Disseminated deposits of alunite at Calico Peak extend into the West Dolores River basin. Potash beds in the Paradox Member of the Hermosa Formation probably do not extend far enough eastward to underlie any of the West Dolores River Basin.

Sodium.---Salt beds in the Paradox Member of the Hermosa Formation underlie the western two-thirds of the West Dolores River basin at depths of 5,000 to 6,000 feet. Very little is known concerning the thickness of the salt beds in this area.

Nonmetallic Minerals

Antimony and arsenic.---Antimony and arsenic could be produced from the ruby silver ores of the Dunton district as discussed under metallic minerals.

Metallic Minerals

Calico Peak District.---The alunite deposits previously discussed extend into the extreme southeast corner of the West Dolores Basin. Aluminum might be recovered from them at some time in the future.

Dunton District.---North northwest trending faults and dikes and sills of quartz diorite or quartz monzonite from the Rico Mountains igneous center cut the sedimentary rocks. Silver, gold, and a little lead have been produced. Massive deposits of the ruby silver minerals pyrargyrite and proustite are abundant in the zone of the secondary sulfide enrichment. Antimony and arsenic could be produced from them and stibnite has been reported as radiating crystals lining vugs.

Mount Wilson District.---This district lies in a group of high peaks separated topographically from the main range of the San Juan Mountains and on the boundary between the Headwaters Basin and the West Dolores Basin. The Telluride conglomerate here is a series of sandstones and shales about 1,000 feet thick. Overlying it the San Juan Tuff and Silverton volcanic series are exposed on the higher ridges. The sedimentary rocks are intruded by a large stock of diorite to monzonite which makes up the main mass of the mountains. The ore deposits are in fissure veins within the stock or in nearby sedimentary rocks that strike N 70° E to S 70° E and dip at angles of 70° or more. They are offset by barren veins striking north. The most productive veins are quartz-filled fissures containing pyrite, chalcopyrite and arsenopyrite with lesser amounts of galena, sphalerite, tetrahedrite, stibnite and calcite. The pay streaks within the veins vary from 3 inches to 5 feet, but are generally narrow and average less than 2 feet. The silver-lead ores are widely distributed and consist of galena, sphalerite and pyrite with subordinate chalcopyrite, tennantite and tetrahedrite in a gangue of quartz, calcite, and lesser amounts of barite and rhodochrosite. The gold ore is mostly pyrite with subordinate amounts of chalcopyrite and arsenopyrite with a gangue of quartz, some carbonaceous minerals and barite. The gold is very fine-grained. Gold, silver, lead, copper, and some zinc have been produced, but the principal values have been in gold and silver. Total production has been about $3 million. The Silver Pick mine is by far the largest mine in the district. It has produced more than 32,000 ounces of gold and 95,000 ounces of silver.

The Dolores River Corridor

Downstream from the proposed McPhee damsite, sec. 2, T. 38 N., R. 16 W., N.M.P.M., the Dolores River corridor follows a general

north-northwest course. The river flows in a deep narrow canyon. The entire section of sedimentary rocks from the Cutler Formation up through the Dakota Sandstone is exposed in the corridor.

The principal structure along the southern half of the corridor is the Dolores anticline, which trends northwest for more than 40 miles from T. 39 N., R. 15 W., to T. 44 N., R. 19 W. From McPhee damsite to Glade Canyon, sec. 18, T. 41 N., R. 17 W., the river flows in a canyon from 3/4 to 1-1/2 miles wide that has been superimposed part way down the southwest flank of the Dolores anticline. Depth of this canyon varies from 500 to 1,900 feet. Glade Canyon is in a narrow west-northwest trending graben about 15 miles long but only about half a mile wide. The Dolores river crosses the Glade Graben near its west end, turns to a more northerly course, and cuts diagonally across the Dolores anticline, crossing the axis in sec. 14, T. 42 N., R. 18 W., in a canyon nearly 2,300 feet deep.

From this point, the Dolores river crosses a number of large northwest-trending structural valleys that are aligned along the Disappointment syncline, the Gypsum Valley anticline, several smaller anticlines and synclines, and the Paradox Valley anticline to the mouth of the San Miguel River. In the valleys the inner canyon may be as little as 400 feet deep, but between them the canyons are as much as 1,800 feet deep. The river crosses the broad, flat-bottomed Paradox Valley at right angles to its axis and is not entrenched into the valley at all. From the mouth of the San Miguel River, the Dolores River angles down the southwest flank of the Nucla syncline to the town of Gateway. From this point to its mouth, the river flows along the axis of the Nucla syncline.

Leasable Minerals

Most of the lands drained by the Dolores River from the proposed McPhee damsite to its mouth is valuable for coal, oil and gas, potassium and sodium.

Coal.---Coal is present in the Dakota Sandstone and underlies the mesas between the streams, but has been eroded from the Dolores River Canyon and the tributary canyons. There are no active mines in the area and there was little or no mining in the past because of the isolated location and small population. However, access to coal mined in the future may be easiest by adits from the canyons.

Oil and Gas.---The entire drainage area is underlain by sedimentary rocks suitable for the occurrence of oil and gas. There is one small producing gas field within the drainage basin, Andy's Mesa Field, in sections 19, 20, 21, 27, 28, 34 and 35, T. 44 N., R. 16 W. Production is from the Cutler Formation. There are several small gas fields south and southwest of the drainage basin. No doubt more discoveries will be made. Chief hindrance to oil and gas development from designation of some stretches of the river as wild or scenic would be in restricting the building of roads and thus limiting access to possible locations of tests for oil and gas.

Potassium and Sodium.---Potash and sodium minerals are interbedded with anhydrite, limestone, dolomite and shale in the Paradox Member of the Hermosa Formation which underlies the entire area at depth. The center of the salt-bearing area is near Egnar, sec. 11, T. 42 N., R. 19 W., 7 miles west of the Dolores River. The salt is approximately 2,000 feet thick but is 6,000 feet or more below the ground surface. Southward from Egnar the beds are nearly horizontal, but the salt thins gradually. Northward, the beds have been folded into a series of parallel anticlines and synclines. In the Paradox Valley, one well was in salt for nearly 14,000 feet. The total amount of salt is very large, but information is not sufficient to make an estimate of the total.

Potassium salts are present in about two-thirds of the area underlain by salt beds, none being present east of 108°30' longitude. Hence potassium salts can be expected under most of the drainage basin. However, even less is known about them than of the salt beds but the total amount of rock containing potassium salts is probably large. In a mine near Moab, Utah, a high-grade body of potash averages 11 feet in thickness and is 2,400 to 4,000 feet below ground surface.

Nonmetallic Minerals

Gypsum.---Gypsum occurs as a cap rock at the top of the salt and crops out in Big Gypsum Valley. The resources of gypsum in this area are probably large, but there is not enough information to make any estimate on the total amount.

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
1	Dolores Water	MDO	*	Dolores River	38-N	14-W	33 SESWSW	1.0		Abs.	02-01-1892	05-31-1879
2	Main Canal #1 and/or Main Canal #2	I	D	Dolores River	37-N	15-W	17 NENWSW	1.1		Abs.	02-01-1892	05-31-1879
								1.1		Abs.		04-15-1880
								1.0		Abs.		05-31-1882
								1.0		Abs.		05-31-1883
								707.7		Abs.		11-25-1885
								592.3		Cond.		11-25-1885
		***	D					100.0		Abs.		11-25-1885
3	Sheek	I	D	Dolores River	37-N	15-W	10 SESENW	0.9		Cond.	02-01-1892	05-31-1879
								2.0		Abs.	12-18-1933	04-15-1903
4	Illinois Ditch	I	D	Dolores River	37-N	14-W	8 SWNWNE	2.763		Abs.	02-01-1892	04-15-1880
								1.137		Cond.		
								0.14		Abs.	03-22-1963	12-22-1933
		DS	D					0.333		Abs.		
5	Home Ditch	IDS	D	Dolores River	38-N	14-W	15 SENESE	3.0		Abs.	02-01-1892	05-01-1880
		DS	D					0.25		Abs.	03-22-1963	05-01-1880
6	Italian Ditch	I	D	Dolores River	38-N	14-W	33 SWSESE	1.0		Abs.	02-01-1892	05-01-1880
								1.0				06-12-1891
								1.0			12-18-1933	04-01-1903
		I	D					0.12			03-22-1963	05-01-1880
		DS	D					0.33				
7	Moriarity Ditch	I	D	East Fork Dolores	38-N	13-W	5 NWSESE	1.0		Abs.	02-01-1892	12-31-1880
								2.8		Abs.	06-18-1891	06-18-1891
								0.7		Abs.	03-22-1963	12-31-1890
			S					0.5		Abs.		
			I					2.0		Cond.		

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
8	House and Sommers	I	D	Dolores River	38-N	15-W	31 SENENW	1.0		Abs.	02-01-1892	03-01-1881
								1.4		Abs.		04-06-1891
9	Bean Ditch	I	D	Dolores River	37-N	15-W	11 SWSENE	1.0		Abs.	02-01-1892	04-01-1881
								1.4		Abs.		06-24-1891
10	Burch and Longwill	I	D	Dolores River	38-N	14-W	27 NENWNE	1.0		Abs.	02-01-1892	04-10-1881
								0.8		Cond.		05-31-1882
								2.0		Abs.		06-17-1891
								4.0		Abs.	03-22-1963	04-10-1881
11	Geo. P. Moore Ditch	I	D	Dolores River	39-N	16-W	33 NWSWNW	0.7		Abs.	02-01-1892	04-30-1881
								1.1		Cond.		
12	Aztec Ditch	I	D	Dolores River	37-N	15-W	7 NENWNE	1.0		Abs.	02-01-1892	05-01-1881
								4.0		Abs.		05-23-1891
13	D. D. Williams Ditch	I	D	Dolores River	39-N	17-W	15 SESWNW	1.0		Abs.	02-01-1892	05-01-1881
								1.8		Cond.		
								1.0		Abs.		01-10-1891
14	Kuhlman Ditch	I	D	Dolores River	38-N	15-W	20 SWNWSE	1.0		Abs.	02-01-1892	05-01-1881
								0.8		Abs.		
15	Hammond and Clark	I	D	Dolores River	38-N	14-W	11 SWSENE	1.0		Abs.	02-01-1892	05-10-1881
								2.0		Abs.	02-01-1892	06-17-1891
								1.6		Cond.		
								3.0		Abs.	03-22-1963	06-17-1891
16	Lone Dome Ditch	I	D	Dolores River	39-N	16-W	19 SESWSE	1.0		Abs.	02-01-1892	02-20-1882
								1.2		Abs.		06-04-1891
								2.4		Cond.		

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
17	Gould A. Moriarity	I	D	East Fork Dolores	38-N	13-W	4 SENWSW	2.25		Abs.	02-01-1892	05-15-1882
								1.75		Cond.		
		I	D					1.0		Abs.	03-22-1963	12-31-1894
		DSO	D					1.0		Abs.		
18	Dunham and Johnson	I	D	Dolores River	37-N	15-W	8 SWNENW	1.0		Abs.		06-01-1891
19	Sebastian Tam Ditch	I	D	Dolores River	38-N	14-W	11 NWSENW	1.0		Abs.	02-01-1892	05-31-1883
								0.6		Cond.		
20	Monument Rock Ditch	I	D	East Fork Dolores	38-N	13-W	10 SENENW	2.0		Abs.	02-01-1892	06-01-1885
21	Lyons Ditch	I	D	East Fork Dolores	38-N	14-W	1 NWNWNW	0.3		Abs.	02-01-1892	04-30-1891
								0.7		Cond.		
22	Quarry #1 Ditch	I	D	East Fork Dolores	38-N	12-W	6 SWSWSW	6.5		Abs.	12-18-1933	03-21-1882
23	Dickinson Ditch	I	D	Dolores River	38-N	15-W	17 SWNESW	1.66		Abs.	12-18-1933	10-31-1882
24	Porter Ditch	I	D	Dolores River	38-N	15-W	30 SENWSW	1.38		Abs.	12-18-1933	05-01-1883
25	Koenig Ditch	I	D	West Fork Dolores	39-N	13-W	9 SWNWNW	4.0		Abs.	03-08-1937	06-01-1883
26	Rogers Ditch	P	D	Fish Creek	40-N	13-W	12 NWSESW	3.0		Abs.	03-08-1937	06-01-1884
27	East Eder Ditch	I	D	West Fork Dolores	40-N	12-W	18 NESWSE	1.0		Abs.	03-08-1937	06-01-1885
								8.5		Abs.		06-01-1887

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
28	West Eder Ditch	I	D	Fish Creek	40-N	13-W	13 NWSENE	1.0 7.0 1.0		Abs. Abs. Cond.	03-08-1937	06-01-1885 06-01-1887 07-01-1936
29	Goebel Ditch	I	D	West Fork Dolores	40-N	13-W	24 NWSWNW	6.8		Abs.	03-08-1937	06-01-1887
30	Jesse Love Ditch	I	D	West Fork Dolores	40-N	12-W	11 SWSWSW	6.0		Abs.	03-08-1937	06-01-1887
31	Sulphur Gulch Ditch	I	D	Sulphur Creek	40-N	12-W	15 SENWNE	0.65		Abs.	03-08-1937	06-01-1887
32	Keystone Ditch	I	D	Dolores River	37-N	15-W	12 SWSENW	2.0		Abs.	12-18-1933	04-01-1889
33	Bradfield Ditch	I	D	Dolores River	38-N	16-W	1 SENWSW	3.0		Abs.	12-18-1933	05-01-1891
34	Ortiz Ditch	I	D	Dolores River	38-N	14-W	33 SENESE	1.0		Abs.	12-18-1933	05-01-1891
35	Linstrom Ditch	I	D	East Fork Dolores	38-N	13-W	11 NWSWNE	4.5		Abs.	12-18-1933	12-31-1894
36	Van Winkle Ditch	I	D	Dolores River	38-N	15-W	19 SENENE	1.5		Abs.	12-18-1933	05-01-1895
37	Roubidoux Ditch	I	D	East Fork Dolores	38-N	12-W	5 SWSWNW	3.5		Abs.	12-18-1933	08-15-1899
38	Rieva Ditch	I	D	West Fork Dolores	39-N	14-W	24 NESENE	5.0		Abs.	12-18-1933	03-21-1900

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
39	Garbarino Ditch	I	D	West Fork Dolores	39-N	14-W	25 NENWNW	1.75		Abs.	12-18-1933	12-31-1900
	#2				39-N	14-W	25 SWNENE	2.0		Abs.		
	#3				39-N	14-W	24 NWNESW	1.0		Abs.		
40	Rossi Ditch	I	D	West Fork Dolores	39-N	13-W	18 SWSWSE	1.25		Abs.	12-18-1933	12-31-1906
41	Ritter Ditch	I	D	Dolores River	37-N	15-W	17 NENWNW	1.0		Abs.	12-18-1933	04-01-1908
42	Lawrence E. Rogers	I	D	Dolores River	44-N	19-W	25 SESWNE	1.5		Abs.	03-08-1937	04-01-1919
43	Carter Ditch	I	D	East Fork Dolores	38-N	14-W	1 NENESE	4.12		Abs.	12-18-1933	06-01-1930
44	Riverside Ditch	I	D	East Fork Dolores	38-N	13-W	11 NESENW	2.6		Abs.	12-18-1933	06-08-1931
45	Bear Creek Ditch	ID	D	Dolores River	38-N	12-W	9 NESWSW	10.6		Abs.	03-22-1963	06-01-1880
46	Frank Robinson	ID	D	East Fork Dolores	38-N	12-W	5 SESESW	4.1		Abs.	03-22-1963	06-01-1880
47	Starret Ditch	ID	D	East Fork Dolores	39-N	14-W	36 SESWNW	2.3		Abs.	03-22-1963	06-01-1882
48	Donald Wallace #2	ID	D	West Fork Dolores	39-N	13-W	36 NWNESE	2.0		Abs.	03-22-1963	07-10-1882
49	Stoner Ditch	***	D	East Fork Dolores	38-N	13-W	6 NWNESW	2.0		Abs.	03-22-1963	07-15-1882

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
50	McPhee Pipeline	ND	D	Dolores River	37-N	15-W	5 NWSESW	2.17		Abs.	03-22-1963	11-01-1927
51	Alexander Ditch	IDS	D	Dolores River	36-N	15-W	7 NENWNE	1.0		Abs.	03-22-1963	12-22-1933
52	Troy Rose Diversion	IS	*	Dolores River	44-N	18-W	31 NWNWNW	2.0		Abs.	06-11-1968	06-01-1908
53	McPhee Reservoir	***	R	Dolores River	38-N	16-W	1 SWNWNW		400,000	Cond.	03-22-1963	09-10-1940
									250,000	Cond.		
									100,000	Cond.		
	McPhee Reservoir Inlet							585.0		Cond.		
54	Donald Wallace #1	I	D	West Fork Dolores	39-N	13-W	36 SESWSE	3.0		Cond.	03-22-1963	09-17-1950
55	Silvey Ditch	IS	D	East Fork Dolores	39-N	11-W	31 NENESW	0.8		Abs.	03-22-1963	09-21-195)
		I	D					1.6		Cond.		
56	Dove Creek Dolores River Supply	***	*	Dolores River	41-N	18-W	23 SWNWNW	0.39		Abs.	06-11-1968	07-16-1951
								0.69		Cond.		
57	Galloway Ditch	I	D	West Paradox Creek	47-N	18-W	18 NWNESE	0.67		Abs.	02-01-1892	04-30-1881
								0.05		Abs.	02-01-1892	04-30-1883
								1.0		Abs.	02-01-1892	05-31-1883
							18 SENE	0.15		Abs.	02-01-1892	05-10-1884
								0.15		Cond.	02-01-1892	05-10-1884
							18 NWNESE	1.0		Abs.	02-01-1892	05-31-1884
								2.13		Abs.	01-19-1926	04-02-1909
								7.5		Abs.	01-19-1926	03-01-1915

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Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
58	Neathery Ditch #2	I	D	West Paradox Creek	47-N	18-W	18 NESWNE	0.23		Cond.	02-01-1892	04-30-1881
					47-N	18-W	18 NWSENE	0.45		Cond.	02-01-1892	04-30-1883
59	W. D. Hamilton Private	I	D	West Paradox Creek	47-N	18-W	18 NESW	0.34		Abs.	02-01-1892	12-31-1883
								0.66		Cond.	02-01-1892	12-31-1883
60	Merrill Springs Ditch	I	*	East Paradox Creek	47-N	18-W	27 NWNENW	0.08		Abs.	03-28-1911	04-01-1909
61	Lower Swain Ditch	I	D	West Paradox Creek	47-N	18-W	17 NESWNE	0.99		Abs.	01-19-1926	04-02-1909
62	Amended Laura Ditch	I	D	West Paradox Creek	47-N	18-W	18 NWSWNE	1.0		Abs.	01-19-1926	04-02-1909
63	Nafus Ditch #2	I	D	West Paradox Creek	47-N	18-W	17 NWSWNW	0.42		Abs.	01-19-1926	04-30-1910
								0.25		Abs.	01-19-1926	04-30-1919
64	Sand Wash Ditch	I	*	Dolores River	47-N	18-W	8 SE	720.0		Abs.	09-25-1942	07-20-1909
65	Gamboleer Pipeline	DO	*	Dolores River	46-N	17-W	31 SENWNW	0.05		Abs.	09-25-1942	12-01-1921
66	West	I	D	Dolores River	48-N	18-W	4	1.17		Abs.	02-11-1939	04-01-1898
67	Wines #1	I	D	Dolores River	15-S	104-W	21 SESWSE	0.86		Abs.	02-11-1939	11-01-1899
							27 SWNWNW	5.81		Abs.	02-11-1939	05-01-1900
68	Bartholomew Hatch	I D	D	West Creek	51-N	19-W	15 SESWNE	3.75 1.30		Abs. Abs.	02-11-1939 02-11-1939	02-01-1900 02-01-1900

APPENDIX J

WATER RIGHTS LISTING

Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
69	Ren Hatch	I	D	West Creek	51-N	19-W	15	0.39		Abs.	02-11-1939	03-15-1901
								0.78		Abs.	02-11-1939	02-10-1939
70	Cottonwood	I	D	Dolores River	51-N	19-W	22 NWSW	2.6		Abs.	02-11-1939	06-15-1902
								2.45		Cond.	02-11-1939	06-15-1913
								5.2		Abs.	02-11-1939	02-10-1939
								4.9		Cond.	02-11-1939	02-10-1939
71	Boyd	I	D	Dolores River	15-S	104-W	27 SWNW	0.9		Abs.	02-11-1939	10-15-1909
								0.42				11-16-1937
72	L. L. Hall	I	D	West Creek	51-N	19-W	14 NWNE	0.75		Abs.	02-11-1939	03-15-1910
		D						0.39		Abs.	02-11-1939	03-15-1910
		I						1.25		Abs.	02-11-1939	02-10-1939
								1.02		Cond.	02-11-1939	02-10-1939
73	Cliff Ranch	I	D	West Creek	51-N	19-W	15 NESESE	3.36		Abs.	02-11-1939	10-01-1910
		D						0.52		Abs.	02-11-1939	10-01-1910
		I						3.34		Abs.	02-11-1939	02-10-1939
74	Calamity	I	D	Dolores River	50-N	18-W	35	0.91		Abs.	02-11-1939	06-10-1916
								0.26		Cond.		11-16-1937
75	Tom Watkins	I	D	Dolores River	49-N	18-W	4 SWSWSW	1.04		Abs.	02-11-1939	07-20-1916
								2.08		Abs.	02-11-1939	02-10-1939
								0.52		Cond.	02-11-1939	02-10-1939
								0.26				04-01-1936
76	Red Cross	I	D	Dolores River	51-N	19-W	22 SENW	5.2		Abs.	02-11-1939	06-15-1918
								4.89		Cond.	02-11-1939	06-15-1918

APPENDIX J

WATER RIGHTS LISTING

Reference No.	Structure Name	Use	Type	Source	Township	Range	Section	Amount Direct Flow CFS	Amount Storage AF	Type Adj.	Adjudicated Date	Appropriation Date
77	Moffet	I	D	Dolores River	50-N	19-W	13 NENE	3.18 1.25		Abs. Cond.	02-11-1939 02-11-1939	09-25-1922 09-25-1922
78	Foster Miner	I	D	Dolores River	50-N	18-W	31 NWSENE	10.15		Cond.	02-11-1939	10-11-1922
79	Dotsero	I	D	Dolores River	48-N	18-W	11	2.08		Cond.	02-11-1939	08-01-1933
80	Gateway Westside	I	D	Dolores River	51-N	19-W	35	12.2		Cond.	02-11-1939	06-01-1936
81	Wilcox Ditch	I	D	West Paradox Creek	47-N	18-W	17 NWSE	3.0		Abs.	09-25-1942	08-03-1941

APPENDIX K

OFFICIAL COMMENTS ON NOVEMBER 1975 DRAFT REPORT

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Washington, D. C. 20250

SUBJECT: INTERA - Wild and Scenic River Study Report and Draft Environmental Statement - Dolores River, Colorado

DATE: NOV 26 1975

TO: T. B. Glazebrook
Director of Watershed and Minerals Management
Forest Service

This is in response to your memorandum of November 19, 1975, requesting our review and comment on the Preliminary Draft Report for the Dolores River Wild and Scenic River study.

We prefer to review the study report and draft environmental statement at the same time if at all possible. Based on our review of the preliminary report alone, the recommended plan does not appear to have any adverse effects on Soil Conservation Service programs.

We have only the following comment for your consideration when you prepare the final report and EIS:

> The discussion of the impact of the alternative plans on agriculture - pages 81, 83 and 85, under the heading of Environmental and Land Use Impacts, is vague. We suggest the report and the environmental statement use quantitative rather than subjective statements in describing the impact on agriculture.

Sheldon G. Boone
Assistant Deputy Administrator -
River Basins

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

Honorable Earl L. Butz
Secretary of Agriculture
Washington, D. C. 20250

Dear Mr. Secretary:

This letter is in response to a request from Assistant Secretary Long for views of the Department of the Army on your proposed report recommending inclusion of the Dolores River, Colorado, in the national wild and scenic rivers system.

Affirmative action by Congress on your proposed recommendation would not adversely affect water resource programs or projects administered by the Corps of Engineers, or other elements of this Department.

We appreciate the opportunity afforded us to review and comment on your proposed report and hope that these comments will be of assistance.

Sincerely,

Victor V. Veysey
Assistant Secretary of the Army
(Civil Works)

GENERAL COUNSEL OF THE
DEPARTMENT OF COMMERCE
Washington, D.C. 20230

DEC 23 1975

Honorable Robert W. Long
Assistant Secretary
Department of Agriculture
Washington, D. C. 20250

Dear Mr. Long:

This is in response to your letter of December 9, 1975, to Secretary Morton requesting this Department's views on the Dolores River Wild and Scenic River Study Report.

Our primary concern is that a thorough mineral inventory be conducted prior to the inclusion of the proposed area in the Wild and Scenic Rivers System. At the bottom of page 98 and the top of page 99 of the report in regard to the Main Dolores, it is stated: "At present there are ten active surface and subsurface mines within the River corridor. Most of these mines and the great majority of the 4,000 claims in the area are for uranium. A closely associated mineral, vanadium, is produced in great quantities in the basin. Minerals management will be an integral part of the Coordinated Management Plan." Subsequently, it is indicated that a determination will be made of the extent and grade of mineral reserves in the visual corridor and associated lands. We support the recommendation that the U.S. Department of the Interior and the Energy Research and Development Administration participate in this study since these agencies are in a good position to determine the availability of these and other minerals in the proposed area and to judge the importance of the estimated quantities relative to the nation's overall needs.

Regarding the West Delores, we note that mineral development will be allowed in accordance with existing laws and regulations and, therefore, we have no comment on this portion of the proposal.

We appreciate the opportunity to comment on the study report.

Sincerely,

David B. Chang for

Betsy Ancker-Johnson, Ph.D.

FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

FEB 2 1976

OFFICE OF THE ADMINISTRATOR

Honorable Robert W. Long
Assistant Secretary of Agriculture
Washington, D. C. 20250

Dear Mr. Long:

In response to your request of December 9, 1975, the Federal Energy Administration (FEA) has reviewed the Dolores River Wild and Scenic River Report. The report was most informative and we support the efforts of both the Department of the Interior and the Department of Agriculture to preserve wild and scenic portions of our Nation's rivers to the extent that these goals are not incompatible with national energy needs. Our comments below address certain energy concerns and implications of the proposed designation.

The report, in Section L, discusses the various minerals which are located within the Dolores River Basin. Some of these minerals are presently contributing to the Nation's energy supplies and could play a more significant role in the future. For example, it is apparent that uranium ore could be an important energy source, particularly if the price of uranium per pound continues to increase. If uranium is mined and milled in the vicinity of the Dolores River Basin, it may require large amounts of processing water presumably from the Dolores River. We are concerned that the report has not presented important data on water availability from the Dolores River. If a segment of the Dolores River is designated as a Wild and Scenic River, it will be necessary to know potential impacts for uranium processing, as well as for vanadium which is also extracted in the Basin.

Although the coal reserves in the actual river corridor are small, the potential coal resources in the Dolores River Basin could be significantly greater. The report does not address the effect that designation of part of the Dolores River as a Wild and Scenic River would have on the ability to mine coal in areas drained by tributaries of the Dolores River.

In several paragraphs under the discussion of "geothermal," the temperature of the water has been given. However, the report does not specify whether the degrees are in centigrade or fahrenheit. This information is important to have in order to assess accurately the geothermal potential of the Dolores River Basin.

Further, the report does not mention oil shale as either a potentially valuable mineral or one which is found within the Basin. The outer fringes of the Piceance Creek Basin extend into Mesa County, Colorado, the same county that the Dolores River passes through. Since the Piceance Creek Basin contains some of the world's richest oil shale reserves, it would be useful to know whether oil shale deposits are found in or near the Dolores River Basin.

In light of our continuing national energy needs, we believe an assessment should be made of the impact that the proposed Wild and Scenic River designation may have on western energy development and water use before a final decision is made.

We appreciate the opportunity to express our views on the Dolores River report and hope our comments will be useful to you.

Sincerely,

Frank G. Zarb
Administrator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Mr. Robert W. Long
Assistant Secretary
Department of Agriculture
Washington, DC 20250

C

Dear Mr. Long:

In response to your request, the Environmental Protection Agency has performed a review of the final Study Report on the Dolores River, proposing candidacy for the Wild and Scenic River System. Due to the short time frame, this could only be a cursory review.

We have no objection to this proposal designating the Dolores River as a member of the Wild and Scenic River System. We noted, though, that this study report did not address many of our previous concerns as expressed in our comments of November 21, 1975.

We appreciate the opportunity to review this Study Report.

Sincerely yours,

Kenneth E. Biglane, Director
Oil & Special Materials Control
Division (WH-548)

cc: Region VIII

90-690 (Pt. VII) O - 77 - 21

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 21 1975

Chairman, Interdepartmental Study Group on
Wild and Scenic Rivers
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240

Dear Sir:

Per your request, we have reviewed the Dolores Wild and Scenic River Study Proposed Review Draft Report. Due to the very limited review time, we have been able to perform only a cursory review. Consequently our response is not as in depth or complete as we would have liked.

In addition, our review was quite difficult due to the unclear printing, particularly evident on the maps and pictures. We appreciate the pressure under which you had to prepare this material, but we feel our review would have been much easier and more meaningful with better copies of the maps and pictures.

One of the assumptions of the Federal-State team was that both the McPhee reservoir site of the Dolores Project and the Paradox Valley site for the Colorado Salinity Control Project were "in-place". Thus no consideration could be given to these areas as potential wild and scenic river stretches.

Information provided by the Bureau of Reclamatrion (USBR) and others have indicated that the McPhee reservoir area is a significant elk and deer migratory route. Restricted access by the 300 foot deep reservoir could have serious consequences for these game animals and their natural predators. Further information suggests that the McPhee dam area may have significant archaeological importance. Approximately 80 sites were identified in a recent study of the area.

We do not wish to unnecessarily impede these Bureau of Reclamation projects; however, it should be pointed out that apparently neither the Dolores nor the Paradox Valley Projects have had the benefit of a National Environmental Policy Act review. The USBR has mentioned elsewhere that 50 alternative sites to the McPhee reservoir had been considered although these have never been identified to the best of our knowledge. Similiarly, the Paradox Valley Project should be evaluated for cost-effectiveness, environmental impact and project alternatives. Some of the project alternatives could possibly be compatible with one or more of the wild and scenic river designations. We thus suggest that it seems premature to dismiss these areas from consideration at this time.

If the sections of the Dolores river recommended for wild and scenic designation are approved by Congress, the exclusion of the upper reaches of the main stem of the Dolores could pose some formidable management problems for the lower segment. Water quality, fish and wildlife in particular, may be adversely affected by streamside mining or other operations. The value of a recreational designation for this reach could provide a set of consistent criteria for any private activities in the stream corridor under which to operate. The Wild and Scenic Rivers Act intends to preserve existing private ownership and activity patterns, so long as the activities are compatible with the uses of the river under the wild, scenic, and recreational classifications.

We support the idea of considering the entirety of the Dolores river under the Wild and Scenic River Act criteria on the merits of each of the important stream segments, including the main stem of the Dolores, the West Dolores, McPhee dam area, the Paradox Valley area and the lower reach from the San Miguel river to Gateway. By restricting their consideration of the segments, the Federal-State team may have compounded the problem of evaluation of the Dolores and Paradox Valley projects under NEPA. Information on these two sites relevant to wild and scenic status could have been useful information for decision-making on alterantives to these projects. It may result that the present McPhee damsite is the best for environmental reasons; however, such a judgment at this time could create problems when the EIS's for the Dolores River and Paradox Valley projects are released.

It is our understanding that the EIS for the Dolores Project will be released in early 1976. The Federal-State team may wish to consider the possibility of recommending that a decision on wild and scenic status for the Dolores River await the outcome of the NEPA review on both projects.

In addition, we note per your November 11, 1975 memorandum that the draft EIS will be sent to the Forest Sevice (FS) and the Bureau of Outdoor Recreation (BOR) for transmittal to Congress along with the report. We question whether the National Environmental Policy Act (NEPA) requirements can be fulfilled unless Congress awaits comments from the final EIS. We appreciate the time restrictions, however the decision makers should be made well aware of this particular point and the fact that the public comment period will not be complete.

Whereas variations in flow in the Dolores River result in periodic situations when very little water is available for some recreational activities, we suggest that more emphasis should have been placed on the non-water related actitities. The Dolores River represents a unique adventure in a semi-arid ecological system that experiences distinctive hydrological cycles. The opportunities of hiking, back-packing, nature observations should be stressed, demonstrating how they can complement the water-related activities. The changing ecosystems from mountaineas to desert along the Dolores River could provide a worthwhile experience for visitors providing them with an appreciation of this unusual type of river system with its natural beauty, wide variety of ecological diversity, abundant wildlife, all with the ever-changing scenic grandeur. This river passes through five distinct life zones in its course.

Since the "Guidelines" state that mining activity must be conducted in such a way to minimize surface disturbance, sedimentation and pollution, and visual impairment, the information in the Report indicates it would be possible to carry on the uranium mining out of the visual sight. However, all necessary steps should be exercised to prevent water pollution and to minimize secondary impacts from mining.

The dual management of different sections of the river raises a question as to the uniformity of the management for the overall program. We suggest that a complete assessment should be made by the Bureau of Land Management (BLM) and FS of all resources, including the river. The assessment should include any plans and provisions of projected land management, as well as all impacts that might result from land adjustments. Until this can be accomplished to the satisfaction of all concerned, we question whether a designation of management is meaningful at this time. We suggest that the report state that the management plans will be determined and developed after being jointly assessed. The most important aspect should be that whatever determination is made will be to the benefit of the river and its environment. A Coordinated Management Plan should reflect a meaningful and coordinated approach.

We suggest the following specific points be clarified.

1. Page 2 of the memorandum of 11/14/75, item 2, uses the figures "60 and 30 percent ... of the visual corridor... respectively." This apparently refers to the previous mention of the "FS and BLM administration" in the previous sentence. However, Table III-3 (page 43) shows the reverse; BLM has approximately 60% of the visual corridor and FS 30%. Which data are correct?

2. Table IV-1, Capsule Summary of Eligibility, Dolores River, presents some seeming discrepancies. This table shows that both the West Dolores and the McPhee Dam to Bedrock segments have no recreational values. This is contrary to the designations proposed in this report. West Dolores is eligible for the Recreational classification and 2 of the 4 sections of the McPhee Dam to Bedrock segment are classified as Recreational.

3. On page 96, we suggest that the use of non-specular paints to enhance scenic values be briefly explained.

4. Page 35. Last sentence on the page. What type of precautions are planned to insure these wastes do not adversely affect water quality?

We appreciate the opportunity to review this report. If you have any questions regarding our comments, please do not hesitate to contact us.

Sincerely yours,

Kenneth E. Biglane, Director
Division of Oil and Special
Materials Control

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION EIGHT
COLORADO DIVISION
10488 WEST 6th PLACE
DENVER, COLORADO 80215

December 19, 1975

IN REPLY REFER TO

08-08.22-A

Honorable Earl Butz, Secretary of Agriculture
Administration Building
Washington, D. C. 20250

Dear Mr. Secretary:

Subject: Dolores River Wild and Scenic River Study Report

We have reviewed the subject study report and are replying direct to you as requested by the U. S. Forest Service Regional Office in Denver, Colorado.

We note on page 12 of the report that five paved state highways, totaling 309 miles in length, are mentioned as winding through the Dolores River Basin and that these two-lane routes form the major transportation network in the area. We suggest the study identify these routes and address the impact of the proposed action on possible future highway improvements.

Thank you for the opportunity to comment on this study.

Sincerely yours,

D. E. Mahling

for A. J. Siccardi
Division Administrator

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

DEC 31 1975

Mr. Robert W. Long
Assistant Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Long:

This is in response to your December 9 letter to Secretary Coleman soliciting our views on the report on the Dolores River as required by the Wild and Scenic Rivers Act. Our brief review has disclosed no problem areas. However, we are providing a copy of the report and your request to the regional representative of the Secretary for further review. We have asked him to review the report and provide comments, if any, directly to you as expeditiously as possible.

Sincerely,

for Joseph Canny

Martin Convisser, Director
Office of Environmental Affairs
Office of Environment, Safety,
and Consumer Affairs

cc: Mr. Robert Kessler
Secretarial Representative
Denver, Colorado

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
FEDERAL BUILDING, 1961 STOUT STREET
DENVER, COLORADO 80202

December 23, 1975

REGION VIII

IN REPLY REFER TO:
8DE

Mr. Craig W. Rupp
Deputy Regional Forester
Department of Agriculture
11177 West 8th Avenue
P.O. Box 25127
Lakewood, Colorado 80225

Dear Mr. Rupp:

This is in response to your letter of December 10, 1975, concerning the Wild and Scenic River Study Report.

As you may know this Department's concern includes the effect of a proposed action on the urban environment. It does not appear that this proposal will have any effect regarding our concern; therefore, we would offer no objections.

Sincerely,

Robert J. Matuschek
Assistant Regional Administrator
Community Planning and Development

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D.C. 20410

OFFICE OF THE ASSISTANT SECRETARY
FOR COMMUNITY PLANNING AND DEVELOPMENT

DEC 30 1975

IN REPLY REFER TO:

Honorable Robert W. Long
Assistant Secretary
Department of Agriculture
Office of the Secretary
Washington, D. C. 20250

Dear Assistant Secretary Long:

Secretary Hills has asked me to respond to your letter of December 9, 1975, concerning your report on the Dolores River in Colorado.

We customarily ask the affected Regional Office for its comments on these matters. Since you have already done so, we will work with the field to expedite your request. You will shortly be hearing directly from the Denver Regional Office.

Thank you for allowing us the opportunity to respond to your report.

Sincerely,

David O. Meeker, Jr., FAIA AIP
Assistant Secretary

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

IN REPLY REFER TO:

JAN 15 1976

Honorable Earl L. Butz
Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Secretary:

This is in reply to Assistant Secretary Long's letter of December 9, 1975, transmitting for the Commission's comments, pursuant to the provisions of the Wild and Scenic Rivers Act (P.L. 93-621), the study report prepared by the Departments of the Interior and Agriculture and the State of Colorado on the Dolores River, Colorado.

The study report recommends that the 105-mile segment of the Dolores River upstream from the town of Bedrock be included in the National Wild and Scenic Rivers System. Of this 105-mile segment, 33 miles would be classified as wild, 41 miles would be scenic, and 31 miles would be recreational. The report concluded that the 8-mile reach of the Dolores River upstream of the Utah State line was eligible for inclusion in the National Wild and Scenic Rivers System but was too short to be included by itself. Although the Colorado Department of Natural Resources recommended that the entire length of the West Dolores River should be considered by Congress for inclusion in the National Wild and Scenic Rivers System, the Federal Study Team agencies did not find that the West Dolores warranted inclusion at this time.

The Federal Power Commission staff has reviewed the study report to determine the effects of the proposals on matters affecting the Commission's responsibilities. Such responsibilities relate to the development of hydroelectric power and assurance of the reliability and adequacy of electric service under the Federal Power Act, and the construction and operation of natural gas pipelines under the Natural Gas Act.

The staff review indicates that there are no existing electric generating plants in any of the river corridors considered for inclusion in the National Wild and Scenic Rivers System. There is a site for the possible development of a pumped storage hydroelectric power project located near Mountain Sheep Point where the Dolores River is proposed for scenic designation. The amount of generating capacity that could be developed at this pumped storage site is not known. There are no known plans under consideration for development of the site. As indicated



in the study report, an existing power transmission line crosses the 105-mile segment of the Dolores River recommended for scenic river classification. Presumably, continued operation and maintenance of this crossing would not conflict with the desired characteristics of the proposed river classification.

As noted in the study report, the Dolores River is in an area which appears favorable for the production of natural gas. The staff notes that, should natural gas deposits underlie river corridors considered for wild, scenic, or recreational classification, production from these deposits could be achieved by slant drilling from outside the corridors. The staff review indicates that an existing 6-inch natural gas pipeline crosses the Dolores River near the mouth of Disappointment Creek, a point located in the river segment recommended for inclusion in the national system. Apparently this crossing would not conflict with the proposed river classification.

The staff also notes that additional powerline and natural gas pipeline crossings of the river segments proposed for classification may be required in the future. However, it is expected that such crossings could be avoided by routing around classified corridors or, if this is not practicable, they could be planned for environmental compatibility with the desired objectives of the river classifications.

Based on its consideration of the study report, and the studies of its own staff, the Commission advises that it has no objection to the proposed inclusion of segments of the Dolores and West Dolores Rivers in the National Wild and Scenic Rivers System, provided that existing and necessary future crossings of the river by powerlines or natural gas pipelines be permitted.

Sincerely yours,

Richard L. Dunham

Richard L. Dunham
Chairman

UNITED STATES WATER RESOURCES COUNCIL

SUITE 800 • 2120 L STREET, N.W. WASHINGTON, D.C. 20037

FEB 23 1976

Honorable Robert W. Long
Assistant Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Long:

This is in reply to your letter dated December 9, 1975, requesting the Water Resources Council to review and comment on the Dolores Wild and Scenic River Study Report as proposed by your Department, the Department of the Interior and the State of Colorado. The Council has completed its review and has no objection to the report.

For your information the Council Representative from the Department of Commerce has identified a concern, which he requested I include in this correspondence. The following is that concern:

> "...the declaration of an area as wild and scenic or as a wilderness can restrict the placement of rain and stream gages necessary for forecasting stream flow. Thus, (1) planning for networks, budget requests, and program development are affected; and (2) protection of life and property may be decreased due to inability to provide an adequate forecast warning system for such things as flash floods. Obviously for (1) above, it would be helpful to the National Oceanic and Atmospheric Administration to have as much lead time as possible. And for (2), it should be noted in the report as a possible consequence of declaring an area wild and scenic."

MEMBERS: SECRETARIES OF INTERIOR, AGRICULTURE, ARMY, COMMERCE, HOUSING AND URBAN DEVELOPMENT, TRANSPORTATION; ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY; CHAIRMAN, FEDERAL POWER COMMISSION — OBSERVERS: ATTORNEY GENERAL; DIRECTOR, OFFICE OF MANAGEMENT AND BUDGET; CHAIRMEN, COUNCIL ON ENVIRONMENTAL QUALITY, TENNESSEE VALLEY AUTHORITY, RIVER BASIN COMMISSIONS, BASIN INTERAGENCY COMMITTEES.

The Council acknowledges the large effort that has been made in this proposed report to provide coordination and the information required by the Principles and Standards. The review of the report would have been facilitated, however, if the analysis of the alternative programs and the resulting rationale for the study recommendations had been described more fully.

The Council appreciates the opportunity to comment on the proposed report.

Sincerely,

Warren D. Fairchild
Director

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

November 18, 1975

Memorandum

To: Chairman, Interdepartmental Study Group on Wild and Scenic Rivers

From: Chief, Division of Intergovernmental Coordination, Office of Land Use and Water Planning

Subject: Wild and Scenic River Study - Dolores River

The subject study has been reviewed only in respect to major issues as your memorandum of November 17, 1975 requested.

The report strikes a practical compromise in a number of areas. First, land acquisition is held to a minimum (easements only) as a means of maintaining private land in its present use. Second, the important mineral resources will not be tied-up and appropriate mining in the future will be allowed. Third, the report recognizes the importance of the proposed water project and the plan is compatible with this development.

It does appear that the section recommended for inclusion in the system has high values for white water use, but the fishing potential is not outstanding. This may suggest that to provide for well rounded use the State proposal to include the West Dolores might be given more consideration. Water quality in various sections of Dolores Creek is affected by previous development. Close attention, and perhaps additional pollution abatement activities, will be required by the State to assure water quality is not further degraded.

Joseph Krivak

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

December 17, 1975

Memorandum

To: Chairman, Interdepartmental Study Group on Wild and Scenic Rivers

From: Chief, Division of Intergovernmental Coordination, Office of Land Use and Water Planning

Subject: Wild and Scenic River Study - Dolores River

Your memorandum of December 12, 1975, requested comments on the subject report. We have no comments to add to those submitted by this office in our memorandum of November 18, 1975 on the Dolores River Study.

We do want to acknowledge the treatment of this report under the Principles and Standards. Appendix E of the report is a valuable addition to the study.

Joseph A. Krivak

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

December 31, 1975

In Reply Refer To:
D4219--Dolores River

Dear Mr. Secretary:

We are pleased to respond to Assistant Secretary Robert W. Long's December 9 request for our review and comment on the Dolores Wild and Scenic River Study Report.

As recognized, completion of the reviews within the time constraints has been difficult. However, we have identified no major substantive problems with the proposal. Accordingly, we concur in the recommendation that a 105-mile segment of the Dolores River in Colorado be added to the National Wild and Scenic Rivers System.

The Bureaus and Offices which reviewed the report made several comments, suggested revisions and editorial changes which should be accommodated in any rewrite or reissuance of the report. These are being furnished directly to Mr. Shenkyr.

The opportunity to comment on the report is appreciated.

Sincerely yours,

Kent Frizzell/FL

Under Secretary of the Interior

Honorable Earl L. Butz
Secretary, Department of
Agriculture
Washington, D. C. 20250

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer
To: FWS/OBS/EA

DEC 19 1975

Memorandum

To: Director, Bureau of Outdoor Recreation

From: Deputy Associate Director, Fish and Wildlife Service

Subject: Dolores River (Colorado) Wild and Scenic River Study--Comments on Joint Agriculture/Interior Proposed Report

In response to Mr. Underhill's memorandum of December 12, we have made an expedited review of the subject report in order to meet the necessarily short deadline and offer the following comments. These comments are the same or similar to comments we made on the Preliminary Draft Report (FWS memorandum of November 21, copy enclosed) and are herein referenced to the Preliminary Report comments in order to avoid repetition. We believe the earlier comments are still very much germane to the present report.

1. Findings (No. 6, page IV). Our Preliminary Report Comment No. 1 is still applicable.

2. Findings (2nd sentence, last paragraph). This sentence and paragraph in slightly different form appeared in Recommendation No. 1 of the Preliminary Draft Report, and we suggested a revision of the sentence in the first paragraph of our Preliminary Report Comment No. 2. The sense of that proposed revision also applies largely to the comparable 2nd sentence cited above. Therefore we suggest it read: "Its construction and operation will enhance most, if not all, the outstanding wild and scenic river values of the Dolores River in such a manner as to ensure that a live stream flow will be maintained below McPhee Dam."

3. Recommendation No. 3 (page V, and Table IV-1 following page 60). This recommendation appeared in the previous draft report as No. 4. Our support of the former Recommendation 4 (Preliminary Report Comment No. 2) applies also to No. 3 of the present report, as does the request in that Comment to amend the footnote of Table IV-1.

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90-690 (Pt. VII) O - 77 - 22

4. Vegetation (pages 26-27). Preliminary Report Comment No. 3 (together with the related enclosures of our memorandum of 11/21/75) applies to the paragraphs on these pages, as well as to those under the Vegetation heading on page 7 of the present report.

5. Wildlife (page 30). Our Preliminary Report Comment No. 4 pertains to the text under this heading, and to page 7 under Fish and Wildlife.

6. Endangered Species Act of 1973 (under Management Authorities and Programs, pages 72-75). Preliminary Report Comment No. 5 is still applicable to the report on the above pages.

We appreciate the opportunity to comment on the report. If you should have any questions pertaining to comments on threatened or endangered plant and animal species, please contact Mr. Gene Ruhr of our Office of Endangered Species (phone (202) 343-7814).

W. J. Dieb, Jr.

Enclosure

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OBS/EA

NOV 21 1975

Memorandum

To: Director, Bureau of Outdoor Recreation
Acting Deputy Associate

From: Director, Fish and Wildlife Service

Subject: Dolores River (Colorado) Wild and Scenic River Study--Comment on Preliminary Draft Report

In response to Mr. Underhill's memorandum of November 17, we have made a necessarily expedited review of the subject report in order to meet the deadline of November 21 and offer the following comments.

1. Findings (No. 6, page IV). The last sentence of No. 6 should be revised by the addition of the word "many" after "enhance". We do not think that existing documented knowledge of the effects downstream of McPhee Reservoir warrants the implication of the present sentence that all fish and wildlife values will be enhanced.

2. Recommendations (No 1, page IV; No. 4, page V, and related material in report). We suggest improving the sense of Recommendation No. 1 by revising it slightly in the second and third lines after "construction" to read as follows: ". . . and operation of the Dolores ~~Reclamation~~ Project in such a manner as to ensure that a live stream flow is maintained. . . ."

We support the Colorado Department of Natural Resource Recommendation No. 4 which recommends consideration by the Congress of inclusion of the 35-mile West Dolores River in the National System under Forest



Service Management, in cooperation with the State of Colorado. From the standpoint of eligibility of existing natural resources of this segment including fish and wildlife, we believe the West Dolores qualifies for inclusion in the National System--as much if not more so than some segments which have been recommended for inclusion (those of Recommendation No. 2, page IV).

We believe this viewpoint is supported by our own knowledge of the segment and by the portions of the report which discuss the segment; e.g., pages 19, 29-30 (Fish and Wildlife), 64, and 85 (1st paragraph, 2nd line), as well as Table IV-1 (following page 58).

In Table IV-1--"Capsule Summary of Eligibility. . .", please revise the 3-starred footnote (re fish and wildlife values) by adding after "State" the words '. . . and the U.S. Fish and Wildlife Service believe. . . ."

3. Vegetation of the River Corridor (pages 26-27). At present, knowledge of the occurrence in the study area of plant species which are Candidates for the Department of the Interior Threatened or Endangered Lists or Candidates for the Colorado State Rare and Endangered List is somewhat limited. However, we think the report should include a brief summary of the enclosed information on the subject. This material should be inserted as part of the general commentary on pages 26-27, preceding the sectional discussions on page 27. A related insert would also be appropriate under Vegetation (of the Basin) on page 7.

4. Wildlife (page 30). The general comments in the first two paragraphs should be augmented by inclusion (perhaps in the second paragraph) of the following information: This inventory (Appendix H) includes one mammal, the marten, and two bird species, the golden eagle and ferruginous hawk, which the Department of the Interior has been requested to consider whether they are Threatened species. Such a review is under way. Also, two of the bird species in the inventory, the southern bald eagle and the peregrine falcon, are on the Department of the Interior's Endangered species list.

A new third paragraph on page 30 should mention the fact that in Colorado are found two of the three known colonies (the third is in Utah) of a butterfly, the nokomis fritillary (Speyeria nokomis nokomis), which is a Candidate for the Department's Endangered fauna list. These two colonies occur within the Dolores River Basin near two tributaries of the Dolores River: above West Creek in a series of springs in Unaweep Canyon (Mesa County); and adjacent to Paradox Creek in Montrose County. The species may be found in the study area but this has not yet been determined.

A brief reference to the above facts should also appear under Fish and Wildlife (of the Basin) on page 8, where the peregrine falcon is already mentioned in the above context.

In addition, the legal considerations of section 7 of the Endangered Species Act of 1973 are applicable to those species which have been determined to be Endangered or Threatened (southern bald eagle and peregrine falcon) and will apply to any other species of plant or animal which subsequently are so determined.

5. Endangered Species Act of 1973 (under Management Authorities and Program, pages 71-75. The legislative and administrative policy authorities listed on these pages should include the above Act.

We appreciate the opportunity to comment on the report. If you should have any questions pertaining to comments on threatened or endangered plant and animal species, please contact Mr. Cone Kahr of our Office of Endangered Species (phone (202) 343-7814).

Enclosures:

Thomas R Clingan

Enclosure

Information on Plants of the Dolores River Basin, Colorado, Which May be Candidates for Threatened or Endangered Listing by the Department of the Interior and Candidates for Rare and Endangered Status by the State of Colorado

The Federal Register 40(127, V)--copy enclosed--contains a list (page 27847) of 23 endangered and 17 threatened candidate plant species in Colorado, as determined by the Smithsonion Institution. Appendix H of the Dolores River Report (page H-16, et seq.) lists several plant genera for which species are indicated in the Federal Register Notice; to wit: Senecio, Arabis, Lesquerella, Stellaria, Astragalus, Oxytropis, Trifolium, Phacelia, Eriogonum, Aquilegia, Mertensia, and Draba. It remains to be determined whether the species listed in the Federal Register and especially those of the above-noted genera occur within the Dolores River Basin and the wild and scenic river study area.

Also, Carex microptera is mentioned in Appendix H, and Carex microptera var. crassinervia is in the Federal Register notice. The presence or absence of the variety in the basin and study area remains to be determined.

According to Dr. William A. Weber, University of Colorado Museum, Boulder, Colorado, 80302 (phone 303/492/6171), who has prepared a draft list of rare and endangered plants of Colorado, Adiantum capillus-veneris and Bothriochloa barbinodis are found in the Dolores Basin, and Mentzelia pterosperma and Mimulus eastwoodiae are likely to be in the basin. Dr. Weber has indicated to us that the cliffs of the Dolores River area are not well known botanically because of their poor accessibility on foot. Thus, the area might have significant "hanging gardens" containing important floral elements.

If and when the study area is included in the national system, efforts should be made to protect any of the above species which may be located in the area.

List A

STATE LISTS OF ENDANGERED AND THREATENED SPECIES OF THE CONTINENTAL UNITED STATES

STATE	STATUS	FAMILY	SPECIES
COLORADO	ENDANGERED	BORAGINACEAE	CRYPTANTHA WEBERI
COLORADO	ENDANGERED	BRASSICACEAE	ARABIS OXYLOBULA
COLORADO	ENDANGERED	BRASSICACEAE	BRAYA HUMILIS SSP. VENTOSA
COLORADO	ENDANGERED	BRASSICACEAE	EUTREMA PENLANDII
COLORADO	ENDANGERED	BRASSICACEAE	LESQUERELLA PRUINOSA
COLORADO	ENDANGERED	CACTACEAE	SCLEROCACTUS GLAUCUS
COLORADO	ENDANGERED	CARYOPHYLLACEAE	STELLARIA IRRIGUA
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS DETERIOR
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS DETRITALIS
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS LUTOSUS
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS MICROCYMBUS
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS NATURITENSIS
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS OSTERHOUTII
COLORADO	ENDANGERED	FABACEAE	ASTRAGALUS SCHMOLLAE
COLORADO	ENDANGERED	FABACEAE	OXYTROPIS OBNAPIFORMIS
COLORADO	ENDANGERED	FABACEAE	TRIFOLIUM LEMMONII
COLORADO	ENDANGERED	HYDROPHYLLACEAE	PHACELIA FORMOSULA
COLORADO	ENDANGERED	ONAGRACEAE	GAURA NEOMEXICANA SSP. COLORADENSIS
COLORADO	ENDANGERED	POLYGONACEAE	ERIOGONUM EPHEDROIDES
COLORADO	ENDANGERED	RANUNCULACEAE	AQUILEGIA MICRANTHA VAR. MANCOSANA
COLORADO	THREATENED	BORAGINACEAE	CRYPTANTHA ELATA
COLORADO	THREATENED	BORAGINACEAE	CRYPTANTHA STRICTA
COLORADO	THREATENED	BORAGINACEAE	MERTENSIA VIRIDIS VAR. CANA
COLORADO	THREATENED	BRASSICACEAE	ARABIS GUNNISONIANA
COLORADO	THREATENED	BRASSICACEAE	DRABA EXUNGUICULATA
COLORADO	THREATENED	BRASSICACEAE	PARRYA NUDICAULIS
COLORADO	THREATENED	BRASSICACEAE	RORIPPA COLORADENSIS
COLORADO	THREATENED	CACTACEAE	SCLEROCACTUS MESAE-VERDAE
COLORADO	THREATENED	CYPERACEAE	CAREX MICROPTERA VAR. CRASSINERVIA
COLORADO	THREATENED	FABACEAE	ASTRAGALUS WETHERILLII
COLORADO	THREATENED	FUMARIACEAE	CORYDALIS CASEANA SSP. CASEANA
COLORADO	THREATENED	POACEAE	PHIPPSIA ALGIDA
COLORADO	THREATENED	POLYGONACEAE	ERIOGONUM BRANDEGEI
COLORADO	THREATENED	POLYGONACEAE	ERIOGONUM SAURINUM
COLORADO	THREATENED	POLYGONACEAE	ERIOGONUM VIRIDULUM
COLORADO	THREATENED	RANUNCULACEAE	AQUILEGIA CHRYSANTHA VAR. HYDBERGII
COLORADO	THREATENED	SAXIFRAGACEAE	SULLIVANTIA PURPUSII
CONNECTICUT	ENDANGERED	ORCHIDACEAE	ISOTRIA MEDEOLOIDES
CONNECTICUT	ENDANGERED	RANUNCULACEAE	TROLLIUS LAXUS
CONNECTICUT	ENDANGERED	ROSACEAE	PRUNUS GRAVESII
CONNECTICUT	THREATENED	CISTACEAE	HELIANTHEMUM DUMOSUM
CONNECTICUT	THREATENED	CYPERACEAE	SCIRPUS LONGII
CONNECTICUT	THREATENED	ISOETACEAE	ISOETES EATONII

United States Department of the Interior

BUREAU OF OUTDOOR RECREATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

JAN 12 1976

D4219--Dolores River

Mr. John R. McGuire, Chief
Forest Service
Washington, D. C. 20250

Dear Mr. McGuire:

This supplements Under Secretary Frizzell's letter of December 31, 1975, to Secretary Butz with respect to the Dolores Wild and Scenic River Study Report. As stated in that letter, comments from Interior Bureaus and Offices were being furnished directly to Mr. Shenkyr.

Enclosed is a memorandum from the Bureau of Land Management which supplements their previous comments. We request that BLM's concerns be accommodated in any rewrite or reissuance of the report.

Sincerely yours,

John Crutcher
Director

Enclosure

IN REPLY REFER TO:

United States Department of the Interior

6223 (370)

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

DEC 31 1975

Memorandum

To: Director, Bureau of Outdoor Recreation

From: Director, Bureau of Land Management

Subject: Dolores River Wild and Scenic River Study Report

This is supplemental to our memorandum of December 22, 1975, concerning the Dolores Wild and Scenic River Study Report.

1. The sentences on pages vi, 79, and 83, which discuss the cost of clearing mining claims at $2,000,000, reflect only the cost to determine validity. It should also be pointed out that potential acquisition costs of valid rights are not included in this figure.

2. On page 46, the discussion on alunite should be updated to reflect new market possibilities based on current research and production in Utah.

3. On page 48, the discussion on uranium values should be updated to reflect a current price of $35.00 per pound.

Rella E Chandler

Acting Assistant

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IN REPLY REFER TO:

6223 (370)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

DEC 9 - 1975

Memorandum

To: Director, Bureau of Outdoor Recreation

Through: Assistant Secretary, Land and Water Resources

From: Director, Bureau of Land Management

Subject: Review of Dolores River Wild and Scenic River Study Report

We have reviewed the draft report on the Dolores River and have the following comment:

The "Summary of Findings and Recommendations" section at the front of the report should reflect both a finding and recommendation regarding the proposed amendment to section 9(a)(iii) of the Wild and Scenic Rivers Act. Language from report chapter VI could be easily carried forward.

George L. Turcott
Associate

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United States Department of the Interior

BUREAU OF MINES
WASHINGTON, D.C. 20240

December 22, 1975

Memorandum

To: Assistant Director for State Programs and Studies, Bureau of Outdoor Recreation

From: Member Interdepartmental Study Group, Bureau of Mines

Subject: Joint Interior/Agriculture Wild and Scenic River Study Report, Dolores River, Colorado

The Bureau of Mines has reviewed the joint Interior/Agriculture wild and scenic river study report for the Dolores River in Colorado. We previously reviewed a draft version of this report and suggested changes at the November 24, 1975, Interdepartmental Study Group meeting.

The most significant compromise resulting from the above meeting has been included in this final report on page 98 as follows:

> The Wild and Scenic Rivers Act (Sec. 9(a) (iii) states that "... 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 appropriations under the mining laws and from operation of the mineral leasing laws. . . ." Because of the high mineral potential and canyon width, it is proposed that, for purposes of the Dolores River designation, Section 9(a) (iii) be amended to read "... the minerals ... in the bed and bank or are situated within an average of one-quarter mile of the bank as determined in the management plan of any river designated a Wild River under this Act or any subsequent Act are hereby withdrawn from all forms of appropriations under the mining laws and from operation of the mineral leasing laws...."

We believe that this compromise will allow for the exploration and development of most of the uranium and vanadium potential of this segment of the river without adversely affecting the integrity of the proposal.

In general, most of our recommendations have been included in this final document. Those not included are:

1. Page 72, first paragraph. It was proposed that a sentence be included in this paragraph to the effect that the Multiple Use Sustained Yield Act stated that nothing will preclude mineral development.

2. Page 76, third full paragraph. The words "the only" were recommended to be replaced by the term "a."

3. Page 77, first full paragraph. The number 4,671,000 was proposed to be changed to 5,000.000.

4. Page 79, Conservation/Recreation Costs and Trends, first paragraph, last sentence. "Clear mineral" was recommended to be changed to "do validity determinations on mining claims in the corridor."

5. Page 83, Conservation/Recreation Costs and Trends, first paragraph, line 10. Same situation as No. 4 above.

This report is an excellent example of inter-and intradepartmental cooperation where compromise offers optimum success and protects the interests of participating agencies.

W. L. Dare

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

L76-LF

DEC 19 1975

Memorandum

To: Director, Bureau of Outdoor Recreation
Attention: Assistant Director for State Programs and Studies

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Deputy Associate Director, Legislation

Subject: Joint Interior/Agriculture proposed report on the Dolores River in Colorado

In his memorandum of December 12, 1975, the Assistant Director for State Programs and Studies requested our comments on the subject report.

Our memorandum of November 21, 1975, contains comments on the Dolores River study draft report which is essentially identical to the proposed report now under review. Accordingly, we believe the comments in our November 21 memorandum are applicable also to the subject proposed report.

Robert M. Linda

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

L76-LF

NOV 21 1975

Memorandum

To: Director, Bureau of Outdoor Recreation
Attention: Chairman, Interdepartmental Study Group on Wild and Scenic Rivers

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Acting Associate Director, Legislation

Subject: Draft report on the Dolores River wild and scenic river study

We are pleased to offer our comments on the subject draft report in accordance with Chairman Underhill's request of November 17, 1975.

We realize that it was necessary to prepare this draft report quickly to comply with the provisions of P.L. 93-621. Accordingly we wish to express our admiration to the Field Task Force for accomplishing such a difficult task in so short a time. Our comments are intended less as criticism of this study than as reminders of information or discussion needed in more detailed future planning studies.

It is apparent, and in part admitted in the study, that very little is known about the cultural resources that may exist along the Dolores and its tributaries. The best archeological surveys have obviously been done not as part of this study but in preparation for the Dolores River dam project. Full surveying, adequate identification of resources eligible for the National Register, and consultation with the State Historic Preservation Officer and the Advisory Board on Historic Preservation are required by law in further planning. Once identification and evaluation of historic resources has occured, planners should then match historic resource preservation requirements against the alternatives being considered for use and development.

We appreciate recognition in the report that archeological and historic resources may not be better protected with a Wild and Scenic River designation; that in fact, greater opportunity for damage and vandalism may exist. In our judgment, that represents a more realistic

AMERICAN REVOLUTION BICENTENNIAL

assessment of potential harm than we sometimes have observed in Wild and Scenic River studies. However, that perception of potential harm would seem to require greater examination of how cultural resources may be affected by the differing designations of "wild," "scenic," or "recreational." Correspondingly, since any opening of the river to further recreation use will almost automatically expose the cultural resources to greater harm, further studies must include discussion either of planning measures that will prevent harm or full mitigation for the harm anticipated.

We also appreciate the inclusion of a separate alternative offering maximum protection for cultural resources. The presence of that alternative calls attention to the equal value held by cultural resources when compared with natural, social, geologic or recreational resources.

We suggest that the description of the National Historic Preservation Act of 1966 on pages 74 and 75 be changed to read as follows: This Act establishes a Federal policy of encouraging the preservation of the Nation's historic and archeologic resources by placing worthy resources on the National Register of Historic Places. Federally licensed or funded projects affecting properties on or eligible for the National Register must be evaluated by the Advisory Council on Historic Preservation.

Another minor detail is that in the third paragraph on page 54, the NPS contract number for the "Report of the Dolores River Project, Archeological Reconnaissance, 1972-1973" should be 2-920-P2-0080 not 2-920-0080.

Robert M. Handlan

United States Department of the Interior

BUREAU OF RECLAMATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO: 725

DEC 29 1975

Memorandum

To: Assistant Director for State Programs and Studies
Bureau of Outdoor Recreation

From: Assistant Commissioner of Reclamation

Subject: Dolores River Wild and Scenic River Study Report

Your memorandum of December 12 requested our review of the subject report and submittal of comments no later than the close of business on December 22.

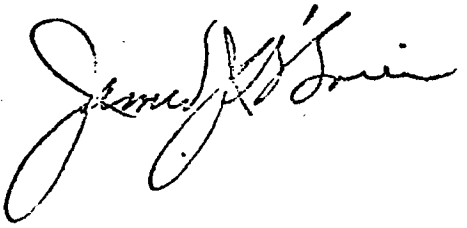
The 10-day review period (10 days from the date of your memorandum) is inadequate to allow a full review of the report. We recognize there are unique time constraints on the completion of the report but it should be noted that the Wild and Scenic Rivers Act provides for a 90-day review period, and that provision was not amended or revised for this study. We question the advisability of going forward with the report without providing an adequate review period. In any event, we do not believe that we can make a commitment on the report without further time for review.

One of the basic concerns which we have in connection with the present report is that there are several places where it implies that the "Wild and Scenic River" designation for the Dolores River may take place without the construction of the Dolores Project. It has been our understanding that the Dolores Project was assumed to be in place for the purposes of the wild and scenic river study and that designation as a "Wild and Scenic River" would not be recommended without stipulating that the recommendation was predicated on the existence of the Dolores Project. We believe that those sections of the report which imply "Wild and Scenic River" designation without construction of the Dolores Project must be revised. We have noted some of those sections in our specific comments.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

On November 17 we received a draft of the subject report and were requested to provide comments thereon. Due to time limitations the review was handled informally with the understanding that we would have the present opportunity to provide official comments. None of the comments provided at that time were incorporated in the present report. Therefore, those comments are being included with this memorandum.

We are attaching a list of specific comments which we believe should be accommodated.



Enclosure

90-690 (Pt. VII) O - 77 - 23

Bureau of Reclamation Comments
Dolores River Wild and Scenic River Study Report

1. The report refers to the Dolores Reclamation Project in several places. The official name, "Dolores Project," should be used throughout.

2. Page iv, item number 6. - The second sentence should be modified so that although the total number of boating days is reduced, the quality of and opportunities for boating are enhanced by the ability to predict and group desirable flow levels.

3. Page vi - The report recommends that the designation of the portion of the Dolores River below the proposed McPhee Dam be dependent on the construction of the Dolores Project. We concur in that recommendation. Footnote 2/ on page vi, however, implies that the designation could take place without construction of the project. We recommend the second sentence of footnote 2/ be deleted.

4. Page 2, paragraph 1. - We suggest deleting the last sentence. The purpose of the amendment, as we understand it, was to avoid delaying progress on the Dolores Project while the wild and scenic river study was completed rather than to speed up the identification of conflicts.

5. Page 3, paragraph 1. - The last sentence mentions the receipt of 400 letters concerning the study. The general thrust of those letters is discussed but the full disclosure of the content of the letters is not made as required by the September 10, 1973, Federal Register (Vol. 38, No. 174, page 96).

6. Page 5, paragraph 2. - The third sentence should be deleted and replaced with the following in order to clarify the statement: "An average of 44% of the annual streamflow volume as measured at the town of Dolores can presently be diverted by the Montezuma Valley Irrigation Company. With the Dolores Project in place the flow volume as measured at the McPhee damsite would be reduced 70%. The 70% reduction would be 39% non-project diversion and 31% project (including evaporation from McPhee Reservoir) diversion.

7. Page 8, last paragraph. - The values in the last full sentence are inaccurate and the sentence should be replaced with the following: "With Dolores Project, out-of-basin exports would average 238,700 A.F. annually. This value does not include the average annual evaporation loss from McPhee Reservoir of 5,400 A.F. Therefore, the total reduction in volume is 244,100 A.F. annually. The average annual discharge of the Dolores River at its confluence with the Colorado River would be reduced to 415,600 A.F. annually. 25,000 A.F. of the reduction due to project diversions would be returned to the Colorado River as return flows to the San Juan River."

8. Page 20, first full paragraph. - The last sentence should be revised to read ". . . reducing high flows and increasing low flows to provide year-round . . . ."

9. Page 32, paragraph 3. - The water right value in the second sentence is incorrect. The end of the first sentence should

be revised as follows ". . . rates up to 7077 cfs for irrigation. In addition they have ~~conditional~~ conditional rights to divert up to 100 cfs for domestic use and 592.3 cfs for irrigation.

10. Page 33, paragraph 1. - The 19 in the first line should be changed to 13, and the 30 in line 3 should be 50.

11. Page 38, paragraph 3. - The 188,000 tons referred to in line six should be changed to 180,000 tons.

12. Page 39, paragraph 5. - This paragraph should be revised to read as follows: "The Dolores Project will develop water for irrigation and municipal use in the Montezuma Valley and Dave Creek area, and Ute Mountain Reservation near Towaoc, and will also significantly alter the existing flow regime of the river below McPhee Dam. Two additional purposes of the Dolores Project are as follows:

"First the project will provide a minimum flow that will meet many of the fish, wildlife, and esthetic needs; . . ."

13. Page 40, paragraph 2. - The "18" on line "8" should be "13" and line "9" should be revised by inserting ". . . and 2,500 cfs . . ." after 1,000 cfs.

14. Page 40, paragraph 3. - the "22" on line four should be "21" and the "9" on line five should be "10."

15. Page 51, paragraph 1. - The last two lines should be revised to read as follows: ". . . substantially because of the maintenance of a minimum fishing flow and the development of several recreation sites around the reservoir and in the downstream segment." In addition, the ability to forecast

white water flows to allow better white water boating opportunities should be discussed here.

16. Page 54, paragraph 2. - The first line should be revised to read "1972-1973 - an archeological reconnaissance of portions of the Dolores . . . ."

17. Page 69, paragraph 1. - The Principles and Standards are incorrectly referred to as an Executive Order. It is also incorrectly stated that the Principles and Standards are "intended primarily for water resource development analysis." They are intended for all water resource planning.

The "no action" plan is treated as a "without situation" since each plan is compared with it. Furthermore, some assumptions are made regarding the "no action" plan that makes it inappropriate for use either as a "no action" plan or as the "without situation;" e.g., on page 75 it is stated that the "no action" plan "assumes that current trends in use and development of resources will continue." This implies action and a with situation. Perhaps the term "no development plan" would be more appropriate.

18. Page 76, paragraph 2. - The "± 10%" on line 8 would be more appropriate if it were changed to "about 10%."

19. Page 76, paragraph 6. - We question the assumption that crop yields will remain the same. It is normally assumed that improved technology will result in yield increases in the future.

20. Page 78, paragraph 3. - We suggest revising the first sentence to read "There is a national need for boating, fishing, hiking, camping, and picnicking and the goal of this NED plan is to maximize the opportunities to satisfy those needs."

21. Page 93, paragraph 2. - We suggest revising the last sentence to more accurately describe the influence of the project by deleting it and inserting "Without the Dolores Project, the recommendations made in this report could not be accomplished."

22. Page 93. - It is not clear as to which one of the alternatives discussed in chapter V and summarized in Table E-8 is being recommended.

23. Page 96, paragraph 1. - The last sentence indicates that the Forest Service will administer public land within and adjacent to McPhee Dam. That determination has not been made at this time. In addition, those lands are in the area specifically excluded from the ild and scenic river study area. Therefore, the last sentence should be revised as follows: "Recreation development from McPhee Dam to and including the Bradfield Ranch site will be administered by the Forest Service."

24. Page 97, paragraph 4. - The last sentence states that "Should the river be added to the National System, and if the Dolores Project construction funds are not provided, these facilities should be constructed by the management agencies." This implies that the Dolores River may be designated a Wild and Scenic River without the completion of the Dolores Project.

The entire study was predicated on the Dolores Project being in place and if the Dolores Project is not completed, we believe the area should be restudied to determine whether or not the river should be so designated without the project.

25. Page C-1, paragraph 2. - The last two lines should be deleted and replaced with ". . . Valley for fish and wildlife management purposes."

26. Page C-1, paragraph 3. - The last two sentences should be deleted because the values used are outdated and are presently undergoing substantial revision.

27. Page C-1, paragraph 4. - The paragraph should be deleted because there are so many unknowns involved. It should be replaced with "The Bureau of Reclamation is continuing work on the Definite Plan Report and Draft Environmental Statement. Both should be completed in early calendar year 1976."

28. Page C-2, Table I. - The water section of the table should be revised to show supplies for "Dove Creek Municipal and Industrial, 600 AF, Dolores Water Conservancy District, 900 AF," and a new line added showing "Fish and Wildlife Enhancement, 1,600 AF." The total should then be changed to 126,600 AF.

29. Page E-1. - The first step in any planning endeavor should be the identification of needs or problems, not identification of

30. Page E-2. - The items listed on this page as a component of National Economic Development and Evironmental Quality should be listed as potential components for evaluation since many are eliminated after further evaluation.

31. Page E-3. - Agricultural production is eliminated from consideration since there is no additional cropland or surplus water. Are all lands producing to full potential? How was it determined that there was no surplus water? There will be spills from McPhee Dam which have the potential for development. Were they considered?

32. Page E-5. - The unit RD should be defined.

33. Page E-6. - Series E population of the OBERS projections is the presently accepted series for use by the Federal Government and should be used in lieu of Series C. Item (f) implies that all croplands in the Dolores River corridor are irrigated. We question the validity of that implication.

34. Page E-7. - What support exists for the statement that "There is a national need for the beneficial esthetic, environmental and spiritual effects associated with preservation of free-flowing streams that have outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values?"

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35. Page E-8. - Table is not clear. What is meant by complementary "array A" and "array B"?

36. Page E-9. - VD should be defined.

37. Page E-31. - The dollar sign should be removed from the number of visitor days in the third column.

38. Page E-32. - The dollar signs should be removed from the number of visitor days in the second and third columns.

39. Table E-8 (following page E-32). - This table attempts to summarize and compare the alternative plans, however, the plan numbers do not correspond to those used in chapter V, Analysis of Alternatives. As pointed out earlier, it is not clear which alternative has been recommended nor is the rationale for the selection clear.

How can benefits and costs be derived from a "no action" situation?

40. Page F-1. - This is the cover page for the description of the Paradox Valley Unit. It lists the Colorado River Basin Salinity Control Advisory Council as though it were the entity planning the unit. The title page should be revised as follows:

APPENDIX F

Paradox Valley Unit
Colorado River Basin Salinity Control Project
Bureau of Reclamation
U.S. Department of the Interior

41. Page F-6, last paragraph. - The 188,000 tons on line three should be 180,000 tons, and the entire last sentence should be deleted.

42. Page G-1 and G-2. - The last 2-1/2 lines on G-1 and the first 2 lines on G-2 should be deleted making the last sentence read:

"They are willing to work with other residents in order to cooperatively solve the water problems of the whole area."

State of Colorado
EXECUTIVE CHAMBERS
DENVER

RICHARD D. LAMM
GOVERNOR

January 9, 1976

Mr. John McGuire, Chief, Forest Service
U. S. Department of Agriculture
South Building, 12th and Independence Ave., S.W.
Washington, D. C. 20250

Attention: Mr. Douglas Shenkyr, Division of Watershed Mgmt.

Dear Mr. McGuire:

Pursuant to your letter request of December 16, 1975, this communication constitutes my comments on the Dolores River Wild and Scenic River Study Report which was transmitted to me along with your letter. Since the study is the first of its kind within the State of Colorado, it has received a great deal of attention by both our Department of Natural Resources and my own personal staff. As your letter points out, the study from its inception to its completion was carried on as a cooperative venture between the participating federal agencies and representatives of the State of Colorado. My comments are therefore based upon an exhaustive and thorough review of all available information pertaining to the study as presented to me by my own staff, the Colorado Department of Natural Resources and the participating federal agencies.

I wish to state at the outset that I wholeheartedly endorse the philosophy and intent of the Wild and Scenic Rivers Act. At the same time, I recognize that the setting aside of considerable land areas for special purposes must be carefully examined in the light of how such purposes might affect the utilization of our natural resources and the lives of our people who are dependent upon such resources.

The constant degradation of our natural environment and the increasing occupation of our land resources has been of such serious concern to our citizens as to cause the Congress to enact such laws as the Wild and Scenic Rivers Act and the Wilderness Preservation Act. On the other hand, our citizens are also deeply concerned about their freedom of choice to occupy lands of their choosing and to earn a livelihood. It is with full recognition of these competing demands that I offer the comments herein contained.

With one major exception, I am in complete agreement with

the conclusions and recommendations set forth in chapter VI of the study report. I commend the study team for a job well done. As the report accurately sets forth, the Dolores is truely a unique and remarkable river. Within a relatively short distance it traverses five western life zones from the relatively wet and high alpine areas of the San Juan Mountains to the semi-arid areas of high western desert. The rapid transition of the river from high alpine meadows through heavily vegetated mountain valleys to a lower terminus of almost perpendicular sheer rock canyons of the high desert zone compels recognition that the Dolores River is indeed remarkable and unique.

Pursuant to the direction of Congress, the study team evaluated four segments of the Dolores River and its tributaries. The study team concluded that two segments, the Main Dolores from Rico upstream to its source and the river from its confluence with the San Miguel River to the Colorado-Utah border, did not qualify for inclusion in the national wild and scenic rivers system. However, the study team recommended that the eight-mile reach from Gateway to the Colorado-Utah border could qualify if added to that portion of the Dolores River flowing through the State of Utah. I fully concur with the conclusions and recommendations of the study team concerning these two segments.

The study team recommended that the one hundred five mile section of the Dolores River between the proposed McPhee Dam to one mile above the Highway 90 bridge be designated as a part of the national wild and scenic rivers system. One detracting factor pointed out in the study report is the absence of a live stream through much of this section during the late summer and fall months. However, as set forth in the report, the proposed McPhee Dam, a part of the authorized Dolores federal reclamation project, would provide for live stream releases throughout the year in that stretch of the river below the dam. The State of Colorado through both its executive and legislative branches of government, together with the local people involved, are totally committed to the construction of the Dolores federal reclamation project I therefore fully concur with the findings in the study report that the authorized Dolores project is not only completely compatible with the proposed wild river designation, but will greatly enhance that designation by providing a live stream flow through that section of the river which is now depleted by upstream irrigation and municipal diversions. Much of this middle section of the Dolores River bears little or no evidence of the activities of man. Through part of this section the Dolores River has carved spectacular rock-walled canyons. The members of the study team were in unanimous agreement as to the desirability of including this one hundred and five mile segment in the national wild and scenic rivers system. I concur in this recommendation.

The remaining study section of the Dolores River system,

the West Dolores, presented a more difficult problem to the study group and the divided recommendation contained in the study report is the major exception which I previously referred to. The study team apparently had no great difficulty in determining that the West Dolores is in fact eligible for inclusion as a part of the wild and scenic rivers system. However, the federal representatives on the team recommended that the West Dolores not be included "at this time" because of "extensive intermingling of private lands and structures leading to potentially difficult and costly administration".

While admitting that there would be administrative problems, the members of the study team representing the Colorado Department of Natural Resources believe that it would be a serious mistake to eliminate consideration of the alpine and mountain valley zones of the West Dolores River. This one divergence of opinion reflected in the study report has presented me with the greatest problem in formulating the position of the State of Colorado. I am sure that this divergence is also of equal concern to the Departments of Agriculture and Interior.

The study report states that almost seventy percent of the thirty-five mile long, one-half mile corridor along the West Dolores River is within the San Juan National Forest. The remaining thirty percent or so of the river corridor is in private ownership which is intermingled with forest lands. While these percentages may not be exact, they are accurate enough to determine that condemnation in fee title of private lands would not be permitted under the provisions of the Wild and Scenic Rivers Act. However, scenic and public access easements could be obtained if the river were given a recreational status as recommended by the Colorado Department of Natural Resources.

While there are no incorporated areas or industrial activities within the West Dolores River corridor, there are several ranching operations and a number of summer cabins and homes occupying the 2,600 acres of privately owned land. There are approximately fifteen separate private land holdings along the river corridor, all of which are occupied by one or more homes or summer cabins. The majority, if not all, of the landowners are opposed to any type of special designation for the West Dolores River.

The existing landowners in the West Dolores corridor and others are genuinely concerned about the impact of a recreational river designation on the river. These people for the most part are sympathetic with the purposes of the National Wild and Scenic Rivers Act, but point out that they also are opposed to any further commercialization of the river area, and that they, in cooperation with the Forest Service, can maintain the river corridor essentially as it is today. They also fear a loss in the farm economy if the river is made a part of the federal system. These fears are all related to the overriding concern that

both their privacy and quality of life will be invaded if the river receives a recreational designation.

We have given a great deal of deliberation to the fears expressed by the local people. Those fears are not entirely without foundation. From a narrow political viewpoint, it might be popular, at least locally, to agree that the provisions of the Wild and Scenic Rivers Act should not apply to the West Dolores River. However, from the explicit provisions of the act, it seems clear that the existing farming and other occupations now carried on within the river corridor cannot be interfered with. I am therefore unable to concur with any fear that the existing economy of the area will in any way be affected. Tourism is a major industry of southwestern Colorado and will most certainly be enhanced by wild and scenic river designations in that area. It cannot be denied, however, that the private enjoyment of that area by the present residents will be interfered with to some extent.

I have no doubt as to the desire of the present landowners in the area to maintain the river corridor essentially as it is today. However, both life and land ownership are fleeting and fragile things. The number of man-made structures along the West Dolores will most certainly continue to increase with the passage of time, until it becomes, like most other river valleys in the United States, a veritable jungle of homes with the ever attendant roads, power lines, telephone lines and the other evidences of modern civilization.

While the possible designation of the West Dolores, or any other river in Colorado, under the national wild and scenic rivers system is of considerable local political importance, it is my unswerving conviction that there are unique and precious natural environments in Colorado which should be preserved for both present and future generations of America. If any reasonable quality of life is to be maintained in this country, we cannot permit the continued exploitation and degradation of our few remaining natural assets.

It has been stated in the study report that the cost of acquiring and thereafter maintaining the West Dolores as a recreational segment of the national system is too great to warrant designation. The estimated one-time cost for establishing the West Dolores corridor is $430,000, and the annual cost thereafter is estimated at $65,000. If this is an excessive cost to this nation for the preservation of a unique national heritage, then it appears that the provisions of the National Wild and Scenic Rivers Act have no meaning.

The designation of the middle reaches of the Dolores River throughout its canyon land area is essential if the river is to be designated at all. However, to ignore that portion of the river which originates in alpine meadows and flows through the mountain valleys

subverts both the unique characteristics of the Dolores River and the purposes of the Wild and Scenic Rivers Act.

For the various reasons expressed herein, I therefore recommend that the West Dolores segment of thirty-six miles, along with the one hundred and five mile segment below the proposed McPhee Dam, be included in the wild and scenic rivers system with the specific designations as set forth in the study report. This recommendation is made upon the following assumptions:

1. That the authorized Dolores federal reclamation project, now in the preconstruction stage, will proceed to completion.

2. That condemnation of private lands in fee title by the federal government in the West Dolores River corridor will not be permitted.

3. That existing farming or other occupations or occupancies on private lands in the West Dolores River corridor will not be interfered with, except for the acquisition of scenic and access easements.

4. That no existing privately owned water rights or diversions within any designated river corridors will be interfered with.

5. That the State of Colorado will be consulted in the preparation of the required management plan, in the event Congress includes any segments of the Dolores River in the national wild and scenic rivers system.

Sincerely yours,

RICHARD D. LAMM
Governor

RDL:mm

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