Pacific Northwest Rivers Study

Assessment Guidelines: Montana

State of Idaho
State of Montana
State of Oregon
State of Washington

NW Indian Tribes

USDA Forest Service
USDI Bureau of Land Management
USDI Fish and Wildlife Service
USDI National Park Service
NW Power Planning Council
Bonneville Power Administration

June 1985

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PACIFIC NORTHWEST RIVERS STUDY ASSESSMENT GUIDELINES

MONTANA

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The Rivers Study staff extends special thanks to Mr. Drew Parkin and Mr. J. Glenn Eugster of the National Park Service's Mid-Atlantic Region for their help and professional guidance. It has been the key to the success of the Pacific Northwest Rivers Study.

PACIFIC NORTHWEST RIVERS STUDY ASSESSMENT GUIDELINES
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CHAPTER 1

OVERVIEW

Introduction

This document presents the process that the state, Federal agencies, and Indian tribes will follow to complete the Pacific Northwest Rivers Study (Rivers Study). It identifies assessment guidelines for each river resource category, provides reporting formats for data collection and presentation, and describes expected results and applications.

Agency Considerations

In order to effectively respond to existing policies and programs as well as to reflect differences in river character, data availability, and public concerns, the study has been organized into four state level studies. State, Federal, Tribal, and interest group participants will conduct the assessment using state boundaries as the geographical framework.

It is not the intent of the study to circumvent the management responsibilities of any state, Federal agency, or Indian tribe. The study is a cooperative planning effort which will benefit all participants. Results do not constitute official policy and by themselves imply no specific action by any participant.

Time Schedule and Products

The Rivers Study is an 18-24 month effort by the 4 northwest states, Federal agencies, and the Tribes. Funding of approximately 1.0 million dollars is being provided by the Bonneville Power Administration (BPA). Concurrently, the Northwest Power Planning Council (NPPC or Council) will provide $540,000 to evaluate anadromous fish resources and Indian cultural/archeological values. Rivers Study activities and goals, budgets, and time schedules are listed in the September 1984 Pacific Northwest Rivers Study Plan available from BPA.

Applications

The Rivers Study will produce a consistent and verifiable river resource data base. While this information may have utility for a variety of applications, the specific purpose of the project is to identify resource considerations which might have a bearing on hydropower development. The ultimate objective is to use this information to identify areas where minimal impact can be anticipated and thus where development might be appropriate. The study responds to the expressed need for resource information for the following:

1. Energy Supply Forecasting - NPPC and BPA
2. Protected Areas - NPPC: 1984 Columbia River Basin Fish and Wildlife Program §1204(c)(1).
3. Site Ranking - NPPC: Northwest Conservation and Electric Power Plan §14.2.

CHAPTER 2

RIVER ASSESSMENT PROCESS

Process

The major objective of the process is to identify the significance of river segments and systems for natural, cultural, and recreational resource categories. Comparative assessment is a major feature of this process. The process does not, however, result in rivers being ranked in numerical order. Rather, it clusters stream reaches into groups according to their relative resource significance.

The study is not an inventory or data collection exercise. The focus is on evaluation by recognized resource experts. The effort will rely on existing information and expertise with field survey kept to a minimum. Study conclusions will ultimately be the responsibility of these resource specialists. The states, Tribes, and Federal agencies will be represented in the evaluation process commensurate with their legal authorities and management responsibilities.

The following is a detailed description of the assessment process.

Step 1: Identification of fish, wildlife, natural, recreational, cultural, and institutional river resource categories.

Categories were chosen to: 1) accurately reflect the overall value of rivers and streams as natural resources; 2) reflect the interests of various public agencies and private interest groups; 3) acknowledge the resource responsibilities of the Tribes, states, and Federal agencies; and 4) reflect the priorities of the Pacific Northwest Electric Power Planning and Conservation Act [(Regional Act) P.L. 96-501]. Tribal cultural and archeological values will be included through a NPPC contract, as will regional anadromous fish values. Tribal participation in determining other river values will be through state level studies.

A "senior resource expert" and cooperating experts have been designated in each state to oversee activities related to each specific resource category. Cooperating experts will provide input into the assessment through the senior resource expert. This manual in Chapters 4-9 describes the methods to be used in the state level effort.

Step 2: Inventory of Existing Information and Identification of Experts

Each state task force has inventoried the availability of expertise and information in each of the six resource categories. Agencies, groups, individuals, or other sources possessing useful data or with the capacity to produce useful data within the study period were identified, including key contact person(s). A list of resource experts is included as Appendix A.

Step 3: Evaluation Criteria and Standards Development

For each river resource category, regional staff and senior resource experts have identified minimum standards and criteria by which data will be evaluated. These were subsequently adapted to meet the needs of each

individual state. Both quantitative and qualitative criteria are employed. In the development of standards and criteria, resource "potential" was taken into account.

This document is an effort to standardize criteria for each state level study and to ensure studywide consistency. The regional and state level project management staff, with input from relevant Federal, Tribal, and private interest group experts, have developed the criteria shown in this guide. A separate, yet similar, guide has been developed for each of the four northwest states. The actual assessment method may vary by resource category and by state. Evaluation forms have been developed for each resource category to promote efficiency and coordination.

Step 4: Individual Resource Category Evaluation

An independent inventory of river resources will be undertaken for each resource value category. Under the direction of designated senior resource experts, rivers and streams meeting minimum threshold standards will be assessed by field level specialists using the identified criteria and assessment procedures. Resource experts will assign a value class to each river segment on maps and data forms. River segment descriptions and rules governing treatment of tributaries will be determined by the state level project management staff. The number of river segments to be included in each value class will be determined by resource experts. No regionwide guidelines will be given.

Results will be compared for consistency, and river segments will be preliminarily grouped according to overall significance. As appropriate, similar assessments may be conducted by user groups to verify results. The resource evaluation findings will be reviewed by designated senior resource experts and agency and Tribal participants. Results will be revised as appropriate by the senior resource experts in consultation with regional project management. An opportunity to review results and provide comments will be given to private groups and citizens who have given input or expressed interest.

The final result of the category assessment will be the identification of all river areas which should be recognized as possessing a particular fish, wildlife, natural, recreational, cultural or institutional value and an identification of the relative significance of each area. The terms outstanding significance, substantial significance, moderate significance, limited significance, and unclassified or unknown are used to denote relative value. Areas with no resource value will be noted.

Step 5: Display of Category Results

Results will be displayed in tabular data forms and also recorded on base maps at an appropriate scale for each resource value. Where available and applicable, a scale of 1:100,000 will be used. The basis for expert judgments will be recorded in narrative form on data sheets for each river segment or segments. Maps of a scale suitable for public presentation (1:500,000) will also be developed. Public meetings to present the findings of Step 4 and the graphic displays of Step 5 may be held. Preliminary statewide results are projected to be available in November 1985.

Step 6: Information Synthesis (1986)

Information obtained for all resource categories will be combined. All significant values associated with a given river or stream will be identified and all tributaries which contribute to these values will be noted. A matrix

format will likely be used as the mechanism for displaying this information. The matrix will identify the total number of resource values associated with each river segment and system and will indicate significance ratings. Ultimately, this information will be incorporated into a computerized data management system. The specific format of this system is to be determined. For purposes of information synthesis, river segments will likely be defined using the following guidelines:

1. Where a river possesses a combination of overlapping values, the outer boundaries of the overlapping values determines the boundary of the segment.
2. A tributary stream which flows into, and is connected to, a larger river area generally is included in the larger river segment description if the tributary stream: a) possesses natural, cultural, or recreational values consistent with those of the main river area, and b) significantly enhances the overall value of the larger river segment's resources. The specific mechanism for entering data on tributary streams is to be determined.
3. A tributary stream with natural, cultural, or recreational values greater than those of a connecting main river area is listed separately.
4. Larger connecting rivers may be listed as tributaries to a river system in certain unique situations, e.g., where: a) the rivers are free flowing and within an undeveloped watershed, and b) the rivers in the watershed exhibit a high degree of hydrological and ecological interdependence.

Step 7: Composite Resource Value Evaluation (Optional)

Using information obtained through this process, it is possible to conduct a composite resource value evaluation. The objective would be to determine overall resource significance of segments and systems and to achieve a sense of agreement between interests as to these findings. This step is optional following completion of the Rivers Study and will not be funded by BPA as part of the current effort.

Composite value findings can give an indication of multiple public values and can thus guide the Council, the states, the Tribes, and Federal agencies in setting priorities. If such an effort is undertaken, it should be structured so as to not diminish the individual category findings derived in Step 4 as they relate to programs directed at specific resource categories.

Step 8: Documentation and Presentation

The study's findings will be documented and graphic presentations of data prepared. Detailed state by state reports and a summary regionwide report will be prepared. A special effort will be made to document the significance of reaches and systems found to possess high and/or unique resource values, as well as those reaches reflecting the priorities of the Regional Act. Statutory recognition (Wild and Scenic Rivers, National Parks, inclusion in Wilderness Areas, etc.) will be included. The final report prepared by regional staff with state, Tribal, and agency assistance will include identification of potential protected areas, narrative descriptions, tabular information, and maps which depict and document the comparative significance of resources for each value category.

CHAPTER 3

METHODOLOGY GUIDELINES

Criteria and Standards

The following chapters identify the assessment guidelines to be followed in conducting the Rivers Study. They were originally derived from the Maine Rivers Study, the Idaho Rivers Inventory, the Montana Fish and Wildlife Valuation Procedures, and the New Hampshire River Protection and Energy Development Project and have been modified to suit unique state, agency, and Tribal requirements. While specific methods will vary by state and resource category, an attempt has been made to ensure an acceptable level of consistency throughout the region.

For each river resource category listed below, regional staff and senior resource experts have identified standards and criteria by which data will be evaluated. "Standards" refer to the evaluation measures used to determine "minimum thresholds of significance." "Criteria" refers to those attributes used to critically evaluate specific rivers or river systems meeting the minimum threshold of significance for a given resource category. Minimum thresholds will be set by each state level staff in consultation with regional level project management and participating agency and Tribal resource experts. As a general rule, thresholds will be set to ensure the valuation of all rivers where documented resource data exists. Both quantitative and qualitative criteria will be employed. In the development of standards and criteria, documented or planned resource "potential" will be taken into account.

Resource experts will assign each river segment to a value class based on best available information and judgment. The assessment guidelines shown in Chapters 4-9 were designed to help determine the appropriate class. Guidelines were developed in order to promote objectivity and consistency.

Resource Categories

Fish and wildlife, natural, recreational, cultural, and institutional river resource categories were chosen to:

1. Accurately reflect the overall value of rivers and streams as natural resources;
2. Reflect the interests of various public agencies and private interest groups;
3. Acknowledge the resource responsibilities of the Tribes, states, and Federal agencies;
4. Reflect the priorities of the Regional Act.

Fish and wildlife categories based on qualitative measures of habitat value have been included to ensure that the study meets the needs of the Council's Fish and Wildlife Program. Tribal cultural and archeological values will be included through a Council contract as well as Tribal participation in the state level studies. Regional anadromous fish values will be developed by the Council. A senior resource expert in each state will be designated to coordinate activities related to each specific resource category. Public and private experts will provide input into the assessment. The resource categories will include, at a minimum, the following:

° Resident Fish (Chapter 4)
  - cold water
  - warm water
  - spawning, rearing, and migration areas
  - sport fisheries
  - Indian subsistence fishery

° Wildlife (Chapter 5)
  - migratory birds
  - resident birds
  - big game
  - fur bearers
  - small mammals
  - endangered and threatened species (Federal and state)
  - non-game and species of special concern including Indian subsistence species

° Natural Features (Chapter 6)
  - endangered and threatened plants
  - unique plant communities and other recognized natural areas
  - undeveloped and free flowing segments
  - sensitive riparian wetlands
  - gorges, waterfalls, rapids, miscellaneous geologic features

° Cultural Features (Chapter 7)
  - archeological sites
  - river related architectural sites
  - historic trails and sites
  - current Indian cultural use sites (Council responsibility)

° Recreation (Chapter 8)
  - white water boating
  - flat water boating
  - river camping
  - river related shoreline activities
  - current public use sites

° Institutional Constraints (Chapter 9)
  Federal, including:
  - wild and scenic rivers
  - wilderness areas
  - research natural areas
  - national parks
  - roadless areas
  - national fish hatcheries
  - national wildlife refuges

  State
  Local (as applicable)

Each river resource category will be evaluated separately. Assessments will be conducted independently without reference to other resource values. For example, river reaches will be evaluated for recreational boating without reference to their value for wildlife or cultural features. Senior resource experts working with state, Federal, Tribal, and user group experts will conduct the assessment. All judgments by resource experts will be available

for review by user groups, river interests, and citizens to assure the proper application of the criteria and standards. There is no requirement that total consensus be achieved. Differences will be noted as such.

Scope of Effort

Initially, any river segment with a significant resource value known to a resource expert should be included in the Rivers Study. Perennial streams which appear on 1:100,000 scale maps will be included. Generally, values within 1,000 feet of a stream will be included. If streams must be excluded, the following can be used to determine stream exclusion:

1. Intermittent streams;
2. Small tributaries;
3. Federal institutional constraints (e.g., National Parks, etc.).

Other exclusion criteria may be identified by state study staff and used following approval by the regional staff. Connected streams may be clustered where resource values are of consistent quality.

River Reach Determination

River segments may be any reasonable length greater than one mile. Normally, segments will be 10 miles or more. Each study coordinator should identify appropriate reach lengths for his state for each resource category consistent with the budget, time available, and map scales to be used.

Value Classes

Value classes are the resource significance levels that are assigned to river segments to denote their value. Participants will assign one of 4 value classes to each river reach to denote its relative significance to a given resource category. As applicable, an "Unknown or Unclassified" or "Resource Not Present" designation may be given in lieu of a rating.

Value Class Definition

1 Unique or Outstanding Resources
2 Substantial Resources
3 Moderate Resources
4 Limited Resources
5 Unknown or Unclassified
6 Resource Not Present

Data Presentation

° Data Entry Forms

Senior resource experts have prepared river resource rating forms for each state level effort. These forms will be used to present pertinent background information and to document evaluation decisions. Individual cells on each data form will reflect the scores for each criteria. The form briefly notes features of the segment which give it value, sums values, and assigns value class. The form provides space for additional descriptive information regarding individual segments. As applicable, segment descriptions will be included on the data forms. State coordinators have identified a comprehensive coded list of rivers for each state. Lists will be made

available to resource experts. Use of these lists will help to promote the consideration of all reaches and will ensure consistency between resource categories. As appropriate, river segments will be identified using physical landmarks, coordinates, or other locational information and will be presented in a downstream boundary to upstream boundary fashion. The terms "mouth" and "to headwaters" or "source" signify the extremes of this segment description system and may be used as appropriate. If no segment description is given, the entire stream length will be assumed to have consistent resource value.

Sample data forms are included for each resource value. In addition to segment description, forms will include a notation of map name to enable input of attributes into the proposed Geographic Information System (GIS). As appropriate, preparers will develop a coding system in consultation with state level and regional project management to denote the relative certainty of resource characterizations. Stream segment numbers will be written on the maps to enable easy cross referencing to the tabular data.

Where resource value is consistent in all upstream tributaries, each tributary need not be evaluated separately. In such situations, the values attributed to the larger segment will be assumed for all tributaries. An asterisk (*) placed after the name of the larger segment will denote this situation. If the river list being used is hierarchical, a diagonal slash drawn through upstream segments could clearly indicate that the segments are being clustered.

If no notations are made on the data form, it will be assumed that the segment is unclassified or resource value is unknown. A horizontal line across the form signifies resource not present.

° Maps

Maps will be used to display river values. Sets of 1:100,000 scale maps and a supply of 1:500,000 scale hydrologic unit maps have been provided to each state coordinator by BPA. Labels have been supplied for each map to be used as legends. Colored pens have also been supplied.

One set of 1:100,000 scale maps will be used to depict the significance of each of the following resource values.

- Resident Fish
- Wildlife
- Natural Features
- Cultural Features
- Recreation
- Institutional Constraints

In addition, 1:500,000 scale maps will be prepared for purposes of presentation and review.

In Oregon, Washington, and Idaho, 50-60 maps will be required per category for each state. Montana will require approximately 100 maps per resource category. Significance will be recorded in colored pen using the following color scheme. Exact names and printing numbers have been included for the standard pens chosen for the study: Berol Prismacolor Art Markers.

- Outstanding or Unique Significance - Red (Crimson Lake: PM-3)
- Substantial Significance - Orange (Bittersweet: PM-16)
- Moderate Significance - Gray (Warm Gray 60%: PM-104)
- Limited Significance - Green (Malachite: PM-32)
- Unclassified or Unknown - No mark
- Resource Not Present - Brown (Burnt Ochre: PM-66)

It is anticipated that the "Unknown or Unclassified" designation will predominate on any one map. For purposes of efficiency, participants will not be required to color stream segments in this category. Uncolored segments will be assumed to be either unknown or unclassified. To decrease production time, an arrow at the upstream terminus of a colored section will signify that all segments above that point are of consistent value. Upstream exceptions may be noted in the appropriate color.

BPA plans to digitize mapped values as presented on study maps and as referenced on data forms. State, agency, and Tribal coordinators will consolidate all value designations on the map for that resource category and return the maps with a copy of data sheets to BPA.

° Study Reports

Each quarter (3 months) the study participants under BPA contract will provide a letter summarizing study progress during the past quarter and briefly outlining future events. Annually, each participant will prepare as a fourth quarter report a brief summary of the past years' activities. By November 1985, each state level coordinator will complete and provide one set of maps, rating forms, and supportive material for river values to the regional level staff for review and printing.

Resident Fish

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
Helena, Montana 59620

PACIFIC NORTHWEST RIVERS STUDY

Method for Assessing the Significance of River Segments and Systems for Fisheries Resources in Montana
Revised May 21, 1985

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INTRODUCTION

The Pacific Northwest Rivers Study was initiated to assess the significance of river segments and systems for a variety of fish, wildlife, natural, recreational, and cultural resource values. The Montana Department of Fish, Wildlife and Parks has been designated to take the lead in assessing the value of rivers for fisheries in the state of Montana.

This report summarizes the method which will be used to complete this assessment. It identifies the value classes to which river reaches will be assigned, the criteria which will be used to determine the value of river reaches, the standards used to apply these criteria, and the process by which decisions will be made.

CATEGORY DESCRIPTIONS

Each stream reach is to be placed in a value class (see below) for each of the following two categories. The final classification, the fishery resource value, will be the higher class given for category 1 or 2. A stream that does not sometime contain fish or for which explicit fish population information is lacking is assigned class 5.

Category 1 - Habitat and Species Value of Stream Reach

The class of each reach is determined by a point system in which most points are awarded for important habitats of fishes of special concern (native fishes found in limited numbers and/or limited waters). Fewer points are awarded for less important habitats of fishes of special concern and for the occurrence of widespread species found in substantial numbers. Least points are awarded for occurrence of non-indigenous species considered of minimal value. Additional consideration is given stream reaches with especially important spawning habitat. Points are also given for spring streams; for local community value where a stream, being one of few or the only one in the immediate area, is important to a community for scientific study, nature study, and/or recreation; and for streams with documented potential for significant sport fisheries habitat improvement.

Category 2 - Sport Fishery Value of Stream Reach

The class of each reach is based on a point system in which points are awarded for each of the following criteria: (1) fish abundance as indicated by biomass or numbers and sizes of game or sport fish, (2) ingress (legal rights of the public to fish the reach or willingness of landowner to permit fishing), (3) esthetics and (4) use by fishermen (fishing pressure).

VALUE CLASSES

Value Class	Class Definition
1	Outstanding fisheries resource
2	High value fishery resource
3	Substantial fisheries resource
4	Moderate fisheries resource
5	Limited fisheries resource or unclassified resource

CRITERIA AND STANDARDS

Following is the detailed procedure for assigning value classes:

A. Procedure for Category 1 Habitat and Species Value of Stream Reach

I. Standards and Associated Points

Standard	Description	Points [1]
I	Best habitat [2] for: (1) large [3], migratory bull trout, or (2) class A fish of special concern [4].	15.0
II	Substantial habitat for: (1) large, migratory bull trout, or (2) class A fish of special concern. OR Best habitat for: (1) class B fish of special concern, [5] or (2) class A fish of special concern with genetic value C or D.	10.0
III	Moderate habitat for: (1) large, migratory bull trout, or (2) class A fish of special concern. OR Substantial habitat for: (1) class B fish of special concern [5], or (2) class A fish of special concern with genetic value C or D. OR Best habitat for: (1) class C fish of special concern, or (2) native rainbow trout with genetic value D.	5.0
IV	Moderate habitat for: (1) class B fish of special concern [5], or (2) class A fish of special concern with genetic value C or D. OR Substantial habitat for: (1) class C fish of special concern, or (2) native rainbow trout with genetic value D.	3.0
V	Moderate habitat for: (1) class C fish of special concern, or (2) native rainbow trout with genetic value D.	1.5
VI	Limited habitat for any fish of special concern.	.4
VII	Abundant [6] population of: (1) native fishes not included above [7] or (2) non-native game or sport species.	.4
VIII	Same as VII only abundance is common.	.3
IX	Same as VII only abundance is uncommon, unknown, presence expected but not verified, or immature fish only	.2
X	Presence of any species not listed above.	.1
XI	Stream is one of few streams or the only one in the immediate area and is important to community for scientific study, nature study, and/or recreation.	3.0
XII	Stream is a spring stream.	3.0
XIII	Reach has documented potential for significant fish habitat improvement using feasible methods.	Points or upgrade based on potential

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1/ Points are awarded for each species meeting a standard. In order for any fish of special concern to be considered as such, it must have a genetic value of A or B except where genetic value C or D is specified.

2/ The habitat value for a fish of special concern reflects biological values, such as competing species, as well as physical attributes and is a judgement decision by a fisheries biologist.

3/ See criteria for large-size fish in Attachment.

4/ See list of Montana fishes of special concern in Attachment.

5/ Bull trout habitat is an exception. In stream assessment, special consideration is given only to habitat of large, migratory bull trout.

6/ See fish abundance ratings in Attachment.

7/ See list of Montana fishes in Attachment.

II. Assignment of class

Points	Habitat and Species Value Class
15.0 or more	1
10.0 to 14.9	2
5.0 to 9.9	3
1.0 to 4.9	4
0.0 to .9	5

A tributary stream reach with especially valuable spawning habitat for a receiving stream that has a Class 1 or 2 sport fish value, is upgraded respectively to Class 1 or 2 habitat and species value.

Other important streams for trout recruitment, including passage, are advanced one class but not higher than class 3.

B. Procedure for Category 2 - Sport Fishery Value of Stream Reach

Criterion I. Fish Abundance - Award of Points and Assignment of Grade

a. Points for abundance of all trout species combined

Biomass (kg/300 m)	Points
70.0 or more	9.0
12.0 to 69.9	6.5
5.0 to 11.9	4.0
3.5 to 4.9	2.0
0.1 to 3.4	1.0

b. Points for abundance of trout with unrecorded biomass and class A non-trout game and sport fish for streams. 2/

Abundance Rating 1/	Points
A	2.0
B	3.0
C	1.0
D	2.0
U, V and Z	.5

NOTE: Maximum for mountain whitefish is 2.0 points.

c. Assignment of abundance grade

Points (sum of points from a and b above)	Grade
9.0 or more	4
6.0 to 8.9	3
3.0 to 5.9	2
1.1 to 2.9	1
0.0 to 1.0	0

Criterion II. Assignment of Ingress Grade

Ingress rating 3/	Grade
1	4
2 and 3	3
4	2
5	1
6 and 7	0

1/ See fish abundance ratings in Attachment.
2/ For species designations see list of Montana fishes in Attachment.
3/ See explanation of ingress ratings in Attachment.

Criterion III. Assignment of Esthetics Grade

Esthetics rating [1]	Grade
A	4
B	3
C	2
D	1
E	0

Criterion IV. Assignment of Use (Fishing Pressure) Grade

Fisherman-days/10 km	Grade
1250 or more	4
310 to 1249	3
65 to 309	2
25 to 64	1
0 to 24, or unknown	0

Computation of Sport Fishery Value Score and Assignment of Class.

A. Score = Sum of (grade for each component x multiplier [2]).

B. Assignment of Class

Standards	Score	Conditions	Sport Fishery Value Class
1.	17 or more	Fish production based on natural reproduction. Trout with abundance B or D (large-size) and biomass at least 100 kg/300 m; or paddlefish must be present with abundance A, B, C, or D. [3] and ingress rating of 1, 2 or 3 and esthetics rating of A, B or C [4] and overall use of 5000 or more [4]	1
2.	15 or more	Ingress rating of 1, 2 or 3	2
3.	12 or more		3
4.	9 to 11		4
5.	0 to 8		5

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[1] See explanation of esthetics ratings in Attachment.
[2] Multiplier for fish abundance is 2; multiplier for other components (ingress, esthetics and use) is 1.
[3] See fish abundance ratings in Attachment.
[4] For the purpose of meeting the 5000 fisherman days (FMD) requirement, the stream segment may be a composite of adjoining reaches that meet all other conditions for class 1, provided each reach with less than 5000 FMD's is less than 6 km long.

C. Assignment of Fishery Resource Value Class

The fishery resource value class is simply the higher class given for category 1 or 2 above. A stream that does not sometime contain fish or for which explicit fish population information is lacking is assigned class 5.

EVALUATION PROCESS

Information in the existing computer data file will be updated and data gaps filled through conferences with Department of Fish, Wildlife and Parks fisheries biologists and cooperating agency experts (Forest Service, Bureau of Land Management and Fish and Wildlife Service). Fishing pressure from mail fishing pressure survey and trout biomass from mark-recovery population estimates will be entered for appropriate stream reaches. Entries should be completed and the rating procedure programmed by August 15. Soon thereafter preliminary ratings should be available for review by cooperating agencies and user groups.

The fisheries expert for the Confederated Salish and Kootenai Tribes will assemble comparable information on reservation streams for inclusion in the state rating system.

Streams on the reservations of participating tribes will undergo an additional step. The assessment standards were developed for the state as a whole and adjustment may be needed for waters in the limited geographical areas encompassed by reservations. When the preliminary ratings for streams are available, state and participating tribal fisheries experts will review them to determine what adjustments, if any, should be made.

DATA FORM ENTRIES

No forms will be needed for the State of Montana fishery evaluation. Attached are examples of types of data printouts that can be delivered depending upon Bonneville Power Administration's needs.

ATTACHMENT

INGRESS RATINGS. As used here, ingress means the legal right to enter.

Code

1 - A stream section bordered almost entirely by public lands which insure ingress by anglers (exclude state school sections).

2 - A stream section bordered by a mix of private and public land where the public land is distributed in such a way that no significant portion of the stream is unavailable by vehicle and/or walking. Floating may also be a major means of access.

3 - A stream section bordered by mostly private land where ingress is uncontrolled or readily available by permission. This portion may be available by floating or through navigability laws. Also includes corporate lands that are currently open but could go to individual ownership in the future or company policy regarding ingress could change.

4 - A stream section bordered mostly by private land where ingress is limited but some fishing is allowed. Includes minor portions where public land or road crossing provides limited ingress. The portion through private land may be available by floating or through navigability laws.

5 - A stream section bordered entirely by private land where public fishing is available for a fee or where a small group has leased exclusive rights. Legality may be in question on some streams but this category identifies the current "fee" or "lease" fishing areas.

6 - A stream section bordered mostly by private land where little or no ingress by permission is allowed. Floating precluded by stream size or other physical limitation (no road or public land to reach stream).

7 - A stream or stream segment bordered by public land that is unavailable because of posting on private land or locked gates on private roads.

ESTHETICS RATINGS. Esthetics are rated A (high) through E (low). Features that detract from esthetics include: pollution, dewatering, channelization, riprap (particularly car bodies and discarded building materials), mine tailings, a busy highway along stream and severe land abuse. As a guide:

A A stream of outstanding natural beauty in a pristine setting.

B A stream comparable to A except that it may lack pristine characteristics. Presence of human development such as roads, farms, etc., usually comprise the difference between B and A.

C A stream with natural beauty but of a more common type than listed under A and B. A clean stream in an attractive setting.

D A stream and area with fair esthetics.

E A stream with low esthetics.

FISH ABUNDANCE RATINGS. Abundance of fish refers only to adult fish, or in the case of game and sport fish to keeper size (7" minimum for trout; exception 6" minimum for trout populations which spawn when shorter than 7"). By nature, abundance ratings are subjective. Since trout command the most interest of Montana fishes, the abundance ratings for all fishes are geared to trout. The abundance graph (Figure 1) is a guide to numbers associated with abundant, common, uncommon and rare. The ratings reflect the peak abundance during the year, e.g., when migratory spawners are present.

A = Abundant
B = Abundant with proportional number of large-size fish (see criteria for large-size fish)
C = Common
D = Common with proportional number of large-size fish (see criteria for large-size fish)
U = Uncommon
V = Uncommon with proportional number of large-size fish (see criteria for large-size fish)
R = Rare
E = Presence not verified but expected
I = Immature fish only; adults never in reach
M = Species absent but might be present if habitat problems corrected
N = Not present
P = Species absent, but could be present if introduced (e.g., potential habitat in a barren stream)
Z = Abundance unknown

MONTANA FISHES OF SPECIAL CONCERN

Class A--limited numbers and/or limited habitats both in Montana and elsewhere in North America; elimination from Montana would be a significant loss to the gene pool of the species or subspecies.

White sturgeon (Acipenser transmontanus)
Pallid sturgeon (Scaphirhynchus albus)
Paddlefish (Polyodon spathula)
Yellowstone cutthroat trout (Salmo clarki bouvieri)
Westslope cutthroat trout (Salmo clarki lewisi)
--includes upper Missouri cutthroat trout
Arctic grayling (Thymallus arcticus)

Class B--intermediate between classes A and C. Limited numbers and/or limited habitats in Montana; fairly widespread and fair numbers in North America as a whole. Elimination from Montana would be at least a moderate loss to the gene pool of the species or subspecies.

Native rainbow trout (Salmo gairdneri)
Bull trout (Salvelinus confluentus)
Sturgeon chub (Hybopsis gelida)
Sicklefin chub (Hybopsis meeki)

Class C--limited numbers and/or limited habitats in Montana; widespread and numerous in North America as a whole. Elimination from Montana would be only a minor loss to the gene pool of the species or subspecies.

Shortnose gar (Lepisosteus platostomus)
Pearl dace (Semotilus margarita)
Northern redbelly dace (Phoxinus eos) x finescale dace (P. neogaeus)
Trout-perch (Percopsis omiscomaycus)
Shorthead sculpin (Cottus confusus)
Spoonhead sculpin (Cottus ricei)

GENETIC VALUE RATINGS FOR FISH

Rating	Description
A -	A genetically pure population as determined by electrophoresis.
B -	A potentially pure population where there is no record of contaminating species 1/. Not applicable to native rainbow trout as their purity can be determined only by electrophorosis.
C -	A potentially pure population where no contaminating species exist, but planting records indicate that a contaminating species (which could cause hybridization) has been planted in the drainage.
D -	An especially valuable genetically pure cutthroat trout population (determined by electrophoresis) where there are also contaminating species. Introgression may be static or receding due to reproductive isolation. This rating also applies to sympatric populations of native and non-native rainbow trout.
E -	A potentially pure population where contaminating species are known to exist.
F -	A genetically pure population may exist, but no documentation is available.
G -	A genetically pure population could exist but is not present.
H -	A hybridized or introgressed population known to exist based on electrophoresis.

1/ (a) Contaminating species for native rainbow trout are: golden trout, cutthroat trout and any hybrid Salmo except hybrid brown trout.

(b) Contaminating species for westslope or Yellowstone cutthroat trout are: rainbow, golden, other strains of cutthroat trout, and any hybrid Salmo except hybrid brown trout.

(c) Contaminating species for bull trout is brook trout.

CRITERIA FOR LARGE-SIZE FISH

Species	Kg	Lbs	Species	Kg	Lbs
Shovelnose sturgeon	2.7	6.0	Northern pike	6.8	15.0
Paddlefish	34.0	75.0	Bullhead--		
Mountain whitefish	.9	2.0	black & yellow	.3	.7
Kokanee	.9	2.0	Channel catfish	3.6	8.0
Cutthroat trout	.7	1.5	Burbot	2.7	6.0
Rainbow trout	1.4	3.0	Smallmouth bass	.9	2.0
Brown trout	1.4	3.0	Largemouth bass	1.8	4.0
Brook trout	.5	1.0	Crappie--		
Bull trout	2.7	6.0	black & white	.5	1.0
Lake trout	6.8	15.0	Yellow perch	.5	1.0
Arctic grayling	.9	2.0	Sauger	.9	2.0
Golden trout	.5	1.0	Walleye	1.8	4.0
Kokanee	1.1	2.5			

MONTANA FISHES IN FAMILY SEQUENCE

Code		Code	
$ +	027 Sturgeon*	$	140 Western silvery minnow
$ +	090 White sturgeon	$	141 Plains minnow
$ +	091 Pallid sturgeon	$	142 Finescale dace[5]
$ +	092 Shovelnose sturgeon	$	143 Northern redbelly dace
		$	144 Peamouth - n. squawfish hybrid
$ +	028 Paddlefish	@	145 Spottail shiner
		$	146 Peamouth - redside shiner hybrid
$	038 Shortnose gar	$	147 N. redbelly - finescale dace hybrid
$	034 Goldeye	$	031 Sucker*
		$	040 Buffalo*
# °	001 Rainbow trout*	$	055 River carpsucker
$ °	002 Cutthroat trout*	$	056 Longnose sucker
# °	003 Brook trout	$	057 White sucker
# °	004 Brown trout	$	058 Largescale sucker
$ °	005 Bull trout	$	059 Blue sucker
$ °	006 Lake trout	$	060 Bigmouth buffalo
# °	007 Golden trout	$	061 Smallmouth buffalo
# +	008 Kokanee	$	062 Shorthead redhorse
#	009 Coho salmon[1]	$	063 Mountain sucker
$ +	010 Arctic grayling		
# °	011 Rainbow trout - cutthroat trout hybrid	$ +	024 Channel catfish
$ °	012 Westslope cutthroat trout (pure)	#	025 Bullhead*
$ °	013 Yellowstone cutthroat trout (pure)	$	064 Stonecat
$	014 Whitefish*	#	065 Black bullhead
#	015 Lake whitefish[2]	#	066 Yellow bullhead
$ +	085 Mountain whitefish		
$	086 Pygmy whitefish	$	100 Trout-perch
# +	087 Chinook salmon		
# °	088 Splake	$ +	026 Burbot
# +	089 Salmon*		
°	118 Trout*	$	103 Plains killifish[6]
	119 Trout/salmon*	@	106 Mosquitofish
# °	120 Rainbow trout - golden trout hybrid	@	108 Sailfin molly
$ °	121 Upper Missouri cutthroat trout (pure)	@	109 Shortfin molly
$ °	122 Native rainbow trout	@	112 Variable platyfish
# °	123 Cutthroat trout - golden trout hybrid	@	115 Green swordtail
# °	124 Brook trout - bull trout hybrid	$	071 Brook stickleback
@	125 Cisco		
#	126 Atlantic Salmon[1]	#	072 White bass
#	099 Rainbow smelt	#	017 Largemouth bass
		#	018 Bass*
# +	023 Northern pike[3]	#	019 Sunfish*
		#	021 Crappie*
$	029 Peamouth	# +	073 Smallmouth bass
@	030 Goldfish	#	074 Bluegill
@	032 Common carp	#	075 Pumpkinseed
$	033 Northern squawfish	#	076 Green sunfish
@	035 Utah chub	#	077 Black crappie
	037 Minnow*	#	078 White crappie
$	039 Longnose dace	#	079 Rock bass
$	041 Northern redbelly/finescale dace*		
$	042 Brassy minnow	#	020 Yellow perch
$	043 W. silvery/plains minnow*	+	022 Sauger/walleye*
$	044 Flathead chub	$ +	081 Sauger
$	045 Lake chub	# +	082 Walleye
$	046 Sturgeon chub	$	083 Iowa darter
$	047 Emerald shiner		
$	048 Sand shiner	$	036 Freshwater drum
$	049 Redside shiner		
$	050 Creek chub	$	016 Sculpin*
$	051 Pearl dace	$	130 Mottled sculpin
$	052 Fathead minnow	$	131 Slimy sculpin
@	053 Golden shiner[4]	$	132 Torrent sculpin
$	054 Sicklefin chub	$	133 Shorthead sculpin
		$	134 Spoonhead sculpin

Codes:

° Trout species or hybrid
Nonnative game or sport fish
+ Class A nontrout game or sport fish for streams
$ Native fish, i.e. indigenous
@ Nonnative nonsport fish
* Undesignated as to species or strain

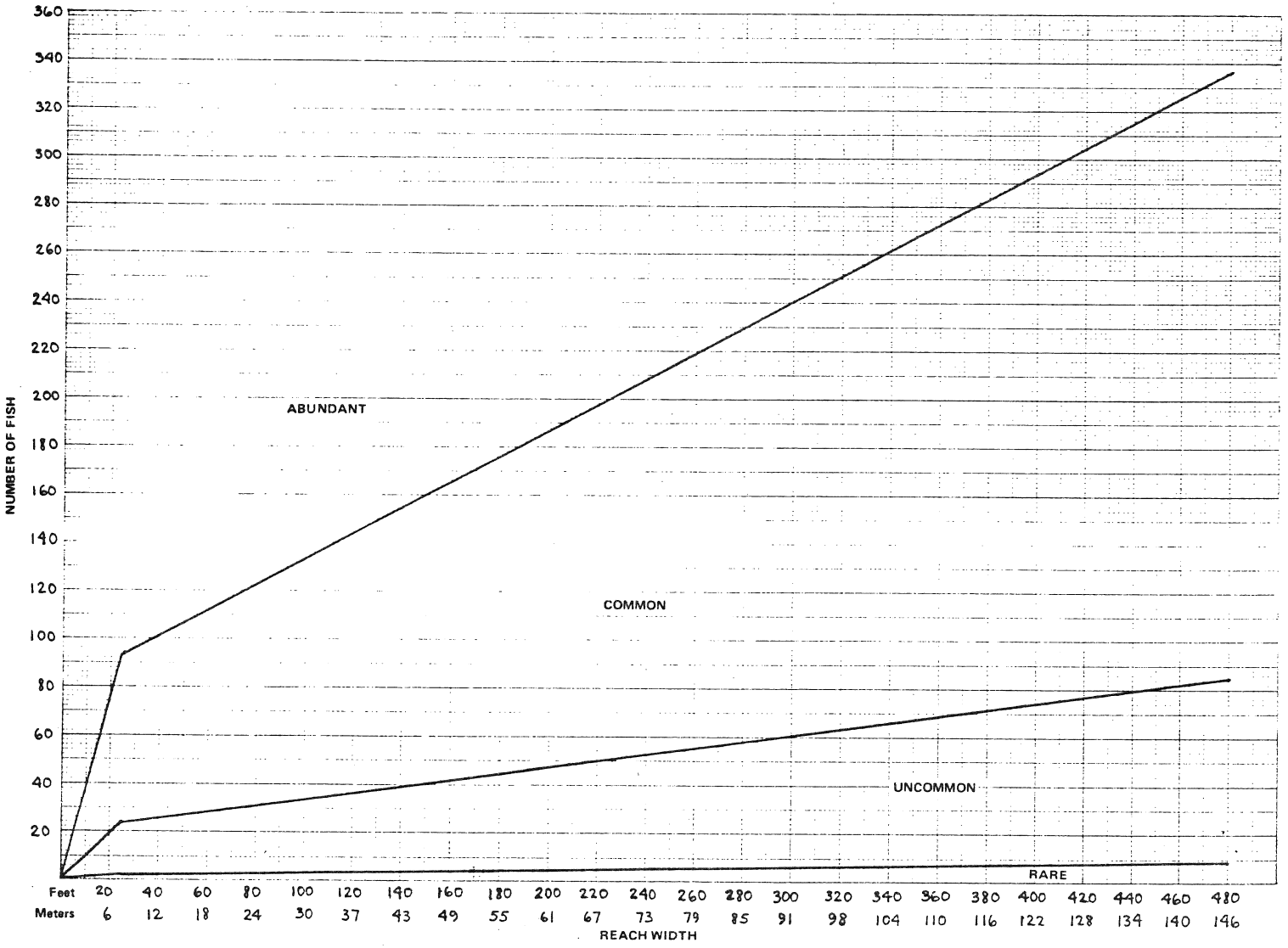
300/19

NOTES PERTAINING TO MONTANA FISHES

1/ Present when planted
2/ May be native in St. Mary's Lake
3/ Native only in Saskatchewan River drainage
4/ May be native in eastern Montana
5/ Expected but not verified
6/ Probably native

300/19

FIGURE 1. FISH ABUNDANCE - FISH PER 300 METERS (APPROX. 1,000 FEET)



STREAM CLASSIFICATION DETAILS (see "Procedure for Classifying Montana Streams")

Stream name: CLARK FORK — FWP region 1 — Code: 05-1440 — Reach: 002
Upper reach boundary: T19NR25W34BCB — MOUTH OF FLATHEAD RIVER — Serial: A71
Lower reach boundary: T21NR28W17DCB — THOMPSON FALLS DAM — FS dist: 16-05
Length (km): 51.5 — Hydrologic unit: 17010213
County at lower reach boundary: SANDERS
Tributary to: COLUMBIA RIVER

* *

HABITAT & SPECIES VALUE

STANDARD	SPECIES	ABUN.	USE	POINTS
VIB	LARGEMOUTH BASS	U	L	.2
VIA	NORTHERN PIKE	D	LZ	.4
V	LARGESCALE SUCKR	A	R	.4
V	LONGNOSE SUCKER	A	R	.4
V	N.SQUAWFISH	A	R	.4
VIB	DOLLY VARDEN	V	C	.2
VIB	YELLOW PERCH	U	L	.2
V	PEAMOUTH	A	R	.4
VIB	PUMPKINSEED	U	Z	.2
VIA	MT.WHITEFISH	C	R	.2
VIB	RAINBOW TROUT	U	R	.2
VIB	CUTTHROAT TROUT	U	L	.2
VIB	BROWN TROUT	U	L	.2

Total 3.6
Habitat & species value class 4

* *

SPORT FISHERY POTENTIAL

COMPONENT			GRADE	MULTIPLIER	SCORE
I	FISH ABUNDANCE (species above)				
	Trout, 40.10kg/300m, points	: 6.5			
	Montrout points	: 1.0			
	Total points	: 7.5	3	2	6
	(Large-sized trout present)		2	1	2
II	INGRESS RATING: 4		1	1	1
III	ESTHETICS RATING: D		3	1	3
IV	USE-fmd/10km: 941.0 ,OVERALL: 4846.1			Total	12

Sport fishery potential class 3

* *

FISHERY RESOURCE VALUE CLASS 3

EXAMPLE OF DATA PRINTOUT - A stream classification detail sheet such as this can be prepared for each stream reach.

This listing coincides exactly with the 1980 Stream Evaluation Map but in addition shows the rating given each stream reach for 1) sport fishing value and 2) habitat and species value. The colors on the map show only the fisheries resource values (the combined rating).

April 15, 1980

MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS
STREAM FISHERY EVALUATION - STREAMS IN ALPHABETICAL ORDER

RV = FISHERY RESOURCE VALUE, SF = SPORT FISHERY POTENTIAL, HS = HABITAT & SPECIES VALUE (1 = HIGH, 5 = LOW)

SERIAL	REG-DRAINAGE-WATER-REACH	CO.	WATER NAME	UPPER REACH BOUNDARY	LOWER REACH BOUNDARY-T,R&SEC	TRIBUTARY TO	LENGTH (KM)	RV	SF	HS
A67	1-08-0020-000	29	ABBOTT CREEK	SOURCE	/MOUTH	-30N19W05 FLATHEAD RIVER	9.7	4	4	4
442	3-22-0014-001	67	ADAIR CREEK	BONHOMN RANCH CROSS	/MOUTH	-01S10E09 SHIELDS RIVER	6.0	3	4	3
A59	1-08-0060-000	29	ADDITION CREEK	SOURCE	/MOUTH	-25N15W20 SO.FK. FLATHEAD R.	8.0	3	4	3
A0Z	1-07-0020-000	29	ADVENT CREEK	SOURCE	/MOUTH	-33N25W34 SUNDAY CR.	4.8	4	4	4
A6V	1-08-0080-000	29	AENEAS CREEK	SOURCE	/MOUTH	-27N18W01 GRAVES CR.	9.7	3	4	3
065	5-22-6804-195	95	AFTERBAY CREEK	HEADWATERS	/MOUTH	-07S16E02 WEST ROSEBUD CREEK	2.6	4	4	4
AE8	4-20-0050-000	49	AHORN CREEK	FORKS	/MOUTH	-21N11W17 WEST FORK SUN RIVER	4.8	4	4	4
335	4-18-0060-001	59	ALABAUGH CREEK	GRANDE RANCH	/MOUTH	-08N09E36 S FK MUSSELSHELL R	5.2	4	4	4
AKE	3-01-9110-001	1	ALBERS SLOUGH	DRUMMY DITCH NO. 2	/MOUTH	-05S07W20 BEAVERHEAD RIVER	19.3	3	4	3
A2P	1-05-0048-000	89	ALDER CREEK	SOURCE	/MOUTH	-23N25W35 LITTLE THOMPSON R	8.0	4	4	4
A1B	1-07-0060-000	29	ALDER CREEK	SOURCE	/MOUTH	-31N25W11 GOOD CR.	9.7	4	4	4
AUM	2-06-0038-200	39	ALDER CREEK	HEADWATERS	/MOUTH	-08N17W06 ROCK CREEK	9.7	4	4	4
AGX	3-02-0075-000	1	ALDER CREEK	HEADWATERS	/MOUTH	-01N11W19 BIG HOLE RIVER	11.4	4	4	4
896	3-01-0040-002	57	ALDER GULCH CREEK	VIRGINIA CITY	/WILLIAMS DITCH	-06S04W14 RUBY RIVER	17.9	4	4	4
443	3-22-0021-000	67	ALDRIDGE CREEK	HEADWATERS	/MOUTH	-08S07E36 MOL HERON CREEK	2.4	4	4	4
AFR	2-04-0030-001	49	ALICE CREEK	BEAR CREEK	/MOUTH	-15N07W34 BLACKFOOT RIVER	11.9	3	3	4
ABA	6-15-0030-001	71	ALKALI CREEK	CONFLU.WITH W.ALKALI	/MOUTH	-30N29E22 MILK RIVER	32.0	4	5	4
AUN	2-06-0076-200	63	ALLEN CREEK	HEADWATERS	/MOUTH	-12N17W18 CLARK FORK	6.4	4	4	4
ALH	5-18-0120-000	107	AMERICAN FK MUSSELSHELL R	SOURCE	/MOUTH	-08N16E33 MUSSELSHELL RIVER	51.2	4	4	4
444	3-22-0056-001	67	ANDERSON CREEK	HEADWATERS	/MOUTH	-06S10E34 MILL CREEK	2.6	2	4	2
AHH	3-02-0125-001	1	ANDRUS CREEK	THAYER CREEK	/MOUTH	-07S14W06 GOVERNOR CREEK	12.2	4	4	4
445	3-22-0084-000	67	ANTELOPE CREEK	HEADWATERS	/MOUTH	-02N09E16 SHIELDS RIVER	12.9	4	5	4
A74	6-15-0060-001	105	ANTELOPE CREEK	HARDSCRABBLE CR CONF	/MOUTH	-29N38E23 MILK RIVER	20.8	4	5	4
AKY	3-01-0135-001	1	ANTELOPE FLAT CREEK	SPRING	/MOUTH	-13S08W03 SAGE CREEK	1.6	4	4	4
A7Q	1-07-0100-000	29	ANTICE CREEK	SOURCE	/MOUTH	-33N23W14 SWIFT CR.	6.4	4	4	4
446	3-22-0133-000	67	AREA CREEK	HEADWATERS	/MOUTH	-02S08E13 BILLMAN CREEK	8.0	4	4	4
BAN	4-16-0120-601	27	ARMELL'S CREEK	8 MI ABOVE MOUTH	/MOUTH	-21N24E06 MISSOURI RIVER	12.9	4	4	4
049	5-22-0138-000	9	ARMSTRONG CREEK	2KM ABV E ROSEBUD LK	/MOUTH	-07S17E21 E ROSEBUD LAKE	2.0	4	4	4
AGF	3-22-0140-001	67	ARMSTRONG SPRING CREEK	DEPUY'S DIVERSION DA	/ORIGINAL MOUTH	-03S09E23 YELLOWSTONE RIVER	.5	2	4	2
447	3-22-0140-002	67	ARMSTRONG SPRING CREEK	ORIGIN	/DEPUY'S DAM	-03S09E23 YELLOWSTONE RIVER	1.1	1	3	1
AFV	2-04-0150-001	77	ARRASTRA CREEK	NATL FOREST BOUNDARY	/MOUTH	-14N10W30 BLACKFOOT RIVER	7.2	3	4	3
AFZ	2-04-0150-002	77	ARRASTRA CREEK	USFS ROAD 4106	/NATL FOREST BOUNDARY	-15N10W33 BLACKFOOT RIVER	5.1	3	4	3
346	4-16-0140-002	45	ARROW CREEK	NEAR UPPER END	/N E GEYSER	-18N10E24 MISSOURI RIVER	15.3	4	4	4
BQM	1-07-0140-001	29	ASHLEY CREEK	AIRPORT ROAD	/MOUTH	-28N21W25 FLATHEAD RIVER	27.7	3	4	3

EXAMPLE OF DATA PRINTOUT

Wildlife

PACIFIC NORTHWEST RIVERS STUDY

Method for Assessing the Significance of River Segments and Systems for Wildlife Resources in Montana

LEAD AGENCY

Montana Department of Fish, Wildlife and Parks

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INTRODUCTION

The Pacific Northwest Rivers Study was initiated to assess the significance of river segments and systems for a variety of fish, wildlife, natural, recreational, and cultural resource values. The Montana Department of Fish, Wildlife and Parks has been designated to take the lead in assessing the value of rivers for Wildlife in the state of Montana.

This report summarizes the method which will be used to complete this assessment. The wildlife task force has reviewed the Rivers Study Manual and proposes the following value classes, criteria and standards. Value classes are the categories of resource significance. Criteria are the attributes that will be considered to determine value classes. Standards are the specific characteristics, associated with each criteria, that will be evaluated. The Methods Section describes the questionnaire resource managers will complete during the inventory process.

CATEGORY DESCRIPTION

Two categories will be evaluated to determine the value class of each river segment. These are:

1. Habitat and species value of the stream reach.
2. Recreation value of each stream reach.

A value class will be determined for each category; the higher value will be assigned to the river segment. Generally, the value class will be determined by Category 1. Evaluation of Category 2 provides an opportunity to include recreation information in the data inventory, identify river segments that are noteworthy for their recreation value, and to integrate the wildlife valuation with the recreational valuation.

VALUE CLASSES

Each river reach in Montana will be assigned to one of the following five value classes to denote its value for wildlife:

1 - Outstanding wildlife resource
2 - Substantial high wildlife resource
3 - Moderate wildlife resource
4 - Limited wildlife resource
5 - Unclassified wildlife resource

STANDARDS AND CRITERIA

Category 1: Habitat and Species Value

The value class for Category 1 will be based on habitat quality and the relative importance of the wildlife species associated with each river segment (Table 1). All available habitat and species information will be compiled but the evaluation will feature the combination of habitat and species that determines the highest value class for each river segment.

Table 1. Proposed value classes of river segments, as determined from habitat and species value.

	Species of		
Habitat of ...	High Concern	Intermediate Concern	Low Concern
High Quality	1	2	3
Intermediate Quality	2	3	4
Low Quality	3	4	4

Species of high concern shall include:

1. Species listed or proposed for listing as threatened or endangered.
2. Vertebrate species of special interest or concern, as designated by MDFWP.
3. Big game animals of regional importance including:
   - Mule Deer - Odocoilcus hemionius
   - White-tailed Deer - Odocoileus virginianus
   - Rocky Mountain Elk - Cervus elaphus
   - Moose - Alces alces shirasi
   - Bighorn Sheep - Ovis canadensis
   - Mountain Goat - Oreamnos americana
   - Black Bear - Ursus americana
4. River Otter - Lutra canadensis
5. Merriam's Turkey - Melragis gallopavo mirriami
6. Harlequin Duck - Histrionicus histrionicus

Species of intermediate interest shall include:

1. All other game animals, game birds, furbearers.
2. Species, associated with riparian habitats, that have been identified by the Forest service as indicators (except for those included above), including non-game species of moderate significance.

3. Birds of high federal interest in the Coal Program, particularly those limited to riparian habitat and of broad distribution.

Species of low concern shall include all other Montana species, that usually are associated with riparian habitats, for which interest is sufficient to warrant consideration in this analysis.

High quality habitats are in excellent condition and may contain:

1. Communities of special concern, which shall include river islands, well developed riparian vegetation, old-growth cottonwood bottoms, old-growth coniferous bottoms, ox-bow sloughs.
2. Communities with high diversity, both vegetation and wildlife.

Intermediate quality habitats are:

1. Habitats that show evidence of man-caused disturbance but still retain obvious values as wildlife habitat.
2. Habitats in relatively good condition which do not satisfy the additional standards for high quality habitats.

Low quality habitats are those which show evidence of major, man-caused disturbance, and limited opportunity for vegetative rehabilitation.

Category 2: Recreation Value

For consumptive wildlife recreation, the analyses will be based on hunting/trapping efforts (days) and harvest rates (per mi^2) for hunting districts in which river segment or basin lies. These values will then be qualitatively modified for the particular drainage being evaluated.

To obtain a nonconsumptive wildlife values, the overall levels and types of uses, scientific and educational values and aesthetics will be evaluated. All rivers and basins will be evaluated for both types of recreational value.

Table 2. Proposed value classes of river segments, as determined from recreation value.

Wildlife Use Potential	Recreation Use		
	High	Intermediate	Low
High	1	1	2
Intermediate	2	3	4
Low	3	4	4

EXCEPTIONS

The following situations will result in an automatic assignment to Value Class 1 or Class 2.

1. Lands and interests of the National Wildlife Refuge system, National Fish Hatcheries, Wildlife management

areas, and Nature Conservancy Areas. These areas may be down graded, as evaluated on a case by case basis, following consultation with and the consent of the appropriate management entity.

METHODS

This section describes in detail how habitat/species value and recreational value will be measured. It is written as instructions to managers who will complete the attached answer sheet. Except for the automatic classification below, rivers or basins will be assigned the highest classification of the two major criteria: 1) Habitat/Species Value and 2) Recreational Value.

I. AUTOMATIC CLASS 1: If river or basin contains any of the following designations, it automatically will be classes as 1, Outstanding. However, all other questions must still be answered. Circle letter(s) on Answer Sheet.

a) Proposed Wilderness Areas (As listed in USFS or BLM recommendation or Alternative "W" by conservation organizations.
b) Wild and Scenic River Corridors
c) National Wildlife Refuges
d) National Fish Hatcheries
e) Wildlife Management Areas
f) Waterfowl Production Areas
g) Nature Conservancy Areas
h) Conservation Easements for habitat/wildlife protection purpose
i) Outstanding Natural Areas (BLM)

II. HABITAT/SPECIES VALUE: Results of both Habitat and Species evaluations will be used to come up with an overall value. Points will be assigned and classifications determined as this process continues.

A. Habitat Quality:
The term quality refers to both the integrity and condition of the riparian (flood plain) zone (regardless of water course size) and the presence of valuable wildlife/habitat characteristics described below:

1. Conditions of riparian zone: (choose best answer)
a. High Riparian zone is excellent condition; minimally impacted by land uses such as roads, agriculture grazing, subdivisions; riparian zone retains nearly all of its natural vegetation characteristics and wildlife values.
b. Moderate Riparian zone has been moderately impacted by land uses (as above) but retains significant amount of inherent natural vegetation characteristics and wildlife values; impacted areas have potential to be rehabilited;

c. Low Riparian zone highly impacted by land uses such that only remnant patches or blocks of natural vegetation exist; only limited opportunity exists for vegetative rehabilitation.

2. Forested: (select best answer)
   a. High Numerous large tracts (> 150 ac) or continuous bordering (> 30 ft wide) of mature deciduous or coniferous forest (e.g. gallery forests);
   b. Moderate occasional large tracts (< 150 ac) or intermittant bordering (< 30 ft) of mature deciduous or coniferous forest;
   c. Low Little or no forest development along riparian zone.

3. Wetlands: (select best answer)
   a. Oxbow lakes, sloughs, backwater areas or other significant wetland types common along water course (characteristic of large meandering rivers).
   b. Occasional Oxbow lakes, ponds, sloughs, backwater areas, or seeps.
   c. Few to no significant wetland areas associated with water course(s).

4. Islands: (select best answer)
   a. Many (characteristic of braided rivers/streams);
   b. Occasional to several islands;
   c. Few to no islands.

5. Vegetative Structure/Diversity: (select best answer)
   a. Riparian zone vegetation well-developed and characterized by a wide variety of vegetation types and structural types appropriate for its size and configuration;
   b. Riparian zone less well-developed due to land uses or natural characteristics; has moderate variety of vegetation and structural types;
   c. Riparian zone dominated by few to one major vegetation type (e.g. crops, pastime, range) or is unvegetated (urban, industrial situations).

B. Species Quality:

1. Does the river segment or basin contain habitat potentially important for the recovery of any of the following Threatened or Endangered species?
   a) Grizzly bear (Mgt. situations 1,2)
   b) Wolf (Recovery areas)
   c) Bald Eagle (existing and potential nesting, wintering, key migration corridors)

d) Whooping Crane
e) Peregrine Falcon (historic, potential nesting)

2. For any designated and mapped wildlife seasonal concentration areas (by MDFWP, BLM, USFS, USFWS) which occur along the river or basin (greater than 10% of length or basin area), indicate type of use and Importance Value (I.V.) using definitions listed below.

Importance Values

3 = "critical" - used during most severe winters; high concentrations of animals; highly important or essential for large populations;

2 = species uses area during moderate winters; relatively important for large population; area of moderate animal concentrations;

1 = has some value to species on seasonal basis, but is not essential;

0 or blank = little or no value exists for this species.

3. Rank the overall habitat suitability (H.S.) for the river or basin for the following species using definitions below:

Habitat Suitability:

3 = Excellent - river or basin has potential to support high density or numbers of the particular species relative to other habitats in Montana; classic habitat for this species in Montana;

2 = Moderate - river or basin supports moderate density or numbers of this species, but better habitat can be found elsewhere in Montana;

1 = Low - river or basin supports low density or number of this species; habitat may be patchy or marginal;

0 or blank - No suitable habitat exists for this species along river or in basin.

4. Does river segment or basin contain any of the following specialized wildlife use areas? Circle letter on Answer Sheet. Locate on 1:100,000 maps, if possible:

a) Waterfowl staging areas, low level feeding flight paths, "prime wetlands" as described by USFWS or MDFWP.

b) Warm/hot springs open in winter and used by winter/migrating waterfowl species;

c) High gradient streams supporting breeding harlequin ducks or amphibians of special concern (Pacific giant salamander, C'oeur d"Alene salamander, Rough skinned new, tailed frog);

d) Sloughs, backwater areas supporting reptiles of special concern (spiny softshell, snapping turtle);
e) Riparian areas supporting colonies (> 5 pairs) of double-crested cormorants, greant blue herons, American white pelican;
f) Large nesting osprey population area (> 1 active nest per river mile long minimum 5 rivers miles);
g) Cliffs occupied or suitable for nesting golden eagles;
h) Other (write in)._____
i) None of the above.

III. RECREATIONAL VALUE: The recreational value considers both consumptive (hunting/trapping) uses and nonconsumptive (bird watching, photography etc.) uses of the wildlife/habitat resource.

A. Consumptive:

For the river segment or basin being evaluated, select the top species (no more than 3) that are probably most sought after. Consider the habitat and general harvest characteristics for the hunting districts as a whole. Put species abbreviation (Appendix A) in column 1.

In column 2, put 1 or 2 hunting districts (h.d.'s) or County appropriate for that species selected. For a river or basin in more than 1 h.d., estimate the % of the h.d. in each (e.g. 50/50, 70/30) and put in column 3 next to the h.d. #. Finally, give a relative rating (H,M.L) for the overall hunting effort that occurs along that river or basin relative to the rest of the h.d. or county in which the river/basin lies. The remaining columns will be filled out later.

B. Nonconsumptive:

1. Wildlife/habitat-oriented uses.

Rate the type and level of Wildlife/habitat-oriented uses which occur along river segment or basin using criteria below. Wildlife/habitat-oriented uses include but are not limited to: bird watching; roadside wildlife watching; collecting/identifying wildflowers, reptiles, amphibians, insects; wildlife/nature photography, artistry, etc.

4 - Area attracts users or visitors from all over the country; relatively high level of use; species or habitats accessible or visible and/or relatively uncommon on national basis.

3 - Area attracts visitors statewide; moderate level of use.

2 - Area attracts visitors from region, or multi-county area. May be significantly used.

1 - Area attracts primarily local people.

U - Unknown.

2. Scientific/Educational Value

Rate the value of the wildlife/habitat resources for scientific, research and educational values using criteria below.

4 - Area contains relict or disjunct plant or animal communities (e.g. bogs) or pristine natural vegetation types or species that are rare or threatened. Plants and/or animals associated with area are highly unusual - not typically found in state. Has highest scientific/education value - nationally significant.

3 - Type localities for other plant or animal species, for forest or range habitat types; near pristine vegetation sites.

2 - Other areas with important educational value including areas frequently visited by school groups.

1 - Study areas for longterm biological or ecological value.

U - Unknown.

IV. Aesthetics: Most of Montana's rivers and streams have been evaluated for aesthetics by Fisheries personnel. You need to complete this part if no aesthetic value was assigned to your basin already.

Fish Classification

A. A water of outstanding natural beauty in a pristine setting.
B. A water comparable to A except that it may lack pristine characteristics. Presence of human development such as roads, farms, etc., usually comprise the difference between B and A.
C. A water with natural beauty but of a more common type than listed under A and B. A clean stream in an attractive setting.
D. A stream and area with fair aesthetic qualities.
E. A stream with low aesthetic qualities.

EVALUATION PROCESS

MDFWP is the agency with primary responsibility for compiling the existing information, to complete the wildlife evaluation for the Montana rivers assessment. Information will be collected by examining files of the participating agencies and consulting with agency planners, knowledgeable personnel within the agencies, and concerned individuals affiliated with appropriate private organizations.

The Wildlife Task Force is responsible for defining value classes, criteria and standards and providing guidance to MDFWP concerning collection and evaluation of wildlife information according to the criteria and standards. Wildlife Task Force members also will encourage others in their respective agencies to assist with the compilation of wildlife information.

The immediate objective is to successfully complete the Montana Wildlife Assessment in accordance with the Pacific Northwest Rivers Study, as directed by the Pacific Northwest Power Planning Council. However, it is recognized that the wildlife assessment has utility for the participating agencies beyond the scope of this study. Accordingly, information will be collected in a manner that is responsive to other potential applications of this assessment and in a manner that will accommodate new and more detailed information.

DATA FORM ENTRIES - see attached data sheet.

ph
804/4

APPENDIX A

THREATENED/ENDANGERED

Code Name	Species
!GB	Grizzly bear (U. arctos horribilus)
!WF	Rocky mountain timber wolf (Canus lupus)
!BE	Bald eagle (Haliaetus leurocephalus)
!PF	Peregrine Falcon (Falco peregrinus)
!a WC	Whooping crane (Grus americana)

Primary Species of Concern

Wt	White-tailed deer
Md	Mule deer
Ek	Elk
An	Antelope
Bh	Bighorn sheep
Ml	Mountain lion
Bc	Bobcat
Lx	Lynx
Mt	Marten
Mn	Mink
Bv	Beaver
Ro	River Otter
Tu	Turkey
St	Sharp-tailed grouse
Sg	Sage grouse
Rg	Roughed grouse
Ph	Pheasant
Cg	Canada goose
Wf	Waterfowl

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RIVERS ASSESSMENT - WILDLIFE
Cover Sheet

1. I.D. #. _____

2. Region: _____

3. Date: _____

4. Evaluators Last Names: _____

5. River Mile Index: CF MI YL (Circle One)

6: H.U. Code: _____

7. H.U. Name: _____

8. Trib. To: _____

9. Water Code: (leave blank) _____

10.	River/segments/streams Included				Portion				
	Water Code			Name	A	N	Lower	Upper	Comments
	dr.	#	Seg.						
01.									
02.									
03.									
04.									
05.									
06.									
07.									
08.									
09.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									

SPECIES

Habitat	H	M	L	U
H	1	2	3	2
M	2	3	4	3
L	3	4	4	4
U	2	3	4	U

Final Value

REC. USE

rec. qual.	H	M	L	U
H	1	2	3	2
M	2	3	4	3
L	3	4	4	4
U	2	3	4	U

COVER SHEET
INSTRUCTIONS

* 1) I.D. (serial #) is assigned.

2) Give MDFWP Region #.

* 3) Today's date.

* 4) Your last names.

5) Circle appropriate River Mile Index in which you are working (CF=Clark Fork; MI=Missouri; YL=Yellowstone).

* 6) Hydrologic Unit Code: see map or number in your R.M. Index.

7) Hydrologic Unit Name: Name of major stream/river upon which unit is based.

8) Give the Name of the river/stream into which the above stream flows (e.g. Yellowstone).

9) Water Code for above (leave blank)

*10) Rivers/streams/segments included in the evaluation. List Names of streams or basins included in the assessment. For tributaries to a stream, list stream name first regardless of whether the stream itself is being evaluated. Then follow it with tribuatry names. If the majro stream is not being evaluated, check "None". Use other columns to describe any "portions" by River Mile and/or by a physical location described in "Comments" (e.g. from FS boundary to headwaters). If all tributaries upstream of a stream or tributary name are included (as well as the stream itself), you need not name them individually, just check "all". You can leave first 2 "Code" columns blank.

11), 12), Final Habitat/species and Recreational Values (leave blank).

* Please complete these parts.

I.D. #. _____

RIVERS ASSESSMENT
WILDLIFE

Answer Sheet

I. **Automatic Class 1:** (circle any that apply) a b c d e f g h i j

II. **Habitat/Species Value:**

A. Habitat Quality: (circle the letter for the most appropriate answer)

1. Condition: a. high b. moderate c. low
2. Forested: a. high b. moderate c. low
3. Wetlands: a. high b. moderate c. low
4. Islands: a. high b. moderate c. low
5. Veg. Diversity: a. high b. moderate c. low

B. Species Quality:

1. T and E: a. GB b. WF c. BE d. WC e. PG f. None

2. Designated seasonal or year-round seasonal concentration areas:

	Big game Species	Type Range[a]	I.V. see Questionnaire	Points (leave blank)
a	Wt			
b	Md			
c	Ek			
d	An			
e	Bh			
f	Mo			
g	Bb			
h	Ml			
i	St			
j	Sg			

3. Habitat suitability (H.S.) for other game species

	Species	H.S.	Points (leave blank)
h	Ro		
i	By		
j	Bc		
k	Lx		
l	Mt		
m	Tu		
n	Rg		
o	Ph		
p	Cg		

a> Type Range:
wi=winter; su=summer; sp=spring; fa=fall; yr=year round, resident

---

4. Other specialized wildlife use areas:
(Circle those that apply) a b c d e f g h i

I.D. #. _____

III. **Recreation Value:**

A. Hunting/Trapping: Effort and harvest key species

	Species	H.D.	% in District	Relative Rating	Days	Harvest		
a								
b								
c								

B. Nonconsumptive (Non-hunting uses): RATING

1. Wildlife - oriented uses (4-1, U) _____
2. Educational/Scientific Value _____
3. Aesthetics (5-1) _____
   or
   Fish. a b c d e

Apppendix A. Species Codes:

Wt - White-tail
Md - Mule deer
Ek - Elk
An - Antelope
Bh - Bighorn
Mo - Moose
Bb - Black bear
Ml - Mt. lion
St - Sharp-tail
Sg - Sage grouse

Ro - River otter
Bv - Beaver
Bc - Bobcat
Lx - Lynx
Mt - Marten
Tu - Turkey
Rg - Ruffed gr.
Ph - Pheasant
Cg - Can. goose

Comments:

Natural Features

PACIFIC NORTHWEST RIVERS STUDY

Method for Assessing the Significance of River Segments and Systems for Natural Features in Montana

LEAD AGENCY

Montana Department of Natural Resources and Conservation

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INTRODUCTION

The Pacific Northwest Rivers Study was initiated in 1984 to assess the significance of river segments and systems for a variety of fish, wildlife, natural, cultural, and recreational resource values. The Montana Department of Natural Resources and Conservation has been designated to take the lead in assessing the value of rivers for natural features in the state of Montana.

This report summarizes the method which will be used to complete the natural features assessment. It identifies the value classes to which natural features will be assigned, the criteria which will be used to determine the value of natural features, the standards used to apply these criteria, and the process by which decisions will be made.

The approach to be followed in this assessment relies heavily on the compilation of existing data. New data will be generated from existing aerial photography, USGS quadrangle maps, and limited field work for selected rivers as time allows. The required products of the study will be a set of 1:100,000 maps of Montana on which known natural features are plotted, together with accompanying documentation and suggested value class ratings for each feature and for selected river reaches.

CATEGORY DESCRIPTION

Natural features include: (a) endangered and threatened plants; (b) rare or unique plant communities; (c) river-related geologic and hydrologic features, and (d) previously designated natural areas or features. Specific elements to be addressed are listed in Table 1.

VALUE CLASSES

Each natural feature will be assigned to one of the following value classes to denote its relative significance. The criteria and standards discussed below will be used to assign features to these value classes.

Table 1. Elements to be mapped.

A. Botanical Features

Stands of threatened or endangered plants (table 2)
Exemplary stands of rare or unique plant communities (including relict or disjunct communities, sphagnum bogs)
Type localities of plant species or forest habitat types
Pristine or near-pristine communities (Ross et al. 1973)

B. Geologic and Hydrologic Fetures

Waterfalls
Gorges, chutes, canyons
Rapids and whitewater reaches
Cliffs
Caves
Glacial features (including moraines, eskers, drumlins, delta kame, kame complexes, kettle ponds, ice-marginal drainages)
Oversize stream channels
Stream capture sites
Active meander complexes with large islands or island complexes, oxbow sloughs, and good representation of all stages of riparian cottonwood forest succession
Hot or warm springs
Badlands or capped sandstone formations (hoodoos)
Type localities of geological formations, soil types, fossils
Exceptional display of bedrock structural features
Paleontological sites or fossil-bearing rocks
Index fossil sites

C. Free-flowing Segments, Drainage Basins

(NOTE: this will rely on a separate map showing the locations of major river impoundments)

D. Designated Natural Features

International Biosphere Reserves (UNESCO)
Research Natural Areas (BLM, USFS)
National Natural Landmarks (existing and proposed) (NPS)
Areas of Critical Environmental Concern (BLM)
Special Interest Areas (USFS)
Research Botanical Areas (USFS, BLM)
Outstanding Natural Areas (BLM)
Natural Area Preserves (The Nature Conservancy)
State and national parks and monuments

Value Class	Definition
1	Outstanding or unique natural feature (of national or regional significance)
2	Substantial value natural feature (of statewide significance)
3	Moderate value natural feature (significant over a multi-county area)
4	Limited value natural feature (of local significance)
U	Natural feature of unknown significance

CRITERIA

The following criteria will be used to determine the value class of an individual natural feature:

A. Scarcity (from national, regional, statewide, or local perspectives)
B. Designation or listing by federal, state, local, or private agencies
C. Scientific or educational value
D. Public and recreational use

Each site identified will be separately rated based on the these four criteria. The final value class assigned to a site will be the highest rating received in any one of the four criteria. Near the end of the inventory, when most of the individual sites have been located and rated, river segments may be assigned to these same value classes based on the number and significance of the individual natural features contained. This can be done subjectively or by summing points within a reach. A decision as to which method to use will be deferred until near the end of the inventory.

STANDARDS

Criterion A: Scarcity. The value class for criterion A will be based on the overall rarity of the feature, as follows:

1. Very Rare (only a few examples worldwide, nationwide, or regionally)
2. Rare (only a few examples in Montana)
3. Scarce (several examples present in Montana but limited to a few counties)
4. Uncommon (examples present in most Montana counties)
U. Abundance unknown

Criterion B: Previous designation. Natural features which have been designated or proposed for designation by governmental or private entities will be given higher value classes within this criterion than those which have not. The higher the level of official recognition, the higher the value class, as outlined below:

1. Nationally significant designation. Includes natural features designated as national monuments, national natural landmarks, BLM or USFS natural areas, areas of critical environmental concern, research natural areas, or outstanding natural areas. Includes known stands of federally-listed threatened or endangered plant species (no plant species are currently listed for Montana), those listed as Category 1 or 2 by USFWS (Federal Register, May 22, 1984), or those proposed for endangered status by the Montana Rare Plant Project (Lesica et al. 1984) (See table 2). Includes proposed national natural landmarks of priority 1.

Table 2. Montana plant species proposed for threatened or endangered status

Species	USFWS category[1]	Lesica et al.[2]
Allium fibrillum	–	T
Amorpha canescens	–	T
Arabis fecunda	–	M
Astragalus convallarius	–	E
Astragalus plattensis	–	T
Astragalus scaphoides	–	T
Botrychium crenulatum	–	E
Botrychium montanum	–	M
Botrychium paradoxum	2	–
Calamagrostis tweedyi	2	R
Carex crawei	–	T
Carex gravida var. gravida	–	T
Carex lenticularis var. dolia (=C. plectocarpa =C. eleusinoides)	2	–
Ceanothus herbaceus var. pubescens	–	T
Cirsium longistylum	–	M
Claytonia lanceolata var. flava	2	T
Comandra livida	–	T
Cypripedium fasciculatum	–	T
Draba daviesiea	–	M
Epipactis gigantea	–	E(candidate)
Erigeron flagellaris	–	T
Erigeron lackschewitzii	–	M
Eupatorium maculatum var. bruneri	–	T
Euphorbia geyeri	–	T
Euphrasia arctica var. disjuncta	–	T
Grindelia howellii	2	E
Halenia deflexa var. deflexa	–	T
Howellia aquatilis	2	E
Lesquerella humilis	–	M
Lesquerella klausii	–	M
Mertensia bella	–	T
Ophioglossum vulgatum	–	T
Orchis rotundifolia	–	T
Oxytropis campestris var. columbiana	–	T
Panicum oligosanthes	–	T
Penstemon lemhiensis	2	T
Phlox missoulensis	–	M
Saussurea weberi	3C	T
Saxifraga tempestiva	–	M
Shoshonea pulvinata	–	E(candidate)
Silene spaldingii	2	T
Synthris canbyi	–	M
Tiarella trifoliata var. trifoliata	–	T

[1]Federal Register, November 28, 1983
[2]E = endangered, T = threatened, R = rare, M = strict Montana endemic

2. Designation significant statewide. Includes natural features designated as state parks, monuments, recreation areas, or natural areas. Includes known stands of plant species proposed for threatened status by the Montana Rare Plant Project. Includes Nature Conservancy natural area preserves and proposed national natural landmarks of priority 2.

3. Locally significant designation. Includes natural features designated as county or municipal monuments, parks, recreation areas, or natural areas. Includes known stands of rare plants listed by the Montana Rare Plant Project. Includes proposed national natural landmarks of priority 3.

4. Not designated. Includes proposed national natural landmarks of priority 4 or lower.

U. Unknown designation.

Criterion C. Scientific reference or educational value. Sites will be rated based on their value for scientific reference or study or for educational purposes, as follows:

1. Exemplary or "textbook" examples of rare or unusual plant communities, disjunct or relict communities, pristine natural vegetation types that are rare or threatened, geological formations or features, or fossil assemblages; type localities for rare, threatened or endangered plants as listed by USFWS or the Montana Rare Plant Project (table 1), type localities for geological formations or fossils.

2. Type localities for other plant species, for forest habitat types, or soil series; near-pristine vegetation sites (Ross et al. 1973).

3. Other areas with important educational value, including areas frequently visited by school groups

4. Study areas for long-term botanical or hydrological studies

U. Unknown scientific or educational value

Criterion D. Public and Recreational Use. Sites will be rated based on the existing type and level of public and recreational use, as follows:

1. National Attraction. Feature attracts visitors nationwide as a primary objective; very high overall level of use; shown on most state highway maps.

2. Statewide Attraction. Feature attracts visitors statewide as a primary objective; high overall level of use.

3. Multi-county Attraction. Feature attracts visitors from a multi-county area; moderate overall level of use.

4. Local Attraction. Feature attracts primarily attracts local visitors (those living within the county or a few adjacent counties).

U. Unknown level of use.

EVALUATION PROCESS

Approach

This study will be conducted with three end products in mind: (a) a map showing the location of identified natural features; (b) a tabular summary of the features identified, by river basin; and (c) documentation of the value classes assigned to each feature. Unlike some of the other resource inventories conducted as part of the Montana Rivers Study (e.g., fisheries), this study will not rely initially on the designation of river reaches or segments. Individual sites will be plotted on the map and assigned to a value class, so that the occurrence of sites within any arbitrarily designated river reach or segment can be determined. Near the end of the study, river segments may be assigned to value classes based on the number and value class ratings of the natural features they contain.

The study will rely on existing data and expertise within the cooperating agencies to the greatest extent possible. Existing data bases will be searched before any field inspections are made. Field inspection will be limited to sites or areas which are believed to have outstanding value natural features which have not been adequately studied.

Inventory effort will concentrate on sites meeting the criteria for value classes 1 and 2. An effort will be made to catalogue 90-100% of these features of statewide or national importance. The study will probably identify only 10-40% of the value class 3 and 4 features.

An advisory committee has been assembled to guide the study. Members and affiliations are listed in Appendix A.

As the study progresses, an attempt will be made to refine the criteria and standards. For example, it may be possible to specify a height to width ratio for gorges allowing objective assignment to a value class based on measurements.

Limitations

While every effort will be made to identify all or nearly all Montana natural features of value classes 1 and 2, it should be emphasized that this is a preliminary and low-intensity reconnaissance rather than an exhaustive inventory. River reaches in which no high-value natural features are identified during this study may be found during more detailed study to contain much of value.

Mapping and Tabulation Methods

As sites are located, they will be plotted on a set of 1:100,000 USGS topographic maps using colored signal dots: green for botanical resources, and red for geological or hydrological features. Each site will be given a unique number which will be lettered on the appropriate signal dot. Numbers will correspond to an information sheet that will be completed for each site (see Appendix B).

Dams and reservoirs will be plotted on a separate 1:1,000,000 map of Montana in order to allow determination of free-flowing reaches. All drainage area in the state upstream from a major impoundment will be indicated on the map.

A reliability diagram, showing the relative intensity of study effort and reliability of data, will accompany the inventory map.

Sites will be rated by project staff as they are identified. At the completion of the mapping effort the ratings of all sites identified will be reviewed and modified as needed based on the findings of the study. Finally, the cooperating agency contacts and technical advisors will be given an opportunity to review the ratings and suggest changes.

At the conclusion of the mapping and rating effort, all sites will be tabulated in a form similar to that shown in Appendix B. Data to be included for each site will include: (a) Name; (b) Description (will be taken from list in Table 1); (c) Designation (if any); (d) County; (e) Quadrangle map where located; and (f) assigned value class for each of the four criteria.

Tasks

Task 1. Telephone interviews with agency and resource people. This will involve interviews with knowledgable people in (a) each USFS regional office; (b) each BLM district office; (c) MSU and UM; (d) state resource agencies. Will include inventory of designated natural areas (Research Natural Areas, Areas of Critical Environmental Concern, etc.)

Task 2. Compile existing data

a) Search National Natural Landmarks reports, geological and ecological themes

b) Search NCIC and USGS place names indices for key words (e.g., island, falls, gorge, slough)

c) Contact Museum of the Rockies and other sources for locations of key fossil sites

d) Search University herbaria and Nature Conservancy files for rare plants and communities (subcontract)

e) Search DFWP stream index for significant natural features

f) Search DNRC geothermal/hot springs files

Task 3. Search USGS quads and/or available aerial photographs; verify sites identified during search of existing data; gather additional descriptive data on sites

Task 4. Tabulate data, prepare final maps

Task 5. Limited field investigation of questioned sites

Task 6. Assignment of sites to value classes based on standards listed above. Four separate ratings will be given to each site, one for each of the four criteria. The ultimate rating to be given a site will be the highest rating assigned for any of these four criteria.

Task 7. Identification of areas where further investigation is likely to reveal presently-unknown natural features of importance.

APPENDIX A
AGENCY CONTACTS

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Personal and Agency Contacts

- USFS regional offices
- BLM district offices
- DFWP regional headquarters
- NPS
- University herbaria
- Montana Rare Plant Project
- The Nature Conservancy
- DNRC geothermal
- Stewart Allen (whitewater rapids)
- Flathead River Basin Commission
- Clark Fork River Basin Commission
- Doug Melton, Dept. of Anthropology, U of M (paleontological sites)
- Elaine Howard, Montana Power Company (paleontological sites)
- Montana Historical Society

Other Sources

- USGS quadrangle maps
- USFWS color IR stereo photography of the Yellowstone River (confluence to Gardiner) and Missouri River (below Fort Peck)
- DNRC black-and-white photography of Marias, Missouri Rivers

Cultural Features

LEAD AGENCY:

State of Montana

SENIOR RESOURCE EXPERT AND STAFF:

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COOPERATING RESOURCE EXPERTS:

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Regional Archaeologist
United States Department of Agriculture
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Missoula, Montana

INTRODUCTION:

The Pacific Northwest Rivers Study was initiated to assess the significance of river segments and systems for a variety of fish, wildlife, natural, recreational, and cultural resource values. Thomas A. Foor, the Department of Anthropology, University of Montana and the State Preservation Office have been designated to take the lead in assessing the value of rivers for Cultural Resources in the State of Montana.

This report summarizes the method which will be used to complete this assessment. It identifies the value classes to which river segments will be assigned, the criteria which will be used to determine the value of Montana river segments, the standards used to apply these criteria, and the process by which decisions will be made.

CATEGORY DESCRIPTION:

Montana Cultural Resources. By "Cultural Resources" We mean reported Montana districts, sites, buildings, structures and objects of State or national significance in architecture, American history or prehistory.

VALUE CLASSES:

Value Class

1. Class I.
2. Class II.
3. Class III.
4. Class IV.
5. Class V.

River segments will be classified into one of these categories based on the below-listed criteria.

CRITERIA:

Class I. Sites listed in or determined eligible or listing in the National Register of Historic Places have been recorded on the river segment.

Class II. Sites have been recorded on the river segment and may be eligible for listing in the National Register of Historic Places.

Class III. No sites have been recorded but there is the potential for National Register eligible properties on the river reach.

Class IV. No possibility of significant cultural resources existing on the river segment.

Class V. Not enough information available to classify the river segment in Categories I, II, III, or IV.

If a river segment can be placed within more than one class the the category of highest significance (the lower numbered category) will be used for mapping purposes.

STANDARDS:

The above-listed categories have the advantages of precision and being to the point as National Register Significance is the yardstick by which cultural resource values are judged on the State and Federal Agency level in Montana. The potential for National Register eligible sites existing on a river segment will be estimated using the cultural resource data base maintained at the University of Montana. This data base contains information on 17,000 prehistoric and historic sites reported in the State of Montana and provides for the information needs of local, State, and Federal agencies.

EVALUATION PROCESS:

An intial list of relevant cultural properties will be compiled by the University of Montana. The status of properties will be determined in consultation with the State Historic Preservation Officer, Cooperating Resource Experts, and other interested professionals. Stream segments lacking cultural resources will be classified into categories III, IV, or V on the basis of the cultural resource distibution in surrounding areas and relationship of the river segment to geographical features.

Work is tentatively scheduled to begin in April and finish in October of 1985.

DATA FORM ENTRIES:

Cultural Resource Evaluation

1. River Segment Listing
   (name/location)

2. Criteria
   a. National Register site present.
   b. National Register eligible site present.
   c. Unevaluated site present and probably eligible for N.R.
   d. No sites reported but N.R. eligible properties probably present.
   e. No possibility for N.R. eligible properties.
   f. Unclassified or insufficient information for classification.

3. Documentation
   a. Site type.
   b. Justification.

4. Rating.

5. Comments.

Recreation

PACIFIC NORTHWEST RIVERS STUDY

Method for Assessing the Significance of River Segments and Systems for Recreational Resources in Montana

April, 1985

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INTRODUCTION

The Pacific Northwest Rivers Study was initiated to assess the significance of river segments and systems for a variety of fish, wildlife, natural, recreational, and cultural resource values. The Montana Department of Fish, Wildlife, and Parks has been designated to take the lead in assessing the value of rivers for Recreational Resources in the state of Montana.

This report summarizes the method which will be used to complete this assessment.

- The Category Description section provides background on the rationale for Montana's inventory method.
- The Value Class section describes the end product of this portion of the study--the classes into which river segments will be grouped.
- The Criteria section explains the nine criteria Montana will use to inventory river segments.
- The Standards section explains how the criteria and

professional judgment will be used to assign rivers to value classes.

- The Methods section explains the mechanics of the procedure--how the inventory will be done. The reader may wish to scan this section first, to see how the study elements fit together.

- Finally, samples are provided of the intended work sheet that will be used to conduct the inventory (to be used in the field and retained by the State; a summary of these data will be provided to BPA).

CATEGORY DESCRIPTION

Many physical, biological, social, and managerial characteristics contribute to the recreational value of rivers. The type and ease of public access, use levels, river length, type of scenery, rapids, the presence of game fish, level of development, onsite management, and other aspects of the river corridor determine the level and type of recreation most suitable on the river.

Public tastes regarding these and other river attributes may vary, so recreation managers recognize the importance of providing a wide variety of different river recreation opportunities. It is therefore not desirable to assign value to specific river characteristics. For example, high use levels indicate a river's popularity--but not necessarily the level of recreational quality. Rivers receiving high use may simply be located closer to population centers, or have easier access than other streams. Less-popular river segments may provide better opportunities for solitude, or river camping, which are also needed opportunities.

The point is that many types of rivers can be valuable for recreation; rivers with high use or easy access do not necessarily have more intrinsic value as recreation settings. The same is true with other recreational characteristics of rivers. River segments will therefore be categorized by their recreational attributes as mentioned above, but value will not be assigned strictly based on them; categorization and valuation are distinct steps.

The scope of this study is limited because the time and budget constraints do not permit the complete field inventory commonly used to conduct inventories of recreational resources. While suitable for use as a planning document in the initial stages of hydropower planning, this inventory is not suitable for actually

siting facilities.

VALUE CLASSES

Value Class	
1	Outstanding recreational resources
2	Substantial value recreational resources
3	Moderate value recreational resources
4	Limited value recreational resources
U	Unclassified or unknown recreational resources

If a river segment is not included in one of these classes, the resource value is presumed not present or does not meet the minimum standards to be included in the study. However, hydroelectric development on segments not included could still adversely affect recreational resources. The inventory is concluding only that segments inventoried are more likely to have recreational resources that could pose constraints to development.

Value classes have verbal descriptions of the type of river segment that would fall into each class to insure consistency of the definition of each class. These will be finalized following pilot testing of the inventory method, but the draft version is provided in the section on Standards.

CRITERIA

Nine criteria--resource attributes or use characteristics that help to give rivers recreational value--will be used to describe the river segments included in the study. Each segment will be placed into one of the categories for each criterion. How a river rates on the criteria will help determine its assignment to a value class, as explained under Standards. Following is a description of each.

1. Opportunities for boating. River segments will be categorized based on water surface type, which also implies the type of boat used on that part of the river. Five categories will be used:

- Segment is exclusively flat water or smooth enough to permit motorboats.

- Segment contains minor rapids and riffles (Class I or II) suitable for canoes, dories, and other crafts.

- Segment contains moderate rapids (Class II to III) more suitable for whitewater canoeing, rafting and kayaking.

- Segment contains large rapids (Class III to V) most suited to advanced whitewater rafting and kayaking.

- Water not boatable (reason will be provided).

2. Opportunities for water-based recreational activities. These are the developed and dispersed uses that currently occur on or along the river segment. Activities will include kayaking, rafting, canoeing, innertubing, fishing from bank or shore, swimming, motorboating, and other activities as appropriate. Each activity present along a segment will be rated as either primary (one of the main reasons people visit the segment) or secondary (an activity that currently occurs, but is not one of the most important segment uses).

3. Land-based recreation activities. These are the developed and dispersed uses that currently occur along the river segment. Activities will include tent camping, car camping, motorized and non-motorized trail use, scenic viewing, picnicking, and other activities as appropriate. Activities will be designated as primary or secondary.

4. Current use levels. If quantitative measures or estimates are available (in visits, visitor-days or other form) they will be used (note: in this case, river segment use levels will also be rated the following way.) If quantitative figures or estimate are not available, use will be estimated using the following three categories:

- Heavy or concentrated recreational use; on a typical weekend day during the summer, people will commonly be seen at sites on shore and on the river (if boatable).

- Moderate or dispersed recreational use; on a typical weekend day during the summer, people will sometimes be seen on or along the river.

- Limited or highly dispersed use; on a typical weekend day during the summer, few or no people will likely be seen on or along the river.

5. Access. This criterion is defined as ease of reaching the river from adjacent land areas (that is, accessto, not within, the river corridor). Five classes of access will be possible:

- Abundant access exists if the segment is parallelled by public land much of its length and paved or car-suitable roads parallel or frequently intersect the river. Access to the river shoreline should also be abundant. For boatable stretches, access may be restricted along the river, but paved roads should permit easy put-in and take-out of boats.

- Moderate access exists if the segment is parallelled or intersected occasionally by good quality roads. Access to the shoreline may be restricted in places by ownership or topography. Access to put-ins or take-outs is not as easy.

- Limited access exists if the segment is rarely parallelled or intersected by roads; the main access may be by poor roads or trails. Shoreline access may be difficult for much of the segment's length.

- Restricted access exists if the segment is not accessible by road and the shoreline is difficult to reach from adjacent lands.

- Other access conditions may be described if none of the four conditions adequately describe access to the river segment.

6. Recreation Opportunity Setting class. River segments will be assigned to one of five classes:

PRIMITIVE. The river corridor is an essentially unmodified natural environment with access along the segment by trail only. Nonrecreational resource uses are either not present or are very compatible with river recreation. Recreational users are likely dispersed, with abundant opportunities for solitude. Recreational development is minimal or not present. River may flow through a designated Wilderness Area.

SEMI-PRIMITIVE. The river corridor is a predominantly unmodified natural environment. Access along the segment may be possible by paved road, but the road

does not intrude on the setting's natural qualities. Nonrecreational resource uses may be present but are compatible with river recreation. Other users may be present, but opportunities for solitude exist. Limited recreational development may be found in the river corridor, but primarily for protection of resource values and user safety.

TRANSITION. The river corridor may alternate between predominantly natural and rural in character. A paved road may parallel the river for some distance, but does not provide abundant access to the water. Nonrecreational resource uses may be present, and may occasionally supplant recreational uses. Recreation visitors may be concentrated at informal or

RURAL. The river corridor remains largely natural, but with moderate evidence of the sights and sounds of civilization. Evidence of other recreation users is abundant. Roads, powerlines, and other manmade features, as well as nonrecreational resource uses, may be present along part or most of the segment. Recreational development, if present, is designed for larger numbers of users.

URBAN. The river corridor is substantially modified, with the natural landscape subordinate to other resource uses. The segment may be closely parallelled for nearly its entire length by highways, transmission lines, or buildings and settlements. Opportunities for solitude are likely very few or nonexistant.

7. Scenic quality. This criterion will categorize river segments on the basis of the memorability, harmony, and uniqueness of their visual settings. The diversity of views and the presence and effect of cultural modifications is also considered. Four categories will be used:

- Outstanding scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create unique, highly memorable, and harmonious visual settings. Views along the river and away from the river to surrounding scenery are highly diverse, providing river users with scenery that is spectacular and/or not common on other rivers in the region. If buildings, roads, and other cultural modifications are present, they either add favorably to or do not intrude on visual quality for river users.

- High scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create a highly memorable and visually pleasing setting, although one that may be more common to the region. Views along and away from the river are highly diverse and cultural modifications, if present, either add to or do not detract from the visual setting.

- Moderate scenic quality. For these segments, landforms, vegetation patterns, and water features along the river combine to create harmonious but common visual settings. Views along and away from the river are somewhat varied, but lack a high degree of contrast and diversity. Encroachment of cultural modifications may be evident, and either adds little to or detracts from visual quality.

- Low scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create visual settings lacking in variety and contrast. Views along and away from the river are monotonous and common. Cultural modifications may dominate and detract from visual quality.

8. Opportunities for fishing. This will be the existing value class for sport fishery in the Montana Stream Data Base. River segments will fall into one of six categories:

- Highest-value fishery resource.

- High priority fishery resource.

- Substantial fishery resource.

- Moderate fishery resource.

- Limited fishery resource.

- Not yet classified.

9. Developed recreation sites along segment. The names and types of public and private outdoor recreation facilities located along the river will be listed.

STANDARDS

Standards are the means by which the river segments are

assigned to one of the value classes. As noted in the introduction, the criteria will not have specific values, numerical ratings, or points attached to them. Instead, raters will study the set of criteria for a given segment and combine that data (and other appropriate information) with their professional judgment to assign a value class.

The raters may also take into account the perceived quality of the recreation experience opportunity, local or regional supply of and demand for similar opportunities, volume or seasonality of flow, and other factors. The specific reasons a segment is assigned to a value class will be recorded. This will allow flexibility in value class assignment, yet give raters a common basis for their assessment and allow the process to be understood by others.

The raters can consider local and regional importance as one of the contributors to value class assignment. Therefore, a river of given characteristics that might not be highly-valued in one part of the state could be highly-valued in another region. However, a river segment will not be devalued just because several high-value rivers are located close to each other.

As stated in the Introduction, the Value Classes will have following descriptions anchored to them, to help raters reach a concensus on value class assignment and maintain consistency from region to region:

I. Outstanding recreational resources are exceptionally fine, popular or well-known recreational settings that nearly everyone would agree are "Blue Ribbon" resources. Thy are unique within a region or provide very high-quality recreational opportunities. These segments would likely have many attributes (criteria) that are highly-valued within the region, and agreement that the river belongs in this class should be unanimous among the raters. Recreational users should be willing to travel long distances or endure difficult access to use these resources. Use of this class should be reserved. For example, in the state's stream evaluation system for fisheries, only about 10 percent of the river reaches are in the highest-value class.

II. Substantial recreational resources are highly valued, but not quite as much as segments in Class I. These segments would likely contain about five or more criteria ratings judged to be desirable within the region. Very important recreational settings, among

the finer in the state or region and capable of providing top-quality recreational experiences.

III. Moderate recreational resources have a considerable degree of recreational value, but not as much (or as many types of) value as Class II segments. They would likely have received two to five criteria ratings judged to be desirable within the region. These resources are likely available elsewhere in the region.

IV. Limited recreational resources have some definite recreational value, but not as much (or as many types of) value as Class III segments. These should contain at least one criterion rating judged to be important within the region. Recreational values could be limited by restricted access, polluted water, disturbed shorelines, or similar intrusions.

V. Unclassified recreational resources likely have some current or potential recreational value, but the level or type of value is unknown. All rivers in the state having a flow of about 5 cfs or higher during recreational use periods are assumed to be in this class, until they are either rated higher during the inventory or dropped from the study.

EVALUATION PROCESS

First, DFWP regional parks managers and federal land managers from the U.S. Forest Service and BLM who have responsibility for or knowledge of rivers in each part of the state will be sent lists of rivers and/or maps of their regions, and asked to designate segments having recreational values. The Forest Service and BLM will be responsible for supplying maps to their agency participants, and the state will supply maps to the regional parks managers. Each participant will receive the same set of instructions and training.

Guidelines for segment definition will be provided. For example, segments should have relatively homogeneous recreational use patterns and values. The list of segments will be reviewed by project staff and compiled into a single list.

This list (drawn up separately for each DFWP management region) will then be recirculated to the same managers, who will be asked to rate each segment in their part of the state on the nine criteria, and to assign each segment to a value class. The managers will make preliminary value class assignments based on

ratings, their perceptions of recreational quality, the regional supply of and demand for the type(s) of recreation characterizing the segment, and other factors judged important. The specific reasons for value class designation will be written down.

A complete set of instructions will be given to the managers, with clarification in person or by telephone. The attached worksheet will be completed by all participating managers.

After the worksheets are returned, project recreation staff will compile them into a single worksheet for each river segment. If there is substantial disagreement on criteria description and value class among the managers who rated a given segment, the managers may be contacted by mail or phone to resolve the differences. River segments could also be assigned the higher of the suggested value classes, or user group input could be used. This part of the process is flexible and will depend on the worksheet information received.

If necessary, the research assistant may travel to one or more of the seven Department of Fish, Wildlife, and Parks management regions in Montana and meet with the state and federal managers. At the meeting, recreation managers would review and agree by concensus on where each segment rates on each of the nine criteria. They would then assign each segment to one of the value classes, also by concensus. The specific reasons for value class assignment, along with any continuing differences of opinion, would be noted.

River recreation user groups will be involved concurrently in the process. As noted in BPA's Issues Resolution Paper, formal public involvement is the responsibility of BPA and the Northwest Power Planning Council. However, the state will initiate user group involvement at the start of the study and views this involvement as an important component of the recreational inventory.

The recreation project staff will compile a list of relevant user groups and knowledgable individuals (supplied by project staff and/or state and federal managers). They will be asked to list rivers and segments they value for recreation and to assign a suggested value class to each. Along with the managers' worksheets, this information will be used by project staff to develop the draft list of river segments and value classes. Written communications from user groups will also be sent to BPA with the maps and worksheets.

Once all worksheets have been completed and user groups' comments received, a draft list of river segments and value classes will be developed by project staff. This list will be circulated to everyone who has participated in the inventory.

Following this, revisions will be made if warranted and the river segments transferred to the maps BPA will receive.

The process methods and timeline will be adapted as needed, but the following schedule is anticipated. Managers will designate segments during March and April and complete the criteria ratings and value classes in April and May. User groups will be contacted during this time period. In June and July, manager and user group information will be compiled and a draft list of segments and value classes sent out for review in August. Revision will take place in September and the maps prepared in October for delivery to BPA in November.

INVENTORY WORKSHEET
PACIFIC NORTHWEST RIVER STUDY
RECREATION RESOURCES - MONTANA
1985

Name of rater: _____
Agency: _____
Date: _____
Notes: _____

1. River Name: _____

2. Segment name or description: _____

3. Upper endpoint: _____

4. Lower endpoint: _____

5. Approximate length: _____

6. Segment number: _____

Criteria

7. Water character and boating suitability:

__ Flat water
__ Minor rapids (class I-II)
__ Moderate rapids (class II-III)
__ Major rapids (class III-IV & up)
__ Not boatable (explain) _____

Average length of boating season: _____ months

8. Water-based recreation activities: 1 = Primary activity
2 = Secondary activity
not checked = little or no use

__ motorized boating
__ canoeing
__ kayaking
__ rafting
__ innertubing
__ swimming
__ fishing (from boat)
__ fishing (from shore)
__ other: _____
__ other: _____

9. Land-based recreation activities: (same instructions as #8)

__ tent camping
__ car camping
__ non-motorized trail use
__ motorized trail use
__ pleasure driving (paved roads)
__ scenic viewing
__ picnicking
__ other: _____
__ other: _____

10. Overall use level: number and unit: _____

__ heavy
__ moderate
__ low

11. Access:
__ abundant
__ moderate
__ limited
__ restricted
__ other: _____

12. Recreation opportunity spectrum (ros) class:

__ primitive
__ semi-primitive
__ transition
__ rural
__ urban

13. Scenic quality:

__ outstanding
__ substantial
__ moderate
__ limited

14. Sport fishing value class: _____

15. Developed recreation sites along segment:

Name of site(s)	Type of site(s)

---

16. Proposed value class assignment:

__ outstanding
__ substantial
__ moderate
__ limited
__ unclassified

17. Explanation for value class assignment:

Institutional Constraints

PACIFIC NORTHWEST RIVERS STUDY

Method of Assessing the Significance of River Segments and Systems for Institutional Constraints in Montana

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INTRODUCTION:

The Pacific Northwest Rivers Study was initiated to assess the significance of river segments and systems for a variety of fish, wildlife, natural, recreational, and cultural resource values. The State of Montana has been designated to take the lead in compiling the institutional constraints in Montana. This report summarizes the kinds of institutional constraints which will be used in this assessment.

CATEGORY DESCRIPTION:

Institutional constraints are comprised of laws or policies with direct implications for hydropower development imposed and/or administered by agencies of government at the Federal, state, or local level, or by the Tribes. Institutional constraints may prohibit, significantly limit, or otherwise impose conditions on hydropower development. For purposes of this survey only the potential prohibitions are included. Other constraints would be addressed in an actual siting study.

CONSTRAINT CLASSES

CLASS DESCRIPTION

1. Federal, state, or local regulations prohibit hydropower development.
2. Potential Federal and state prohibitions (such as wilderness study areas).

CRITERIA AND STANDARDS:

Wild and Scenic Rivers - All such designated rivers will be class one but considered along with other reaches for the other five resource areas.

Wilderness Areas and National Parks - All such designated rivers will be class one and will not be considered along with other reaches in the other five resource areas unless time permits. They can be excluded because it is presumed that the land typed designation was not determined on the quality of the streams. It is assumed that these streams represent a mix of value classes but because of their inclusion in wilderness or National Parks designations will not be developed for hydropower.

Roadless Areas, National Natural Landmarks, Fish Hatcheries, Wildlife Refuges, Biosphere Reserves - All such designated areas adjacent to rivers will be classified a minimum of class two unless expert judgment warrants class one designation.

EVALUATION PROCESS

Each constraint will be assigned to a senior resource expert for inclusion in their categorization. River segments affected by Class I and II constraints will be mapped at 1:100,000.

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APPENDIX A

PACIFIC NORTHWEST RIVERS STUDY

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IDAHO - Forest Service

Northern Rockies Region - 1
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IDAHO - U.S. Fish and Wildlife Service

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Cooperating Agency Resource Experts | Project Staff/Participating Agencies

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OREGON - Forest Service

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Nooksack Indian Tribe

Puyallup Indian Tribe

Sauk-Suiattle Indian Tribe

Stillaguamish Indian Tribe

Suquamish Tribe of the Port Madison Reservation

Swinomish Indian Tribe

Upper Skagit Indian Tribe

NOTE: Tribes with names and addresses have responded to BPA regarding project participation.

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