

SUPPLEMENTS TO RECOMMENDATIONS FOR A
FISH AND WILDLIFE PROGRAM

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Submitted to: Pacific Northwest Power Planning Council

Supplements I - IV submitted March 26, 1982

Supplements V - VIII submitted April 1, 1982

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TESTIMONY

BY

Jim Flynn, Director
Montana Department of Fish, Wildlife, and Parks

On behalf of the Montana Department of Fish, Wildlife and Parks, I appreciate the opportunity to appear before the Council to offer our comments regarding a Fish and Wildlife plan for your consideration in fulfilling the statutory charges before you. The development of this plan has provided us with an excellent opportunity to work with our sister states of Idaho, Oregon and Washington to insure a better future for all fish and wildlife in the region.

The Regional Power Act has brought a long needed mechanism to integrate and provide for stable energy planning in the Pacific Northwest. Development and implementation of the Fish and Wildlife Program will address a shortcoming which has existed in regional hydropower development for some time. Existing laws recognize the impacts of energy development on fish and wildlife, however, those laws have failed to provide an effective process to implement protective measures as well as mitigative measures when necessary. It is our intent that the program submitted to you, when implemented, will provide that mechanism.

The process in which we have been engaged over the past few months has indicated to us that Montana has a unique perspective amongst the four states of the Pacific Northwest. We sit at the headwaters of some of the Columbia River's major tributaries, yet we are not so fortunate as to share the runs of steelhead and salmon which are found in our sister states. We

do, however, find most of the resident game fish species in western Montana migrating in patterns similar to those of anadromous fish and being subject to the same impacts as their anadromous counterparts. Blocking migrations or changing the water quality or quantity in spawning tributaries in Montana will affect entire river and lake fisheries.

Thus we have worked intently to insure that recommendations are made to protect Montana's fish and wildlife resources and maintain the high quality of outdoor recreation which Montanan's and their guests have come to expect and enjoy.

In addition, we have addressed another area of concern. That being adequate mitigation for past and potential future hydroelectric development. The recommendations submitted to you last November have documented past impacts of hydro development and the measures needed for adequate mitigation. Our recommendations today will address the means for future mitigation if and when it is needed.

Considerable coordination and discussion with the Confederated Salish and Kootenai Tribes, the U.S. Fish and Wildlife Service and the operators of hydroelectric projects in western Montana have been conducted to arrive at our recommendations. In addition, we have held public hearings in four western Montana communities regarding the recommendations before you. We have extended this in-state effort of coordination through participation with agencies and tribes in Idaho, Oregon and Washington.

As part of that effort, we assisted in preparing a coordinated implementation plan for the fish and wildlife program to aid the Council in identifying measures to protect and mitigate fish and wildlife impacts.

We feel we have observed the spirit in which the Council called for the recommendations and that the recommendations are reflective of a reasonable position on behalf of Montana's fish and wildlife resources.

We view the Regional Plan as an opportunity to address the cumulative impacts of energy development on fish and wildlife. Future impoundments or diversions of streams will undoubtedly center on small or micro-scale dams. The large number of potential sites and the indications by some agencies that small projects may be exempted from certain licensing procedures could have major impacts on both anadromous and migratory resident fish.

Another important aspect of a Regional Power Plan is the opportunity to reach a much needed balance between impoundment created by reservoirs and the remaining free-flowing river systems. Free-flowing sections of important river systems must be maintained in their present unaltered condition to insure that the opportunity to fish, float and hunt along these river corridors and their major tributaries can be maintained into the future.

Two of the Columbia River's system major storage reservoirs, Libby and Hungry Horse are found in Montana. The storage provided by these reservoirs have important implications for power and fisheries production

both within Montana and in downstream states. Our recommendations provide for a balance which maintains a reasonable fishery both within the reservoirs and in the river below the reservoirs. Additional flows particularly in higher flow years would be available to enhance anadromous fisheries downstream.

In addition to our concern and recommendations for fish, we have also addressed the needs of wildlife. Wildlife is very dependent on stream-side vegetation and flood plains, resources that are in limited supply and almost impossible to create. In the cases of Libby and Hungry Horse Dams large tracts of wildlife habitat were inundated when the projects associated with those dams were completed. In these cases as well as other hydroelectric projects in Montana, adequate mitigation for wildlife losses and to a lesser degree fish losses has not been provided. It is our request that wildlife be recognized in future hydroelectric development planning and be an integral part of the fish and wildlife program.

We have also indicated in our recommendations a desire to participate as decisions are developed on hydro-system operations which affect the reservoirs located in Montana. This desire is stimulated by our statutory responsibilities for the management of fish and wildlife. It is our hope that the Council would react favorably to our request for funding to participate in this process. It is unlikely that this participation would be of the same frequency or depth as those whose primary interest is with the anadromous fish resource.

In summary we feel that a balance must be reached to insure an adequate, reliable and cost-effective power supply while insuring the impacts on fish and wildlife are adequately addressed. In the past, planners and developers have found the issue of fish and wildlife difficult to handle. They dealt with numbers, equations, forecasts, and dollars. They found the biologist's inability to put hard numbers on a dynamic ecosystem or hard dollars on a wild river frustrating. The result has been to push the issues aside, cast doubt on their relevance and delay implementation of both protective and mitigative measures; all to the detriment of fish and wildlife as well as recreational opportunity.

For this reason, we urge the Council to develop a "phased approach" in implementing the fish and wildlife recommendations. The highest priority programs with the greatest potential for enhancement should be implemented as soon as possible. This will insure that a cost-effective and balanced program is developed in a timely manner and provide immediate relief while minimizing potential conflicts.

Our Department strongly supports a coordinated and phased approach to implementing protection, enhancement and mitigative measures for fish and wildlife in Montana and the rest of the Pacific Northwest. We look forward to a continuance of the efforts of the Council, fish and wildlife agencies, tribes, and other participants in this process to achieve an acceptable program for all.

TECHNICAL TESTIMONY

BY

Patrick Graham
Fishery Biologist

Briefly the technical information we are now providing supplements our published November recommendations. This information concerns operation of both Hungry Horse and Libby projects and clarifies some issues regarding stream protection.

STREAM RESERVOIR LEVELS

Minimum pool elevations in our principle storage reservoirs continues to be a controversial and complex issue. The answer to the question of how much storage is enough to maintain good fish populations cannot be generated from a textbook. The answer for one reservoir cannot be applied to the next because of variations in reservoir configuration, size, productivity and the fish species present.

Ideally, the closer a large reservoir resembles a lake the better it is for fish production and survival, and the better it is for recreation. Unfortunately, drawdown for flood control, power generation and other uses make a stable reservoir an impractical request. Our requested minimum pool levels in large storage reservoirs are far from ideal, but such control will improve the fishery.

Supplement I includes the best estimates we have at this time for a minimum pool level in Libby Reservoir. Attachment A discusses the

Libby Reservoir recommendation in more detail because it was not presented in November. It is still unclear how Libby Reservoir drawdown will be impacted by future power demands and downstream flow requests.

We recognize some degree of flexibility must be built into the system because of the variation in runoff. We recommended that during years of extreme runoff, the minimum pool can be decreased to meet flood control or power system needs. However, we qualified this recommendation by asking that firm guidelines be established by the Council to prescribe conditions that would warrant such decreases. This should not be a unilateral decision by the operating agency.

HUNGRY HORSE FISH FLOWS

Supplement II refines our previous request for flows from Hungry Horse Dam. These flows are based on data collected from a Bureau of Reclamation funded study of the feasibility of increasing peaking power production at Hungry Horse and of constructing a reregulating dam below Hungry Horse Reservoir. An attachment explains the methodology and analysis used to establish these flows. We will evaluate the effectiveness of these flows in stabilizing production of salmon over the next four years with funding provided by the Bonneville Power Administration.

A preliminary study of a modified version of our flow request was made by the Bureau of Reclamation and resulted in only a 10 MW reduction in power capability during the critical water period. Another significant study that combined our flow request with the K-Study showed no significant change in the power deficit.

LIBBY FISH FLOWS

Supplement III recommends a need to define the probability of occurrence of minimum flows on the Kootenai River between 3,000 and 4,000 cfs based on guidelines similar to those recommended in Supplement I. We also recommend that our agency be contacted when there are conflicts between maintaining river flows or minimum reservoir levels. If meeting one criteria could preclude the other, we would like to be involved in resolving such problems on a case by case basis.

STREAM PROTECTION

Supplement IV provides more information on the issue of stream protection. Our discussion of the protection of streams from inundation and diversions is based on a partial review of the Regional Power Act, Federal Power Act and related documents. We believe the Comprehensive Regional Energy Plan, with its fish and wildlife program, could provide the type of stream protection recommended. This should not require new legislation. This should also avoid the types of problems associated with legislation like the Wild and Scenic Rivers Act, which imposes restrictions on landowners adjacent to protected rivers.

At this time, we are adding information to clarify the classification of streams according to fishery value and we are working on similar information for wildlife. This will supplement recommendations published last November.

We are also preparing a more detailed plan for implementing our recommendation. It will include time tables and cost estimates where appropriate. This information should be available by mid-April. This

effort is being coordinated with the other fish and wildlife agencies and tribes in the Pacific Northwest.

MICRO-HYDRO DEVELOPMENT

We would like to reiterate the need to coordinate the objectives and goals of the fish and wildlife program with the energy plan. The Act clearly prioritizes conservation and renewable resources ahead of other energy alternatives. We support that concept and are concerned that incentives to develop small or micro-hydro projects will eventually conflict with measures being taken to mitigate and protect fish. In the past six months, approximately 70 preliminary applications for micro-hydro sites were filed in northwest Montana alone. Already, because of the large volume of projects, the Federal Energy Regulatory Commission cut the length of the review period in half. The issue is broader than just individual site specific impacts. Together, these projects can affect a fairly large portion of a river's rearing and spawning habitat, impact water quality, create harmful roads on critical big game ranges and affect riparian zones. One proposed site we looked at had only a six foot high dam, but it would divert water out of a stream for nearly five miles. These impacts add up, and presently no review process accounts for the cumulative impact on fish and wildlife. The issue must be addressed in resource assessment, incentive programs such as billing credits, and other efforts to insure that the fish and wildlife program will not run counter to the energy plan.

FISH, WILDLIFE AND POWER

A lot of discussion and a few studies have focused on the potential

conflicts between resident fish needs and anadromous fish needs in regards to operation of the Columbia River hydro system. We have reviewed the work of the Instream Flow Group using the Corps of Engineers model and would like to point out that studies performed to date have not incorporated stream flows or reservoir levels recommended by Montana. We would like to see future studies incorporate our recommendations because we believe it is possible to provide for Montana's resident fish and still improve flows for anadromous species downstream.

Considering the need for power, we reviewed the base power case (G-Study) with recommendation 1.1.1 (K-Study) which considers anadromous fish as well as power. The K-Study disperses the impact of reservoir drawdown in the upper Columbia Basin among three major reservoirs, Hungry Horse, Libby and Grand Coulee. We determined the number of years that mean monthly flow below Libby Dam did not exceed 3,000 cfs during at least one month and the number of years a 90 foot drawdown limit would be exceeded at Hungry Horse. The frequency of occurrence for both measures differed by only one year between the G and K studies during the 40 year period of record.

It appears to us that accommodating the needs of Montana's fish and wildlife through operation of the hydroelectric system would not produce a major conflict between resident fish and anadromous fish during the proposed Phase I implementation. The conflict, if it exists, seems to be between power production and fish and wildlife needs and these conflicts are most evident during low water years. Identification and resolution of potential conflicts should be addressed through a coordinated and phased approach to implementing protection, enhancement and mitigative measures.

INTRODUCTION

TO

SUPPLEMENTS I - IV - submitted March 26, 1982

This section contains written testimony of Jim Flynn, Director and Pat Graham, fish and wildlife biologist for the Montana Department of Fish, Wildlife and Parks, and four supplements to the Department's original recommendations submitted in November, 1981. It also contains attachments referred to in the respective supplements.

Supplement One deals with minimum reservoir elevations at Hungry Horse and Libby Reservoirs. It includes clarifying recommendations. While recognizing the need for flexibility in maintaining reservoir elevations, it also defines probability of occurrence guidelines.

Supplement Two refines our previous flow request for Hungry Horse Dam based on studies being conducted on the Flathead River by our Department. A more complete summary of methods and data analysis is included.

Supplement Three discusses the need to define the probability of occurrence for minimum flows in the Kootenai River below Libby Dam. It also recommends that the Department be contacted to resolve conflicts between providing river flows or reservoir drawdown criteria in the event that providing one precludes the other.

Supplement Four clarifies some issues on stream protection including implementation under the Regional Energy Plan and stream classification criteria to be considered in stream protection issues.

Recommendations are typed in italics and changes or additions to recommendations submitted in November are underlined for comparative purposes.

Supplement I. MAXIMUM DRAWDOWN OF HUNGRY HORSE AND LIBBY RESERVOIRS

A. Drawdown of Hungry Horse Reservoir should not exceed 85 feet (1.2.1).

Exceptions would be made as specified in items 1-3 as follows :

1. Guidelines and methodology should be developed to insure that the maximum reservoir drawdown of 85 feet is not exceeded except in years of extreme run-off conditions. The guidelines should be based on local drainage and regional basin-wide run-off forecasts using the historical record. The frequency of occurrence guidelines would be established by the Power Planning Council based on input from the Montana Department of Fish, Wildlife and Parks, Bureau of Reclamation and other appropriate entities. These guidelines should be implemented by the end of Phase I (within the first five years of the Fish and Wildlife Program). Every effort should be made to meet the recommended operational criteria in each year prior to adoption of the guidelines.

2. Probability of occurrence guidelines should be based on the best available historical record, and insure that minimum reservoir levels could be expected to be met or exceeded during 80 percent of those years.

3. If a conflict occurs in a particular year between maintaining reservoir levels or minimum stream flows, the Department's designated representative would be contacted to determine which criteria could be violated under the agreed guidelines.

B. Drawdown of Libby Reservoir should not exceed 90-110 feet. Exceptions would be made as specified in items 1-3 as follows :

1. Guidelines and methodology should be developed to insure that the maximum reservoir drawdown of 90-110 feet is not exceeded except in years of extreme run-off conditions. The guidelines should be based

on local drainage and regional basin-wide run-off forecasts using the historical record. The frequency of occurrence guidelines would be established by the Power Planning Council based on input from the Montana Department of Fish, Wildlife and Parks, Corps of Engineers and other appropriate entities. These guidelines should be implemented by the end of Phase I (within the first five years of the Fish and Wildlife Program). Every effort should be made to meet the recommended operational criteria in each year prior to adoption of the guidelines.

2. Probability of occurrence guidelines should be based on the best available historical record, and insure that minimum reservoir levels could be expected to be met or exceeded during 80 percent of those years.

3. If a conflict occurs in a particular year between maintaining reservoir levels or minimum stream flows, the Department's designated representative would be contacted to determine which criteria could be violated under the agreed guidelines.

In recent years, the operation of Libby and Hungry Horse dams has provided maximum reservoir drawdowns in the ranges recommended by the Montana Department of Fish, Wildlife and Parks. These were informal agreements that helped maintain the reservoir fisheries while insuring refill of the reservoirs. It has become apparent that the competition for use of reservoir storage for both power and fish and wildlife purposes necessitates establishment of a more formal operational agreement to assure a predictable level of fish and wildlife protection can be maintained in the future.

We also recognize that a certain degree of flexibility in minimum pool levels must be accommodated during years of unusually high or low

run-off. This will require establishing firm guidelines and procedures based most likely on a combination of local drainage and regional basin-wide run-off forecasts. It is probable that some fashion of sliding scale, similar in concept to the one recommended for anadromous fish flow on the mainstem Columbia River (Anadromous Fish Objective 1.1.1), could be developed.

System hydro-regulation studies should be initiated to determine the impact of maximum drawdown constraints on the systems ability to provide stream flows recommended to improve juvenile anadromous fish survival on the mainstem Columbia River (Anadromous Fish Objective 1.1.1). Preliminary studies indicate that our recommendations would be compatible with Objective 1.1.1.

Studies could also be initiated to better quantify acceptable seasonal minimum pool elevations to maintain or enhance the existing fisheries.

Background information and supporting evidence for the Hungry Horse Reservoir recommendation (part A) is provided in the text of the original recommendations. Attachment A to this section provides background information for Libby Reservoir. The same general concepts apply in both cases.

Supplement II. FLATHEAD RIVER FISH FLOWS

1. Hungry Horse Dam should be operated to insure successful reproduction of kokanee in the Flathead River as follows (1.1.1) :

Spawning : Flow at Columbia Falls should be not less than 3,500 cfs and not more than 4,500 cfs from October 15 through December 15.

Incubation : A minimum flow of 3,500 cfs at Columbia Falls should be provided from December 15 through April 30.

Emergence : Periodic flows should be provided from March 15 through initiation of spring run-off (usually mid-April) to flush emerging fry downstream to Flathead Lake.

2. A minimum flow of at least 3,500 cfs in the Flathead River at Columbia Falls should be provided 24 hours per day from July 1 through October 15 (1.1.2).

Based on more recent information and analysis provided by on-going studies, we are amending recommendations 1.1.1 and 1.1.2 as submitted in November, 1981. The previous flow request recommendation was based on a compromise worked out between our Department, the Bureau of Reclamation and the Bonneville Power Administration to provide trial flows to evaluate the impacts of river fluctuation on kokanee spawning success. The compromise did not provide a preferred biologically-based flow, but rather provided for some measure of spawning success by minimizing power impacts while a flow recommendation was being formulated for adoption. The studies will be continued to evaluate the impact of the present flow request on kokanee spawning success.

Our studies indicate that spawning is usually not initiated in the regulated portion of the Flathead River prior to mid-October and is usually completed by mid-December. Studies during the winter of 1981-82 also found that providing an intermediate spawning flow (ie. 4,500 cfs) then dropping back to a lower incubation flow (ie. 2,500 cfs) resulted in approximately 20 percent or more egg mortality due to dewatering in major spawning areas. For these reasons, we have placed maximum constraints on our requested spawning flow and increased the incubation flow to provide what we anticipate would be a balanced level of spawning success.

Based on an analysis of Flathead River cross-sectional profiles, we revised our minimum flow request during the growing and migration period for juvenile cutthroat and bull trout (July 1 - October 15). The minimum flow was increased from 2,500 cfs to 3,500 cfs. Both flow requests are documented in a summary and explanation of our State water right filing (Attachment A).

It should be recognized that these recommended flows (1.1.1 and 1.1.2) include natural, unregulated flows from the North and Middle Forks of the Flathead River that must be supplemented with variable flows from Hungry Horse Dam.

This flow regime should be implemented in the fall of 1982 to reverse the significant downward trend in the kokanee spawning population in the Flathead River. The Department has initiated broad restrictions in fishing regulations for kokanee to provide additional protection. The length of the river snagging season was reduced by half and the limit on both the lake and the river was reduced by over 40 percent.

These measures will not reverse the downward trend, but were viewed as emergency measures to prevent the situation from worsening.

Power Impact

The Bureau of Reclamation has made some preliminary and, as yet, unofficial studies of a flow request similar to the one presented here and determined that the impact on the power system would be a deficit of approximately 10 MW (± 5 MW) (personal communication, Bureau of Reclamation, Boise). It should also be noted that this impact is not necessarily additive to power impacts from other fish flow requests. When added to the anadromous fish flow request (Study K) which originally produced a 490 MW power deficit, the Hungry Horse request reduced that deficit to 486 MW.

Project Authorization

Congress authorized completion of the Hungry Horse project in 1944 expressly for irrigation, flood control, downstream flow regulation, hydroelectric generation, and "other beneficial uses primarily in the State of Montana, but also in downstream areas." (Act of June 5, 1944; 43 U.S.C. Sec. 593 [1976]). Our interpretation is that providing and maintaining minimum flows for fish and wildlife is a beneficial use consistent with the Congressional Authorization of 1944. Such flows have never been provided, although experimental flows were provided during the fall and winter of 1980-81 and 1981-82 by the Bureau of Reclamation in cooperation with Bonneville Power Administration.

The recommended flows do not interfere with the other uses of the

project and do not affect project water previously appropriated under State law. The Bureau of Reclamation's 1947 water right claim was filed in the State of Montana for 1,200 cfs and 3.5 million acre-feet. Based on project operation and capacity, our request appears to be consistent with the storage right filed by the Bureau.

The 1947 filing stated "the purpose for which said water is claimed is for generation of hydroelectric power, improvement of navigation, regulating the flow of the South Fork of the Flathead River, controlling floods, and for other beneficial uses."

Attachment A to this supplement was submitted to the State of Montana in refiling for water rights previously claimed under a 1969 State law. The attachment documents and clarifies the methodology used to determine our present recommended flows.

Supplement III. KOOTENAI RIVER MINIMUM FLOW

Existing criteria on operations of Libby Dam for fisheries should be maintained unless conditions warrant a change in operation that would benefit the fishery (1.2.5).

Amended to include the following statements:

1. Guidelines and a methodology should be developed to insure that the minimum stream flow of 4,000 cfs is provided except in very low run-off years when no less than 3,000 cfs would be provided. The determination should be based on local drainage and regional basin-wide run-off forecasts using the historical record. The frequency of occurrence guidelines would be established by the Power Planning Council based on input from the Montana Department of Fish, Wildlife and Parks, Corps of Engineers and other appropriate entities. These guidelines should be implemented by the end of Phase I (within the first five years of the program). Every effort should be made to meet the recommended operational criteria in each year prior to adoption of the guidelines.

2. If a conflict occurs in a particular year between maintaining reservoir levels or minimum stream flows, the Department's designated representative would be contacted to determine which criteria could be violated under the agreed guidelines.

This section provides clarification of an existing operational constraint by requiring development of a method to insure predictable frequency of occurrence. We have attached two memos from the Corps of Engineers in regards to operations of the Libby project.

The first correspondence, Attachment A to Supplement III dated 20 August, 1981, describes the increase in permanently wetted stream surface

area when the minimum flow is increased from 2,000 to 4,000 cfs. The letter states that beyond the 4,000 cfs level, each unit increase in discharge results in a much smaller increase in area (ie. 4,000 cfs inflection point). We replotted the data on a scale that emphasized wetted surface area rather than discharge (Figure 1). From this it appears the inflection point is approximately 5,000 cfs.

We are not requesting a change in minimum flows. However, we want to clarify our interpretation of the data for the record. The Department has been analyzing cross-sectional profiles to evaluate instream flows on other rivers based on a more commonly used methodology, the wetted perimeter/inflection point method, which takes into account the area of stream bottom.

The second correspondence, Attachment B to Supplement III dated 1 September, 1981, describes on page 6 the following downstream fluctuations and flow criteria.

Minimum discharge

1. Normal - 4,000 cfs.
2. If required to refill - 3,000 cfs.
3. Short-duration power emergencies - 2,000 cfs.

Our original recommendation was to maintain the existing operating criteria at Libby Dam (1.2.5). Our proposed amendments to that recommendation will insure a predictable frequency of occurrence of the 4,000 cfs minimum flow instead of the presently open-ended criteria of "if required to refill" when only a 3,000 cfs minimum would be provided. This would be similar to the recommendation prepared for reservoir refill.

We recognize that a certain degree of flexibility in minimum stream

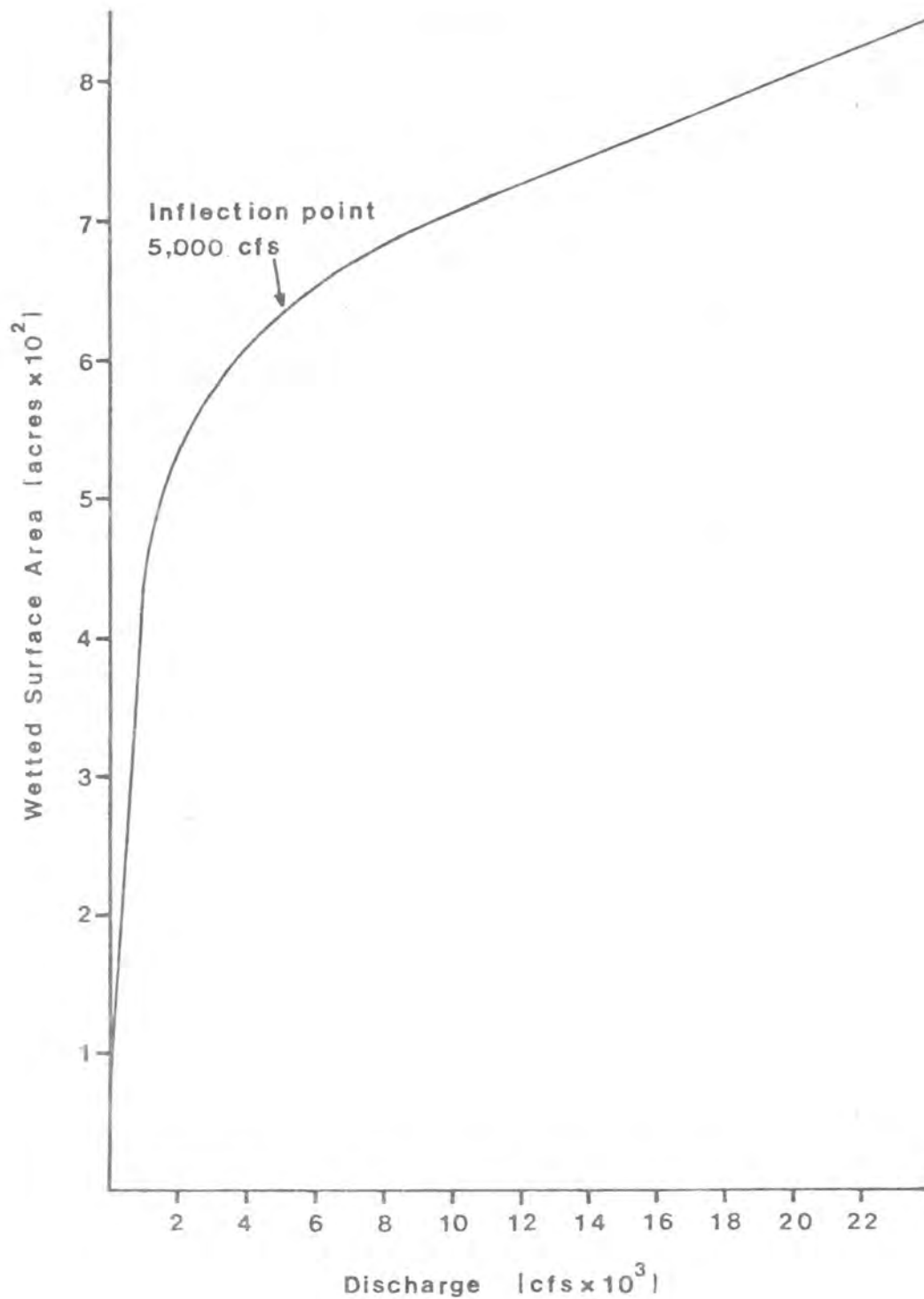


Figure 1. Wetted surface area vs. discharge for an 11.1 mile section of the Kootenai River beginning 3.6 miles below Libby Dam.

flows must be accommodated during years of unusually low run-off. This will require establishing firm guidelines and procedures, based most likely on a combination of local drainage and regional basin-wide run-off forecasts. It is possible that some fashion of sliding scale, similar in concept to the one recommended for anadromous fish flows on the mainstem Columbia River (Anadromous Fish Objective 1.1.1), could be developed.

It is imperative that this methodology be developed and implemented during Phase I of the Fish and Wildlife Program. The frequency of occurrence determination cannot be left solely to the operating and marketing agencies as is presently done.

Supplement IV. STREAM PROTECTION

Several of the recommendations refer wholly or in part to the issues of stream protection, including 1.9.1, 1.9.2, 1.9.3 and 5.4 as follows:

Critical habitat areas in North and Middle Fork Flathead River tributaries should be protected from any development that could not guarantee the project would not adversely affect gamefish rearing habitat (1.9.1).

Compensation for loss of a significant migratory fishery in the Clark Fork drainage should include protection and maintenance of the Big Blackfoot River, Rock Creek and Fish Creek, and possibly other Class I streams in a natural and unaltered condition (1.9.2).

The Council should support the development of a process that protects aquatic and wildlife resources of significant value from future hydroelectric development. This would be a form of mitigation for past development needed to establish an essential balance between rivers and reservoirs. Highest priority should go to streams that could not be adequately mitigated (1.9.2).

Potential site-specific and cumulative impacts of small scale and micro-hydroelectric projects (installed capacity of five megawatts or less) should be evaluated to insure that the resource assessment goals and objectives established by the Council in the Energy Plan are compatible with the intent of the fish and wildlife program (5.4).

Implementation

Implementation of these recommendations can be accomplished within the framework of the Energy Plan being developed by the Power Planning Council. In the Fish and Wildlife Program, the Council can implement

measures to protect, mitigate and enhance fish and wildlife. Fish and wildlife habitat of high resource value or that which is attained as mitigation or enhancement from other projects should be protected from the impacts of impoundment, diversion, or associated activities. These areas would be excluded from consideration for hydroelectric development in the energy resource assessment being developed for the Regional Energy Plan.

The Northwest Power Planning Act and other existing laws require compliance by Federal Agencies to guidelines set up by a comprehensive energy plan. For example, Section 4.(h)(11)(A) of the Pacific Northwest Electric Power Planning and Conservation Act is worded as follows:

4.(h)(11)(A) The Administrator and other Federal agencies responsible for managing, operating, or regulating Federal or non-Federal hydroelectric facilities located on the Columbia River or its tributaries shall -

4.(h)(11)(A)(i) exercise such responsibilities consistent with the purpose of this Act and other applicable laws, to adequately protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, affected by such projects or facilities in a manner that provides equitable treatment for such fish and wildlife with the other purposes for which such system and facilities are managed and operated;

4.(h)(11)(A)(ii) exercise such responsibilities, taking into account at each relevant stage of decisionmaking processes to the fullest extent practicable, the program adopted by the Council under this subsection. If, and to the extent that, such other Federal agencies

as a result of such consideration impose upon any non-Federal electric power project measures to protect, mitigate and enhance fish and wildlife which are not attributable to the development and operation of such project, then the resulting monetary costs and power losses (if any) shall be borne by the Administrator in accordance with this subsection.

In addition, the Federal Power Act¹, which authorizes construction of non-Federal dams, requires under section 10(a) that the projects be "best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes."²

As described in the analysis by Michael Blumm³, it is probable that the Corps 308 reports represent the closest thing we have at this time to a comprehensive water development plan. Development of an Energy Plan by the Regional Power Planning Council should now serve as the "comprehensive plan" referred to in the Federal Power Act.

Therefore, identification of stream reaches which should be protected from future hydroelectric development can be included in the Fish and Wildlife Program and Energy Plan and should not require any additional legislative action.

1. 16 U.S.C. §§ 791-825(1976).

2. 16 U.S.C. § 803(a)(1976).

3. Blumm, Hydropower vs. salmon: The Struggle of the Pacific Northwest's Anadromous Fish Resources for a Peaceful Coexistence with the Federal Columbia River Power System, *Env't'l L.* 212(1981).

Stream Classification

This segment provides a clarification and supplemental information on the recommendations (1.9.1, 1.9.2, 1.9.3, 5.4).

Class I streams and their major tributaries which provide spawning and rearing habitat for migratory fish should be protected from hydroelectric development. All other classified and unclassified streams must be evaluated based on their resource potential and the impact that would occur from impoundment or diversion of that stream either on-site or cumulatively. This evaluation should be done prior to project feasibility studies.

Important wildlife habitat should also be protected from impoundment or water diversion. Streams should be classified in the future by their overall resource value for wildlife as they presently are for fisheries. Emphasis should be placed on the protection of already limited riparian vegetation zones and critical wildlife range. Critical big game winter ranges in Western Montana were identified and mapped in an earlier comprehensive water planning effort.¹ Protection from inundation and disturbance of these remaining ranges should be considered by the Power Planning Council. A listing of these critical stream reaches for wildlife is being compiled by the Department.

1. Reference map of big game winter ranges (Figure 7, pages 73-102) in: Columbia North Pacific Region Comprehensive and Framework Study of Water and Related Lands, Appendix XIV Fish and Wildlife; Submitted to Pacific Northwest River Basin Commission, 1 Columbia River, Vancouver, Washington, November 1971.

We have included attachments documenting the stream classification system used by the Montana Department of Fish, Wildlife and Parks. A map of Western Montana stream classifications is provided as Attachment A to Supplement IV. This system is used to identify high priority stream resources based largely on fishery and recreational values. The accompanying Attachment B is a reach by reach listing of stream classification based on 1) fishery resource value; 2) sport fishery potential; and 3) habitat and species value. It includes all classified streams in the State.

Immediate attention must be given to this issue. Since November, when our recommendation document was submitted, over 70 micro- and small-scale hydroelectric projects in Northwest Montana have been submitted to the Federal Energy Regulatory Commission for preliminary licenses.

INTRODUCTION

TO

SUPPLEMENTS V - VIII - submitted April 1, 1982

The following section was provided to the Regional Power Planning Council in response to requests for information at the 26 March Fish and Wildlife hearing in Missoula. This section also includes supporting information for earlier recommendations or statements.

Supplement V is a clarification of our stream classification system in response to questions raised by Council member Chuck Collins. It also includes specific stream reaches recommended for protection for wildlife values to support Supplement IV presented at the 26 March hearing.

Supplement VI is our detailed implementation plan. It includes proposed year of implementation, estimated capital cost and duration of measures for both fish and wildlife recommendations.

Supplement VII provides biological supporting documentation for the recommended minimum pool elevation at Hungry Horse Reservoir.

Supplement VIII reviews existing mitigation, enhancement or protection measures. It should be noted that much of this data was previously presented in the November recommendation document. However, we have provided more specific data where it was appropriate.

SUPPLEMENT V - STREAM CLASSIFICATION

This information was prepared in response to questions raised by Council member Chuck Collins at the March 26 Fish and Wildlife hearing in Missoula. The essence of the questioning was to determine more precisely the relationship between the quality of the fishery below Libby and Hungry Horse dams and recommended measures for mitigation.

The discussion centered on the rating system used for a given water, in particular, criterion three (species of high interest to the State). This criterion is the same as the fishery resource value (RV) in Supplement IV, Attachment B. The final stream classification, or fishery resource value, was the higher of two ratings: 1) habitat and species value of a stream reach, or 2) sport fishery potential of a stream reach. We have provided an outline of procedures used for developing fishery resource values (Attachment A to Supplement V) as well as a sample of Montana's stream data-base form and description/definitions of input (Attachment B to Supplement V). A general review of the rating criteria for the Kootenai and Flathead Rivers follows along with an explanation of the quality criteria for other Class I reaches such as Rock and Fish creeks and the Blackfoot River.

KOOTENAI RIVER

The Kootenai River from Libby Dam to the Idaho border is rated "Value Class I". The river was broken into two reaches: 1) from Libby Dam to Kootenai Falls, and 2) from the falls to the Idaho border. The reach below the dam was rated I for sport fishery value and III for habitat

and species value. The fishery resource value was I, the higher of the two values. The reach downstream from Kootenai Falls was rated II for sport fishery value and I for habitat and species value. Thus, both reaches were rated Value Class I, but for different reasons.

The high fishery value in the reach downstream from Libby Dam was a result of the good sport fishery and production of rainbow trout. As described in the November recommendations, the species complex in the Kootenai River has changed from a westslope cutthroat trout fishery to a rainbow trout fishery. In part, this change can be attributed to construction of the project. However, implementation of a minimum river flow has served to sustain the rainbow and whitefish fishery. We recommended in November that these operating criterion be maintained.

Other factors improved the fishery during the same period, but were not related to mitigation for the dam. They included a significant reduction in pollution both in Montana and upstream in Canada and construction of a selective withdrawal system at the project as required by the Environmental Protection Agency to meet water quality standards. More specific information was provided with our November recommendations.

The high fishery resource value downstream from Kootenai Falls was due largely to the presence of the only white sturgeon population in Montana. Its status was described in a report by Graham (1981) cited in the November recommendation document. There appears to be a relationship between the decline of sturgeon in the river and the operation of Libby Dam. We have recommended that this be investigated. Presently, the status of the white sturgeon in Montana's portion of the Kootenai River should be considered threatened or endangered (see Attachment C to Supplement V).

We submitted very limited and specific recommendations to the Power Planning Council to provide additional mitigation, enhancement or protection for the fishery of the Kootenai because of past mitigation measures which were implemented. Maintaining existing operational criteria, for example, must be continued if the reach below Libby Dam is to remain a Class I fishery. Similarly, disappearance of the white sturgeon from the reach below Kootenai Falls would reduce it to a Class II stream. Only through continued cooperative efforts between our Department, the Corps of Engineers and the Power Planning Council can these quality fisheries be maintained.

A related mitigation measure that will help insure the fishery is sustained involves periodic removal of bedload material which is aggrading at the mouths of tributary streams. Controlled spring runoff, as a result of Libby Dam, prevents this material from washing downstream. These accumulations are beginning to form barriers to important tributary spawning migrations.

The recommendation submitted in the March hearing to establish minimum reservoir elevations was developed out of concern that reservoir operations may change due to demands for water downstream. We do not consider this as mitigation, rather it is a bottom line for maintenance of a fishery. If it is violated, it will undermine the effectiveness of the hatchery and stream enhancement measures undertaken to sustain a fishery. In that event, additional mitigation, enhancement or protection measures would have to be implemented.

FLATHEAD RIVER

The Flathead River and its forks are also Class I streams based on their habitat and species value. Presence of the migratory westslope cutthroat trout is the basic reason. They are a species of special concern because they are a native species found in limited numbers in only a few waters. Their life history and distribution were described and additional references were provided with our November recommendations.

Construction of Hungry Horse Dam on the South Fork of the Flathead River eliminated large areas of spawning tributaries and blocked spawning access to the South Fork for fish from Flathead Lake. None of these impacts have ever been mitigated. Presently, the dam can discharge a peak flow of over 10,000 cfs and reduce it to a 140 cfs minimum whenever and as often as is deemed necessary. Evidence of the impact of this type of operation on the fishery is the Class IV fishery value assigned to the South Fork below the dam.

Despite the impacts of Hungry Horse Dam, the main Flathead River maintains its Class I rating because it is an irreplaceable habitat linking spawning and rearing tributaries in the North and Middle Forks of the Flathead River to Flathead Lake.

The main Flathead River was also rated high on sport fishery value. This was due to the large amount of effort expended in the kokanee fishery. Kokanee were introduced into the Flathead in 1915 and a good fishery in Flathead Lake and portions of the river system developed by the 1930's. Operation of Hungry Horse Dam from 1953 through 1965 was generally favorable to kokanee. Since 1965, advanced energy withdrawals have created generally

unfavorable water conditions for salmon reproduction. In recent years, the kokanee run has become the smallest on record.

As the salmon fishery has declined, both the season and limit have been reduced and so has the number of fishermen. The value as a sport fishery continues to decline because of operation of Hungry Horse Dam. We recommended to the Council that a minimum flow for fisheries be established out of Hungry Horse Dam. Studies done in cooperation with the Bureau of Reclamation provided information to formulate the recommended flows. We also recommended that a spawning channel be constructed if the identified goal cannot be met through controlled flows.

A point of interest, the goal is not to provide the maximum number of fish historically produced, but instead an intermediate number. The reasoning is that fishermen prefer catching adult kokanee about 13 inches long. Because of the density-dependent nature of kokanee in Flathead Lake, large numbers of fish means smaller fish. Therefore, a balance is being sought to maintain a stable, quality fishery, not a quantity fishery.

Because no mitigation has ever been provided for Hungry Horse Dam, we strongly recommend that the remaining valuable spawning and rearing tributaries in the North and Middle Forks be protected from hydroelectric development. Many of these streams are already protected because they are in Wilderness areas, Glacier National Park or Wild and Scenic River status.

A maximum drawdown level on Hungry Horse Reservoir should also be provided as recommended. This represents a bottom line for maintaining the existing reservoir fishery. If it is exceeded, mitigation, enhancement

or protection measures must be implemented.

The Blackfoot River, Rock and Fish creeks were recommended to be protected as partial off-site mitigation for dams constructed on the lower Clark Fork River. The following sections explain criteria which resulted in Class I rating for these streams.

BLACKFOOT RIVER

The Blackfoot River from its mouth upstream to the mouth of the Clearwater River is rated a Class I stream. This 34 mile section was rated high based on its sport fishery potential. This reach of the Blackfoot is almost entirely bordered by public land, has easy access and outstanding scenery which combine to make it one of Montana's most heavily used recreational waterways.

A statewide creel census conducted in 1975 showed that this reach of the Blackfoot River received in excess of 15,000 man-days of annual fishing pressure at that time.

ROCK CREEK

Rock Creek, another Clark Fork River tributary, is nationally acclaimed for its outstanding sport fishery. Again, it is this high sport fishery potential that rated Rock Creek a Class I resource value. This stream ranks near the top in three of the four categories used to determine sport fishery potential. It contains high trout populations, receives heavy fisherman use and produces high aesthetic values. All this, combined with good access, makes Rock Creek one of the best of our Class I streams.

The 1975 statewide creel census showed that Rock Creek received almost

23,000 man-days of fishing pressure with about two-thirds of this occurring below Hogback Creek.

FISH CREEK

Fish Creek, a smaller Class I stream flowing into the Clark Fork River between Alberton and Superior is rated Value Class I because it, like the Flathead, provides high quality habitat for the westslope cutthroat trout, a fish of special concern in Montana. Fish Creek is one of the few strongholds for this species in the entire Clark Fork drainage. Loss of this habitat would further jeopardize the status of the westslope cutthroat in western Montana.

Statewide creel census in 1975 also showed that this stream receives high use by fishermen. Almost 8,000 fisherman-days were expended on Fish Creek in 1975.

SUMMARY

This supplement provides a brief explanation of the diversity of information that goes into stream classification. It is also apparent from the Kootenai River situation that mitigation and enhancement measures can be implemented to maintain a river's Class I status. Unfortunately, this was done at the expense of over 90 miles of wild river.

WILDLIFE

Wildlife losses have not been adequately mitigated. The attachment to this section (Attachment D to Supplement IV) contains a listing of stream reaches that should be protected because of their unique and

valuable wildlife resources. Although there is not at present a classification scheme to rate these river corridors for wildlife resource value, the prime areas are mapped and on storage in Department files and can be made available.

SUPPLEMENT VI: IMPLEMENTATION PLAN

STATE OF MONTANA FISHERIES PROGRAM

RECOMMENDATION	YEAR OF FISH AND WILDLIFE PROGRAM							
	1	2	3	4	5	6-10	11-15	16-20
1.1.1 Regulated flows for kokanee reproduction, Hungry Horse Dam (Supplement II)	Implement flow regime				Reevaluate flow regime			→
1.1.2 Minimum flow for fish rearing, Hungry Horse Dam (Supplement II)	Implement flow regime							→
1.1.3 Quantify impacts of reservoir discharge on kokanee, Hungry Horse Dam	Research \$105 K*	R: \$120 K*	R: \$130 K*	R: \$70 K*				
1.1.4 Evaluate existing mitigation measures for kokanee, Bigfork Dam	X	X	X	Research \$70 K	R: \$70 K			
1.1.5 Maintain minimum flow, Bigfork Dam								→
1.2.1 Implement minimum pool criteria, Hungry Horse Dam (Supplement I)	Develop and implement Research & Development \$60 K	R: \$110 K	R: \$120 K	R: \$130 K	R: \$80 K			→
1.2.2 Evaluate impact and implement measure to improve kokanee reproduction, Kerr Dam	Research \$4/ R: \$130 K*	R: \$140 K*	R: \$160 K*	R: \$200 K*	R: \$180 K*	→ R: \$210 K*		
1.2.3 Maintain habitat conditions at Flint Creek Project								→
1.2.4 Evaluate Montana Power Co. recommendations, Milltown Dam	X	R: \$80 K	R: \$100 K	R: \$60 K				
1.2.5 Maintain existing fishery operating constraints, Libby Dam (Supplement III)								→
Supp. I. Implement minimum pool criteria, Libby Dam (Supplement I)	Develop and implement Research \$60 K	R: \$110 K	R: \$120 K	R: \$130 K	R: \$80 K			→

RECOMMENDATION	YEAR OF FISH AND WILDLIFE PROGRAM								
	1	2	3	4	5	6-10	11-15	16-20	
1.2.6 Evaluate impact of Libby Dam on white sturgeon	X	X	X	X	Research \$120K				
1.3.1 Determine instream flows for Kootenai River tributaries	X	X	X	X	X	→			
1.5.1 Removal of bed material Kootenai River tributaries, C.E. funding		Negotiate with gravel company monitoring R:\$10K				as needed			
1.7.1 Evaluate mitigation measures for lower Clark Fork Dams	X	X	X	Research \$200K	R: \$180K	R: \$80K			
1.8.1 Evaluation of kokanee spawning channel, Hungry Horse Dam	X	X	X	X	Construction: R: 2,000K	O & M R: \$80K/yr		→	
1.8.2 Purchase water rights, 9/ Painted Rocks Reservoir	Implementation \$20K Evaluation \$15K	\$20K R:\$25K	\$20K R:\$15K	\$20K	\$20K	\$20K/yr		→	
1.8.3 Consider Montana's fish and wildlife in future water allocations								→	
1.9.1 Protect N.F. and M.F. Flathead River tributaries from hydro development								→	
1.9.2 Protect Class I streams from hydro development (Supplement IV and V)								→	
1.9.3 Develop process to protect streams from hydro development								→	
5.1 Insure mitigation mandatory in future hydro projects								→	

RECOMMENDATION	YEAR OF FISH AND WILDLIFE PROGRAM							
	1	2	3	4	5	6-10	11-15	16-20
5.2 Cumulative impacts of hydro development should be considered								→
5.3 Council should consider impacts of advanced energy withdrawals								→
5.4 Evaluate impacts of micro-hydro developments on fish and wildlife	Research \$185K	R: \$200K	R: \$225K	R: \$60K	R: \$70K	→		
TOTAL	R: \$555K (\$235K*) \$20K	R: \$795K (\$260K*) \$20K	R: \$870K (\$290K*) \$20K	R: \$920K (\$270K*) \$20K	R: \$780K (\$180K*) \$2,020K	Not estimated		

FOOTNOTES

* Already funded

- 1/ Flows requested in this recommendation in November were amended in testimony presented as Supplement II at Fish and Wildlife hearings on 26 March.
- 2/ This research is a continuation of studies initiated in cooperation with the Bureau of Reclamation, presently funded by Bonneville Power Administration.
- 3/ This recommendation was amended in testimony presented as Supplement I at Fish and Wildlife hearings on 26 March. Estimated budget for research was included in the event the Council determines further information or evaluation is necessary.
- 4/ Research presently funded by Bonneville Power Administration.
- 5/ This recommendation was clarified in testimony presented as Supplement III at Fish and Wildlife hearings on 26 March.
- 6/ This recommendation was submitted in testimony presented as Supplement I at Fish and Wildlife hearings on 26 March. Estimated budget for research was included in the event the Council determines further information or evaluation is necessary.
- 7/ This measure would be implemented as needed to remove gravel. Negotiations with gravel companies could significantly reduce the cost of this measure.
- 8/ This would be built if research determined it was the most cost-effective way to meet the biological objective.
- 9/ Water rights would cost \$1.50 to \$2.00 per acre foot of water for an estimated 10,000 acre feet. Charges are assessed by the Department of Natural Resources and Conservation for operation and maintenance costs for Painted Rocks Dam. These charges would change with inflation.
- 10/ This issue was discussed more completely in Supplements IV and V provided to the Power Planning Council during the comment period ending April 1.
- 11/ A project proposal is being developed for this recommendation.

STATE OF MONTANA WILDLIFE PROGRAM

RECOMMENDATION	YEAR OF FISH AND WILDLIFE PROGRAM							
	1	2	3	4	5	6-10	11-15	16-20
Evaluate wildlife mitigation for Hungry Horse Dam (page 25)	X	X	X	Evaluation R: \$60K	R: \$65K	Implementation		
Mitigation for wildlife losses at wildlife refuge, Flathead Lake from Kerr Dam (page 39) U.S.F.W.S.	Implementation \$24K Research \$20K	Implementation ? Research \$10K						
Mitigation for Clark Fork Dams (pages 85-86)	X	Evaluation R: \$50K	R: \$55K	Implementation				
Mitigation for Libby Dam (pages 102-103) Corps of Engineers	Purchase remainder of 9,500 acres of wildlife habitat \$10,000K							
1.9.3 Protection of valuable wildlife resources from hydro development								
TOTAL	Implementation R: \$20K	\$10,024K R: \$60K	R: \$55K	R: \$60K	R: \$65K			

SUPPLEMENT VII

BIOLOGICAL JUSTIFICATION FOR THE 85 FOOT DRAWDOWN LIMIT ON HUNGRY HORSE RESERVOIR

INTRODUCTION

Hungry Horse Reservoir, built by the Bureau of Reclamation, is a multipurpose impoundment located on the South Fork of the Flathead River near the town of Hungry Horse, Montana. This 35 mile long impoundment was first filled in 1954 and has since been used for hydroelectric generation and flood control storage. Storage of irrigation water, regulation of the South Fork and other beneficial uses are other stated purposes of the impoundment.

At full pool elevation of 3,560 feet msl, total reservoir capacity is 3,468,000 acre-feet. Additional storage (surcharge storage) of about five feet can be added above full pool if water conditions warrant. Live storage starts at elevation 3,336 feet msl. Water stored below 3,336 feet msl (486,000 acre-feet) is considered inactive storage. The fixed turbine intake invert is at elevation 3,319 feet msl. A rough cross-section of the dam and reservoir showing these sections is shown in Figure 1.

The 2,982,000 acre-feet of live storage is 86.0 percent of the total full pool volume. Maximum drawdown of 224 feet would leave a low pool of only 486,000 acre-feet or 14.0 percent of full pool capacity. The maximum drawdown of record of 128 feet in 1972 left a pool of 1,267,000 acre-feet or 37 percent of full capacity.

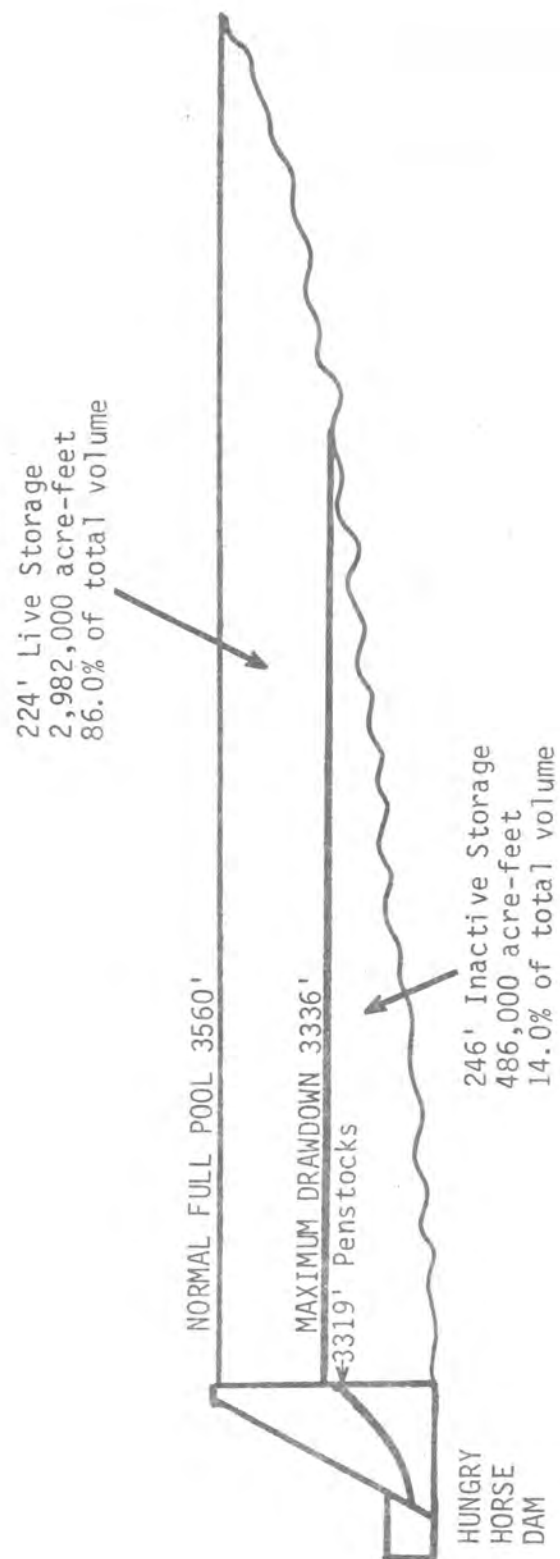


Figure 1. Rough cross-section of Hungry Horse Dam and Reservoir showing location of maximum drawdown level and relationship between live and inactive storage volumes.

FISHERIES MANAGEMENT HISTORY

Very little data is available concerning the history of the Hungry Horse Reservoir fishery prior to 1958. The South Fork Flathead River drainage prior to construction of Hungry Horse Dam was considered the major spawning area for adfluvial fish stocks from Flathead Lake. Migratory fish species from Flathead Lake spawned in the South Fork drainage above the dam site, including substantial numbers of bull trout (*Salvelinus confluentus*) and westslope cutthroat trout (*Salmo clarki lewisi*) and smaller numbers of mountain whitefish (*Prosopium williamsoni*) and kokanee (*Oncorhynchus nerka*). Resident fish species in the South Fork drainage prior to dam construction includes westslope cutthroat and bull trout, mountain whitefish, northern squawfish (*Ptychocheilus oregonensis*), largescale sucker (*Catostomus macrocheilus*), longnose sucker (*Catostomus catostomus*) and pygmy whitefish (*Prosopium coulteri*).

The fish population in the reservoir now includes westslope cutthroat trout, bull trout, largescale and longnose suckers, mountain and pygmy whitefish, grayling (*Thymallus arcticus*), yellowstone cutthroat trout (*Salmo lewisi bouvieri*) and rainbow trout (*Salmo gairdneri*). About five million grayling fry were planted in the reservoir by the Montana Department of Fish and Game in the mid-1950's. Another 13,000 adult grayling were planted in the reservoir in 1965. Rainbow trout and yellowstone cutthroat trout reached the reservoir by drifting downstream from high mountain lakes planted by the Department in the 1940's, 1950's and 1960's. Since about 1970, westslope cutthroat trout have been the only species planted in the South Fork drainage. Grayling, yellowstone cutthroat and rainbow

trout make up only a small fraction of the total fish population of the reservoir. The last authenticated catch of a kokanee occurred in 1961.

Hungry Horse Reservoir is very unique in two aspects; 1) maintenance of the fish population is entirely by natural reproduction and 2) native fish species make up the majority of the total population.

Gill net sampling in the reservoir by the Montana Department of Fish and Game in 1958 yielded a total of 1,615 fish. Of those, there were no non-native species such as yellowstone cutthroat, rainbow trout or grayling. Similar sampling done in 1980 caught 2,366 fish of which only three were grayling and one was a rainbow trout.

RESERVOIR CONFIGURATION

Generally, lakes and reservoirs with stable water levels are more productive than similar bodies of water with fluctuating water levels. Dewatering of lake bottom area reduces aquatic plant and animal production and reproduction affecting all levels of the food chain.

Reservoir storage capacity and surface acreage at various levels of drawdown is a function of reservoir bottom configuration. These two elements are illustrated in Figures 2 and 3. An inflection point on Figure 3, at which dewatering of reservoir bottom accelerates, occurs at about 3,525 feet. This inflection point indicates that maximum drawdown should be limited to about 35 feet to maximize aquatic plant and animal production with some space reserved for reservoir operation.

Montana Department of Fish, Wildlife and Parks has requested a maximum drawdown (combined flood control and power generation) limit of 85 feet from full pool elevation of 3,560 feet msl during all but extreme water years. This 85 foot request is based upon the reactions of the fish

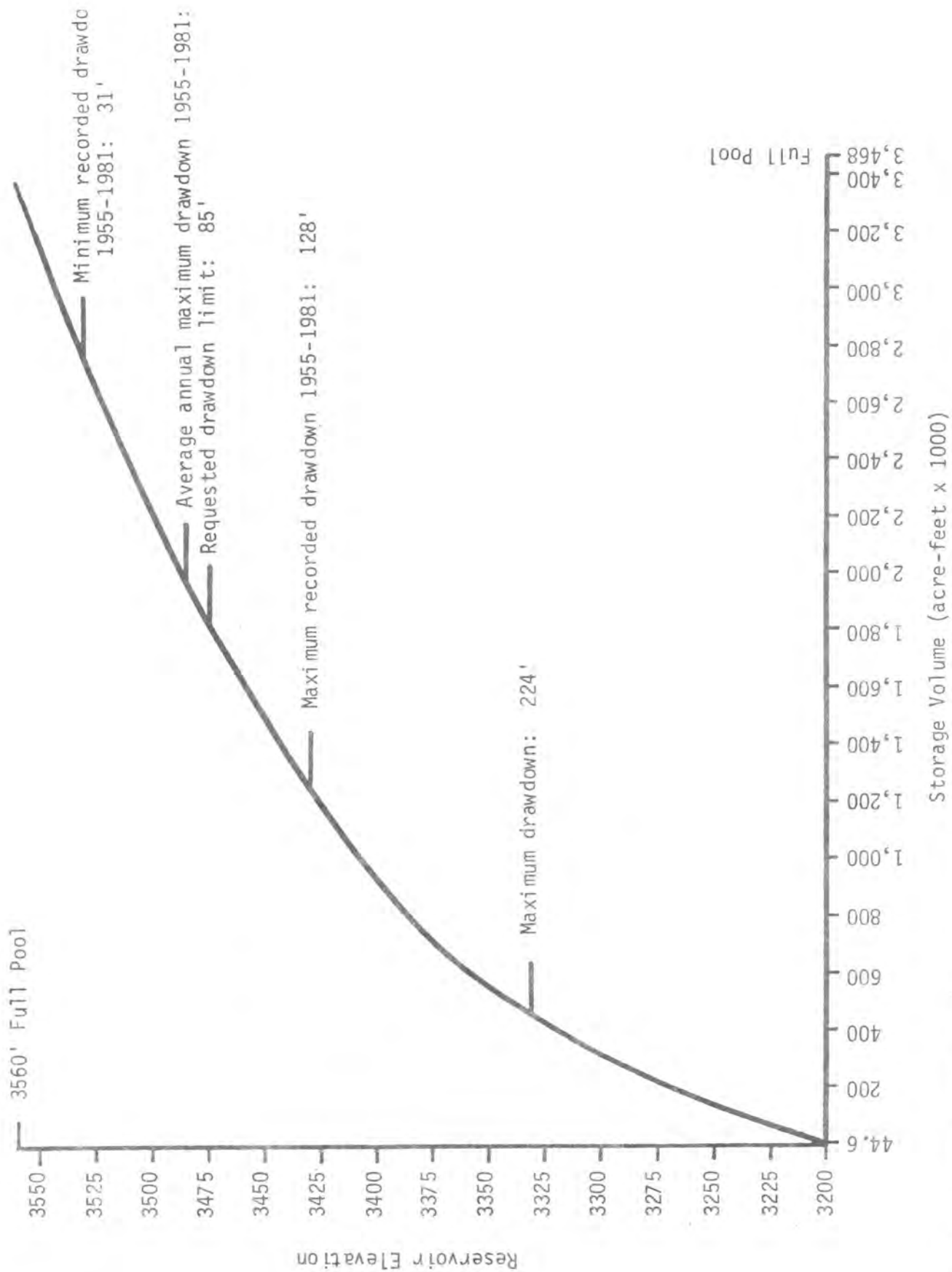


Figure 2. Storage volume of Hungry Horse Reservoir vs. reservoir elevation.

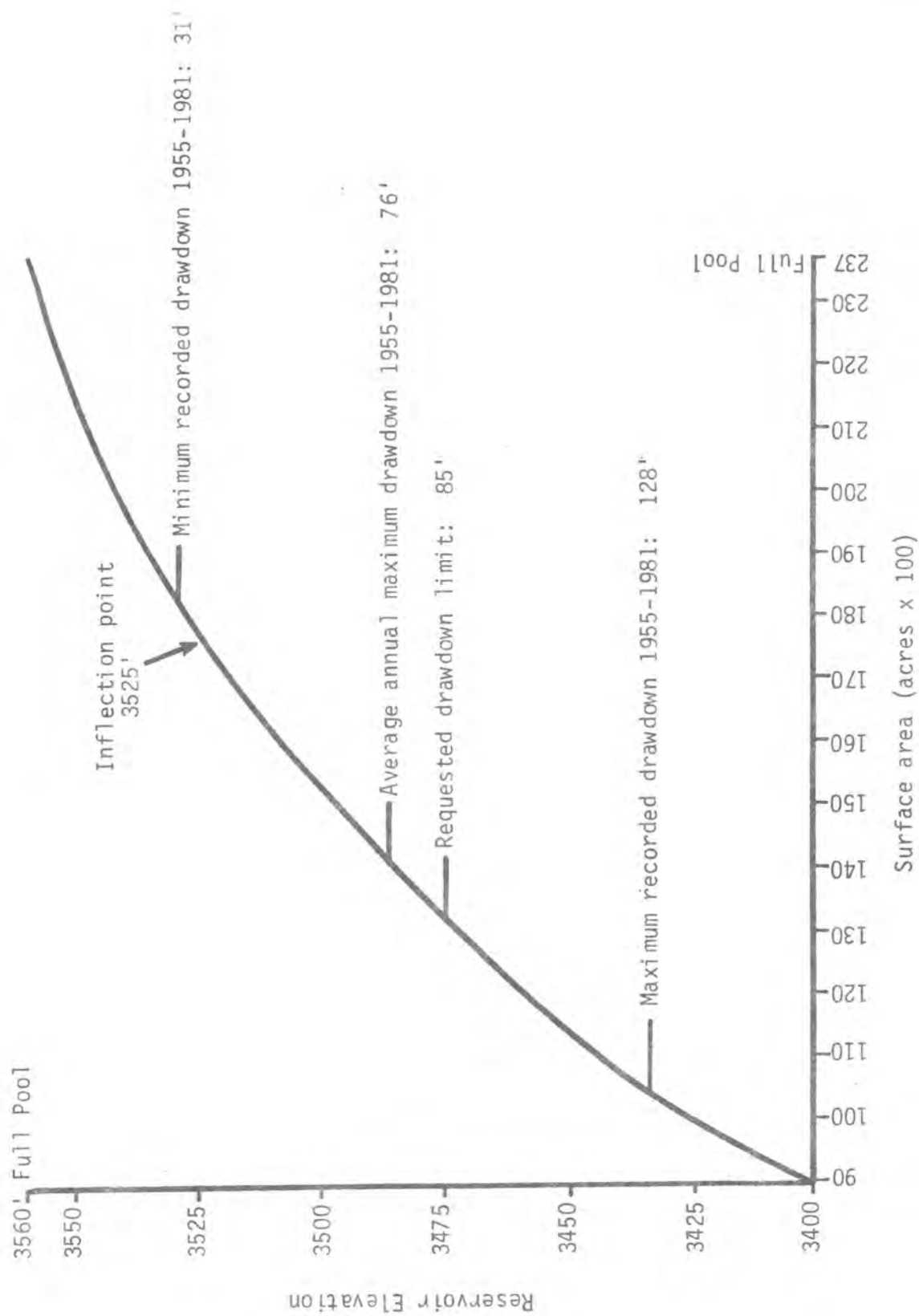


Figure 3. Surface area of Hungry Horse Reservoir vs. reservoir elevation.

population to reservoir operation which has occurred since the reservoir was built.

RESERVOIR OPERATION VS. FISH POPULATIONS

Reservoir operation is considered one of the most critical factors controlling the fish populations of Hungry Horse Reservoir. This discussion will be limited to total drawdown (power drafting plus flood control drafting) and will disregard other aspects of operation such as drafting for advance power generation and timing of drawdown. Hungry Horse Reservoir was first filled in 1954 and drafted in the winter of 1955. Figure 4 shows the maximum drawdown which occurred from 1955 through 1981. Generally, Hungry Horse reaches its maximum drawdown in March or April.

Examination of Figure 4 indicates that in the 27 years of record, drawdown has varied from a minimum of 31 feet in 1963 to 128 feet in 1972. The average drawdown was about 76 feet; somewhat less than the proposed maximum drawdown of 85 feet. Figure 4 also indicates that drawdown of the reservoir has followed three patterns described in Table 1.

Table 1. Drawdown of Hungry Horse Reservoir by three time periods.

Drawdown period	Average drawdown	Maximum	Minimum	Years below 85' request
I) 1955-1964 (10 years)	64 feet	84'	31'	0
II) 1965-1975 (11 years)	92 feet	128'	60'	7
III) 1976-1981 (6 years)	66 feet	95'	40'	1

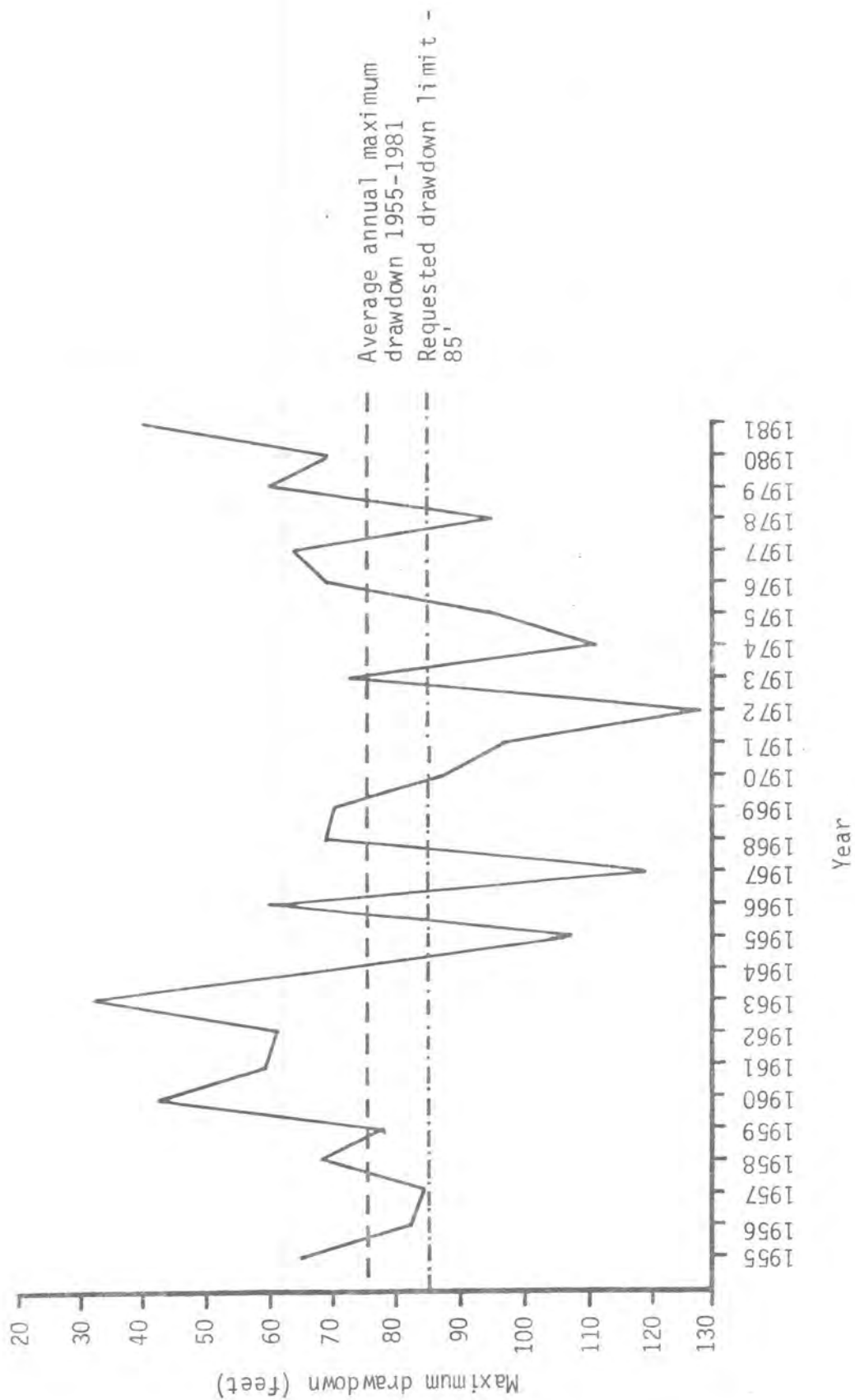


Figure 4. Annual maximum drawdown of Hungry Horse Reservoir for the years 1955-1981. Includes drafting for flood control as well as power production. Reservoir did not fill during 1973 and 1977.

Interpretation of fishery statistics related to environmental change is often difficult to define and requires analysis of many related factors such as the life cycle of a particular species and frequency or magnitude of the environmental change. Therefore, data can easily be misinterpreted if viewed without consideration for related factors. For that reason, changes in the fish population in relation to the three drawdown periods will include interpretation in each of the following five areas: 1) west-slope cutthroat spawning populations in Hungry Horse Creek from 1965 through 1972; B) cutthroat trout stocks; C) average catch per unit effort (gill net night) of selected years sampled between 1958 and 1980; D) age-class composition of whitefish and bull trout in the reservoir population; and E) growth of selected year classes of whitefish, cutthroat and bull trout.

A. Cutthroat spawning populations in Hungry Horse Creek, 1965-1972.

Hungry Horse Creek is a small tributary entering the reservoir from the east about five miles upstream from the dam. This creek contains about 13 miles of spawning area used by westslope cutthroat trout and mountain whitefish from Hungry Horse Reservoir. Flows vary from an average June peak discharge of about 450 cfs to fall and winter flows of about 5 cfs. Principle spawning areas for cutthroat trout include Hungry Horse Creek and its tributaries, Margaret and Tiger creeks. Mountain whitefish spawning occurs mainly in mainstem Hungry Horse Creek below the mouth of Margaret Creek.

Estimates of the number of adfluvial cutthroat trout from the reservoir entering Hungry Horse Creek to spawn were obtained most years between 1965 and 1972. Estimates for the years of 1968 through 1972 were very

accurate since data were obtained from a mainstem upstream-downstream trap located near the mouth. Estimates for the years 1965 and 1966 may be less reliable since they were obtained from box-traps fished in tributaries of Hungry Horse Creek or from a partial mainstem upstream trap.

Estimated spawning populations of adfluvial westslope cutthroat trout in Hungry Horse Creek are listed in Table 2 below. Average size of cutthroat and the sex ratio are also shown. The majority of spawners were four and five year old fish.

Table 2. Estimated numbers, average sizes and sex ratios of adfluvial cutthroat trout spawning in Hungry Horse Creek during 1965, 1966 and 1968 through 1972.

Parameter	Spawning year						
	1965	1966	1968	1969	1970	1971	1972
Number	1200	1200	1160	1034	1003	703	590
Average size (inches)	14.5	14.6	14.5	14.5	14.2	14.1	14.2
Sex ratio (male:female)	1:3.2	1:3.3	1:3.7	1:3.9	1:5.6	1:6.2	1:4.0

The number of cutthroat entering Hungry Horse Creek to spawn began to decline from 1969 through 1972. This decline in number of fish spawning was thought to be related to increased average reservoir drawdown starting in 1965 with a four year lag period for the fish to reach maturity. Another factor is the differential between fish stocks which is described in Section B of this report.

A complete analysis of the reasons for the decline in Hungry Horse Creek spawning populations is beyond the scope of this report. Data, however, does indicate that a major reason for the decline in numbers

was poor survival of juvenile fish after leaving the creek and adult fish in the reservoir.

Average size of the spawning cutthroat also declined somewhat, most noticeably from 1969 to 1970. Fish spawning in 1970 were largely four and five years old and would have emigrated from their natal stream into the reservoir during 1967 and 1968; about three months to 15 months following 100+ foot drawdowns in 1967.

Sex ratios of similar runs of westslope cutthroat trout were approximately one male to three females (eg. Flathead River and Lake Koocanusa). Sex ratios in Hungry Horse Creek reached a ratio of one male to six females in 1971. It was hypothesized that this skewed sex ratio was the response to stress, possibly associated with increased drawdown, and its effects upon the fish's habitat.

B. Cutthroat Trout Stocks

Hungry Horse Creek enters the reservoir from the east about five miles upstream from Hungry Horse Dam. Sullivan Creek enters the reservoir from the west about 25 miles upstream from the dam. Intensive mark and recapture studies were done on adfluvial cutthroat trout spawning in or emigrating from Hungry Horse and Sullivan Creeks in the 1960's and early 1970's. Location of recapture of these tagged fish indicated the fish emigrating from Hungry Horse Creek utilized different areas of the reservoir than fish emigrating from Sullivan Creek.

Cutthroat emigrating from Hungry Horse Creek moved upstream in the reservoir mostly along the west shore. These fish were most frequently caught in the upper part of the reservoir. Cutthroat emigrating from

Sullivan Creek were most frequently caught in the lower part of the reservoir.

These movement patterns indicate that fish spawning and rearing in Sullivan Creek spend the time between smolt emigration and spawning in the lower part of the reservoir. Fish spawning and rearing in Hungry Horse Creek spend the rest of the time in the upper part of the reservoir. It is likely these two populations are separate cutthroat trout stocks occurring within the same reservoir.

Drawdown would impact the Hungry Horse Creek cutthroat stock more severely than the Sullivan Creek stock because any level of drawdown would affect the upper end of the reservoir more than the lower end. Drawdown in excess of 100 feet dewateres almost all the reservoir upstream from Sullivan Creek.

C. Reservoir Fish Sampling

The Department has sampled Hungry Horse Reservoir with gill nets periodically since 1958. The average catch per net night for the three drawdown periods in Table 1 is shown in Table 3 below.

Table 3. Average catch per gill net night by species for three drawdown periods on Hungry Horse Reservoir. Sample years are in parentheses.

Drawdown period	Number nets	Average catch per net night						
		WCT ^{1/}	DV	MWF	CSU	FSU	SQ	Total
I) 1955-1964 (1958,60,61,62)	144	0.8	5.1	12.6	2.9	6.9	2.5	30.8
II) 1965-1975 (1968,70,72,74)	277	0.9	5.1	15.1	2.8	1.7	5.3	30.9
III) 1976-1981 (1978 & 1980)	171	1.2	5.4	11.4	2.9	1.4	2.9	25.2

^{1/} Abbreviations are: WCT - westslope cutthroat trout, DV - bull trout or Dolly Varden, MWF - mountain whitefish, CSU - largescale sucker, FSU - longnose sucker, SQ - northern squawfish.

These netting data show some changes have occurred in the gill net catch from the reservoir since netting was begun in 1958.

Catch of cutthroat trout increased slightly from Drawdown period I to Drawdown period II. Catch of cutthroat increased markedly from Drawdown period II to Drawdown period III. The trend is significant in view of the large numbers of nets used. Reasons for this increasing catch throughout the three time periods is related in part to coordinated management activities by Montana Department of Fish, Wildlife and Parks and U.S. Forest Service.

Cutthroat trout are the most sought after gamefish in Hungry Horse Reservoir. Management activities have been aimed at maintaining or improving this species. Population sampling done in the 1958-1962 period showed a declining population characterized by increased average size of fish caught from the reservoir. Average size of cutthroat caught in 1961-1962 was about 14.4 inches total length. The available data indicated a cutthroat population with insufficient annual recruitment which resulted in fewer individuals at a larger size.

The Department and U.S. Forest Service undertook a program starting in 1963 to open up many reservoir tributaries blocked to spawning cutthroat to increase opportunity for spawning and increase annual recruitment of new fish to the reservoir population. In the years of 1963, 1964 and 1965, about 60 additional miles of tributary streams were made accessible to spawning cutthroat. Removal of barriers included road culverts and log jams.

Increased spawning and recruitment of young cutthroat to the reservoir population did occur. By 1968, size of the average cutthroat caught in the reservoir had declined to 12.0 inches and the number of fish increased slightly. In effect, increasing spawning and recruitment potential masked

the deleterious effects of increased drawdown upon the reservoir-wide cutthroat trout population.

It is a paradox that general reservoir cutthroat populations appeared to be stable throughout 1955-1975, but the Hungry Horse Creek spawning stock showed a 50 percent decline in numbers. Stream improvements were affected on several west-side streams and upper reservoir streams including the Sullivan Creek drainage. It is suspected that the several cutthroat stocks which exist in the reservoir were affected differently by reservoir operation depending on their reservoir habitat.

Gill net catch of cutthroat trout increased markedly in Drawdown period III compared to both Drawdown periods I and II. This response is largely related to decreased reservoir drawdown and the stream improvement program.

Stream improvements, although targeted for cutthroat, did benefit all stream-spawning fish species inhabiting Hungry Horse Reservoir. These other species include bull trout, mountain whitefish, largescale suckers and squawfish. Average catch of these species has remained relatively stable since the first sampling was done in 1958.

Longnose suckers are thought to spawn in the reservoir pool. The gill net catch of this species declined markedly from Drawdown period I to Drawdown period II and continued a slight decrease in Drawdown period III. Since this fish species spends its entire life cycle in the reservoir and was not benefited by the stream improvement program, it provides a measure of the reservoir habitat characteristics.

D. Age Composition of Bull Trout, Cutthroat Trout and Whitefish

This section reports age composition of bull and cutthroat trout and mountain whitefish caught by net sampling. The age composition data was limited to collections in the fall (October and November) of 1958, 1961, 1966, 1972, 1974 and 1980. Data for 1968, 1970, 1976 and 1978 have not been analyzed to date.

Data collected in the fall should better represent the population structure because all age classes would be present in the reservoir. Bull trout and cutthroat emigrate from natal streams into the reservoir during the spring and summer months at an age of two or three years. Data from spring sampling would not accurately reflect the abundance of these younger age groups. One year old whitefish were generally too small to net in the spring with standard gill nets, but were caught during the fall netting.

Table 4. Age composition of bull trout from fall gill net catches from Hungry Horse Reservoir, 1958, 1961, 1966, 1972, 1974 and 1980.

Drawdown period	Percent of catch in age group				
	II	III	IV	V	VI and older
I) 1958	8	20	36	16	18
1961	8	35	17	20	20
II) 1966	3	67	20	5	5
1972	14	34	32	8	12
1974	4	53	22	9	12
III) 1980	5	31	29	19	16

Some changes have occurred in age composition of bull trout in the reservoir (Table 4). Analysis of these data will be limited to those fish six years old or older since these ages of bull trout were generally mature spawning fish and comprised the bulk of the trophy fishery. In 1958 and 1961,

six year old and older fish comprised 19 percent of the net catch of bull trout. In 1966, 1972 and 1974 they made up 10 percent of the net catch, while in 1980 they comprised 16 percent of the catch. These data show that survival to maturity of bull trout was lower in Drawdown period II compared to both periods I and III even though total numbers in net catches were very similar in all three drawdown periods (Table 3). It appears that the higher average drawdowns of period II had an adverse impact on bull trout survival to maturity.

There was no clear trend in age composition of mountain whitefish from Hungry Horse Reservoir (Table 5). It does appear that four year old and older fish comprised a higher percentage of the population in period I than in other periods, making up 54 percent of the net catch in 1958 and 1961 compared to 44 percent and 32 percent in periods II and III.

Table 5. Age composition of mountain whitefish from gill net catches at Hungry Horse Reservoir, 1958, 1961, 1966, 1972, 1974, 1978 and 1980.

Drawdown period	Year	Percent of catch in age group				
		I	II	III	IV	V and older
I	1958	2	20	35	36	7
	1961	3	8	24	38	27
II	1966	2	14	24	24	36
	1972	6	9	34	39	12
	1974	18	20	42	14	6
III	1978	2	24	55	18	1
	1980	7	30	20	35	8

Aging of mountain whitefish scales collected in 1958 showed that some mountain whitefish lived as long as eight and one-half years. Maximum longevity of whitefish collected in 1972 and 1974 was six years in 1972 and five years in 1974. Maximum age of whitefish collected in 1978 and 1980 was six years and five years, respectively. It would appear the maximum longevity of whitefish declined from period I to periods II and III, but has not changed since.

A major shift in age composition has occurred between immature cutthroat (age Class II and III) and adult cutthroat trout (ages IV, V and VI) (Table 6). In Drawdown period I, adult cutthroat made up 54 percent of the gill net catch. In period II, adult cutthroat made up only 41 percent of the total catch.

Table 6. Age composition of westslope cutthroat trout caught by gill net sampling in Hungry Horse Reservoir, 1958, 1961, 1966, 1968, 1970, 1972, 1974 and 1978.

Drawdown period	Year	Percent of catch in age group				
		II	III	IV	V	VI
I	1958	32	33	26	9	
	1961	16	11	16	44	13
II	1966	6	41	36	15	2
	1968	31	33	20	15	1
	1970	5	44	37	14	---
	1972	20	49	24	7	---
	1974	32	32	16	20	---
III	1978	20	31	35	13	1

Data from period I were interpreted to mean poor annual recruitment was occurring. This led to a stream improvement program aimed at increasing spawning area availability. About 60 additional miles of spawning stream

were made available and subsequent observation showed fish used these areas as soon as they were opened up. The decline in the percent of adult fish in period II, even though the population level remained relatively constant (Table 3), indicated increased annual recruitment, but poorer survival rates in the reservoir.

The shift occurring in the 1978 gill net catch to a 51:49 percent immature to mature fish ratio along with higher population levels (Table 3) is interpreted to be an indication of increased survival of young fish and maintenance of a good spawning age population. This shift is likely due to the increased spawning area available and decreased drawdown reducing mortality rates during Drawdown period III.

E. Growth Rates

Growth rates of fish are another measure of environmental changes affecting aquatic habitats. For this report, growth rates of bull and cutthroat trout and mountain whitefish will be presented in such a manner as to omit fish that lived in two or more drawdown periods. Examples of this are fish caught in 1961 that have lived entirely in Drawdown period I, or fish caught in 1980 that emigrated from natal streams to the reservoir in 1976 or later. This latter example would preclude analyzing bull trout older than seven years since those fish would have entered the reservoir in Drawdown period II.

Growth rates for all three periods were essentially identical for fish in age classes I, II and III (Table 7). This is to be expected since these fish were stream residents and unaffected by reservoir levels.

Table 7. Growth rates of bull trout during three drawdown periods in Hungry Horse Reservoir. Sample size is in parentheses.

Drawdown period	Sample year	Length in inches at annulus									
		I	I	III	IV	V	VI	VII	VIII	IX	X
I	1958, 61	2.7 (346)	5.5 (340)	8.7 (326)	12.7 (237)	17.1 (152)	21.6 (76)	25.6 (15)			
II	1972, 74	3.1 (416)	5.7 (416)	8.6 (392)	11.6 (247)	15.0 (152)	18.5 (71)	21.6 (37)	25.1 (16)	27.6 (10)	31.8 (1)
III	1980	3.0 (147)	5.5 (147)	8.6 (137)	11.7 (88)	14.8 (45)	19.0 (17)	22.7 (5)			

Age classes IV-VII give the truest indication of the effects of drawdown on growth rates. A significant decline in bull trout growth in these age classes was noted between Drawdown periods I and II. For all of the age classes between IV and VII, the growth increments in Drawdown period II are less than those for Drawdown period I.

Older bull trout (ages IV-VII) in Drawdown period III indicate a slight growth increase over period II in response to smaller average drawdowns, but sample sizes are presently too small to draw any firm conclusions.

The lack of data for bull trout age VIII and older during period I is due to an inability on the part of the biologist to assign an age to scales taken from larger fish. Thus, even though older fish were present, they are not included in the data. Age VIII and older fish were omitted from period III because their reservoir growth period overlaps into Drawdown period II.

Cutthroat trout exhibit a pattern similar to bull trout in the early life stages. Most cutthroat outmigrate from natal streams as age II fish and as a result show little differential growth during the first two

years, regardless of reservoir drawdown.

Growth rates of cutthroat trout in the age classes III, IV and V were variable and showed no consistent trends (Table 8). Age IV fish were somewhat smaller during Drawdown period II.

Table 8. Growth of westslope cutthroat trout during three drawdown periods in Hungry Horse Reservoir. Sample size is in parentheses.

Drawdown period	Sample year	Length in inches at annulus					
		I	I	III	IV	V	VI
I	1958 & 1961	2.6 (121)	5.3 (117)	8.8 (88)	12.2 (60)	14.3 (35)	15.2 (7)
II	1970,72 74	3.0 (175)	5.4 (170)	9.0 (130)	11.4 (49)	14.2 (13)	
III	1978*	3.3 (85)	5.2 (84)	9.3 (67)	12.5 (44)	14.1 (13)	

* Includes year class 1974 and 1975 since these fish were rearing in streams and entered reservoir in 1976, the first year of drawdown period III.

Overall, growth of cutthroat trout during Drawdown period III was at least equivalent to the other periods. This occurred despite an overall increase in numbers of cutthroat trout (Table 3).

Growth rates of mountain whitefish (Table 9) were not consistent with the patterns seen in bull and cutthroat trout. There appeared to be a slight increase in growth during Drawdown period II which carried over into period III. The increased growth rate in period II coincided with increasing populations (Table 3). This anomaly cannot be explained due to changing drawdown characteristics.

Table 9. Growth rates of mountain whitefish during three drawdown periods in Hungry Horse Reservoir. Sample size is in parentheses.

Drawdown period	Sample year	Length in inches at annulus							
		I	II	III	IV	V	VI	VII	VIII
I	1958, 61	3.4 (222)	7.2 (213)	9.7 (171)	11.3 (109)	12.3 (41)	13.3 (8)	13.8 (2)	14.6 (2)
II	1972, 1974	3.2 (280)	8.1 (188)	11.1 (123)	12.5 (34)	14.0 (7)			
III	1978* 80	3.3 (269)	7.5 (238)	10.4 (114)	12.3 (42)				

* Includes only fish from the 1976 year class or younger since older fish would have lived partly during Drawdown period II.

SUMMARY AND CONCLUSIONS

We have attempted to provide a historical overview of the impacts of reservoir drawdown on the fish population using averages of data collected during three different drawdown periods. Had we selected certain individual years and omitted others, we could have further strengthened our request. However, the nature of a biological system is such that it does not recognize discrete time periods and impacts affected during one period are subject to dampened responses in another period. We feel that our analysis during the three drawdown periods we selected give an accurate portrayal of the events and impacts.

Briefly, the five-part analysis provided in this report has shown the following:

Cutthroat spawning populations, as monitored in Hungry Horse Creek, declined during the high drawdowns of period II (the late 1960's and early 1970's). A stream improvement program during this same period

increased recruitment of young cutthroat to the reservoir which offset decreased reservoir survival due to large drawdowns. The decreased level of drawdown during period III combined with the gains of the stream improvement program, have provided an increased population of cutthroat in the reservoir with better growth rates and a more balanced age structure.

Bull trout have shown somewhat less of a response to drawdown levels than have cutthroat. This may be due in part to the fact that they are dependent on whitefish as a food supply and being higher in the food chain are less sensitive to disturbances which have affected the cutthroat. Nonetheless, bull trout populations have shown a slight increase during drawdown period III and survival of bull trout to maturity has increased during this period. Most evident is the increased growth rate of bull trout in response to the lessened drawdown of period III.

Mountain whitefish have shown the least response to changes in drawdown level of the three species. Increased population levels during the increased drawdown of period II may have been due to the stream improvement program which directly benefitted this species. The level of reproduction may have been inadequate to produce as many whitefish as the habitat could support.

We have demonstrated that the level of drawdown which occurred during the 11-year period from 1965 through 1975 was detrimental to gamefish in Hungry Horse Reservoir, particularly cutthroat trout. Drawdown during these years averaged 92 feet (Table 1). Drawdowns averaging 66 feet, which occurred from 1976 to 1981, produced a positive trend in populations and certain parameters such as age composition and growth rates.

We feel that establishment of an 85 foot maximum drawdown level

would benefit the Hungry Horse Reservoir fishery. With a drawdown constraint of 85 feet, the average drawdown over a period of years would likely be in the neighborhood of the 66-foot average maintained from 1976 to 1981. While this is not a desirable or optimum level for maintaining fishery potential in the reservoir and its tributaries, our evidence indicates that with this constraint the reservoir fishery could be maintained at its present level instead of declining as it did during drawdown period II.

A final noteworthy point is that Hungry Horse Reservoir is the vital link for the well-being of the fishery in its tributaries. This includes not only tributaries flowing into the reservoir directly, but also the entire South Fork of the Flathead River. Bull trout tagged in Hungry Horse Reservoir have been caught by anglers some 60 miles upstream in Danaher Creek, deep in the Bob Marshall Wilderness.

Most of the data presented in this report can be referred to in Federal DJ Reports F-34-R-1 through 15, Jobs IIa and IIIa, and State of Montana 29-E-2 project reports. Some of the age and growth data has not yet been published.

Supplementary Table Illustrating the Relationship Between
Full Pool Capacity and Inactive Storage Volume at Hungry Horse
and Libby Dams as Compared to Other Major Columbia River Storage Reservoirs

	Pool Elevation	Drawdown (ft.)	Volume (af)	% of Full Volume
Hungry Horse	3,560'	0-Full Pool	3,468,000	100
	3,475'	85-Recommended Limit	1,821,000	52.5
	3,432'	128-Maximum of Record	1,267,000	36.5
	3,336'	224-Inactive Storage Level	486,000	14.0*
Libby	2,459'	0-Full Pool	5,869,392	100
	2,369'	90-Preferred Recom- mended Limit	2,585,128	44.0
	2,349'	110-Acceptable Recom- mended Limit	2,086,777	35.6
	2,287'	172-Maximum of Record Inactive Storage Level	889,924	15.2*
Dworshak	---	Inactive Storage Level	---	42*
Brownlee	---	Inactive Storage Level	---	32*
Grand Coulee	---	Inactive Storage Level	---	43*

* Note: Inactive storage level at Hungry Horse and Libby is a considerably lower percentage of the pool than at Dworshak, Brownlee or Grand Coulee.

SUPPLEMENT VIII

Existing mitigation, enhancement or protection measures were provided with the November recommendations. We have provided additional information as requested on three projects:

LIBBY DAM

This section details mitigation measures undertaken as a result of the construction of Libby Dam. The measures actually instituted as mitigation for fisheries fall into four categories: 1) Murray Springs Trout Hatchery; 2) Lake Koocanusa Tributary Development; 3) Young Creek Habitat Development; and 4) Kootenai River Fish Flows. Measures 2 and 3 are now completed and no longer subject to federal funding.

Murray Springs Trout Hatchery

The Federal Government authorized expenditure of four million dollars for construction, operation, and maintenance of a fish hatchery near Rexford, Montana on the shores of Libby Reservoir. Approximately three million dollars were spent in the construction phase completed in 1979 and the remaining funding will be adequate to maintain hatchery operations through about 1985. It is anticipated that the hatchery, which is supposed to be funded for the life of the project (100 years), will remain funded through Libby Dam's operational budget. The hatchery is operated by the Montana Department of Fish, Wildlife and Parks under contract to the Corps of Engineers. Total annual operational and maintenance costs are about \$170,000 per year.

The value of this mitigation measure to the fishery is presently unquantified. The hatchery became operational in 1979 and the first plant of fish from the hatchery consisted of 200,000 westslope cutthroat trout stocked in Lake Koocanusa in May, 1981. It will take several years before the actual contribution of hatchery fish to the fishery can be determined.

Lake Koocanusa Tributary Development

During the period July 1, 1972 through June 30, 1975, the Corps of Engineers contributed \$19,100 to a Montana Department of Fish and Game study of Lake Koocanusa tributaries. Work completed included tributary surveys, barrier removal, and imprint planting of cutthroat fry. A complete synopsis of this work is found in the attached report: Supplement VIII, Attachment A; Lake Koocanusa Tributary Development by Joe E. Huston and Bruce May, Federal Contract No. DACW 67-73-C-0004.

Young Creek Habitat Development

In conjunction with the above study an intensive management effort was undertaken on Young Creek, a tributary to Lake Koocanusa. The Corps of Engineers designed and built an upstream-downstream fish trap on Young Creek at an approximate cost of \$45,000. The Montana Department of Fish and Game developed the stream to establish a spawning run of adfluvial cutthroat trout by removing the resident fish, imprint planting cutthroat trout fry from adfluvial stock, and operating the fish trap to exclude other species and evaluate project success. A spawning run of about 300 adfluvial cutthroat was established. The total Corps contribution to

the project from July, 1969 through August, 1975 was \$160,283. A complete summary of this work is found in the attached report: Supplement VIII, Attachment B; Habitat Development of Young Creek, Tributary to Lake Koocanusa by Bruce May and Joe E. Huston, Federal Contract No. DACW 67-73-C-0002.

Kootenai River Fish Flows

This project involves regulation of the Kootenai River by Libby Dam so as to provide a baseline flow and limit water level fluctuations to protect and enhance the fishery. This is described on page 94 of the November Recommendations. There were no direct capital costs associated with implementing this cooperative measure.

Selective Withdrawal System

The Montana Department of Fish and Game requested in 1962 that a selective water withdrawal system be incorporated into the design of Libby Dam, but the request was denied due to unfavorable cost:benefit ratios. At a later date, the EPA demanded a selective withdrawal system to improve water quality and it was then added onto the dam. It became operational in 1977 and has significantly reduced the loss of fish downstream through the dam, but was not built as a mitigation measure for fish and wildlife.

HUNGRY HORSE DAM

Studies were initiated in 1979 to do appraisal and feasibility

level studies for the Bureau of Reclamation on adding additional power generation capabilities and constructing a reregulating dam at the Hungry Horse Project. This study ends in 1982. It could not be considered as mitigation by definition or intent.

Additional studies were begun under funding secured from Bonneville Power Administration to monitor the effectiveness of providing stream flows below Hungry Horse Dam to improve success of kokanee spawning. These studies would mesh well with recommended measures for mitigation. The study will be approximately four years in duration.

KERR DAM

A study is being funded by Bonneville Power Administration to assess factors associated with the decline of kokanee spawning along the shoreline of Flathead Lake. This is a six year study effort. The project proposal can be provided upon request.

Montana Power Company has not provided any mitigation for Kerr Dam nor have they contributed funds to the existing study. The study is being coordinated with the Confederated Salish and Kootenai Tribes.

SUPPLEMENT I - ATTACHMENT A

LIBBY RESERVOIR DRAWDOWN LIMITATION

Supplement I - Attachment A

LIBBY RESERVOIR DRAWDOWN LIMITATION

From a fisheries management standpoint, the most desirable mode of operation at Libby Dam would result in establishment of a stable level in Libby Reservoir year-round. This would 1) maximize water retention time in the reservoir, thereby enhancing overall lake productivity; 2) allow for the development of a littoral zone including aquatic macrophytes; 3) increase benthic invertebrate and fish production; and 4) optimize the overall fishery potential. Operation of the reservoir for flood storage and power generation precludes this option, however. We are instead faced with trying to maintain a balance that does the least amount of harm to the fishery while meeting the storage and power generation needs of the project.

During the eight-year period between 1974 and 1981, the average maximum drawdown of Libby Reservoir has been 127 feet (Table 1) with a range from 94 feet (1979) to the maximum possible 172 feet (1975). The maximum drawdown of 172 feet results in a 69 percent reduction in surface area, from 46,456 acres down to 14,487 acres. The volume of water stored in the reservoir is reduced even more drastically, from 5.9 million acre-feet to 0.9 million acre-feet, a reduction of 85 percent.

Fish population levels are dependent on a complex interaction of factors not fully understood. One of these factors is living space. Logic dictates that in large reservoirs, the more living space there is available the greater the potential fish population. Drawdowns of the magnitude described, resulting in an 85 percent reduction in living

Table 1. Recorded maximum drawdown of Lake Koocanusa for the period of record.

Year	Drawdown (ft.)
1974	154
1975	172
1976	152
1977	101
1978	129
1979	94
1980	106
1981	109
Mean	127

space, have a deleterious effect on the fish biomass the reservoir can support. These drawdowns also occur during the most stressful seasons of the year, winter and spring, when food supply is at its lowest.

The upper two-thirds of the 92 mile long reservoir behind Libby Dam lies in a basin shaped quite differently from the lower one-third. In the upper portion, the historical river channel was bordered by a broad gradual floodplain (now inundated) paralleled by a mountainous formation on either side. As a result, drawdown in reservoir level at first causes only a slight reduction in surface area as the steep foothills are dewatered. Once the water level reaches the floodplain, this rate of loss accelerates (Figures 1 and 2). This effect is seen in a large percentage of the upper basin above the old Rexford townsite. Most of the floodplain begins at an elevation of about 2,400 feet. This corresponds to the inflection point seen on the graph of reservoir surface area vs. elevation (Figure 3).

Downstream, from the old Rexford townsite to the dam, the reservoir is mostly confined to a narrower canyon with considerably less floodplain development. In this area, lowering of reservoir elevation causes much less of an impact on rate of surface area loss (Figure 4).

On the graph of reservoir surface area vs. reservoir elevation (Figure 3), an inflection point occurs at about 2,410 feet elevation, as previously noted. This corresponds to a reservoir drawdown of 49 feet. Beyond this point, a drop in elevation results in a greater depletion of surface area due to floodplain dewatering.

A study of fish food habits on Libby Reservoir completed in 1979 showed that the surface layer is the most important area of the reservoir

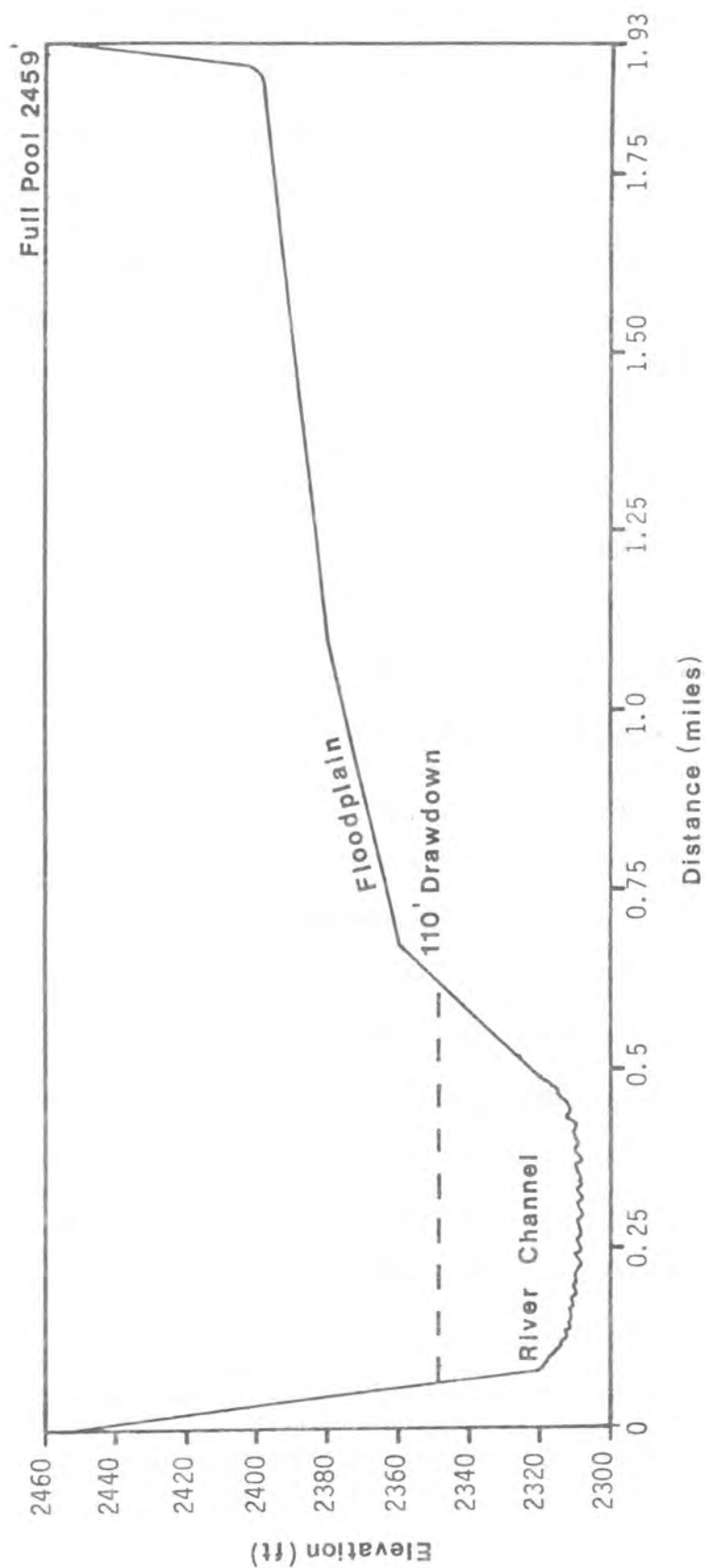


Figure 1. Typical Libby Reservoir cross-section showing location of floodplain in relation to 110-foot drawdown level. Location: 1.5 miles south of U.S.-Canada border (North section boundary W to E of Sec. 13 R28W, T37N and Secs. 17 and 18 R27W, T37N) at Kootenai Flats.

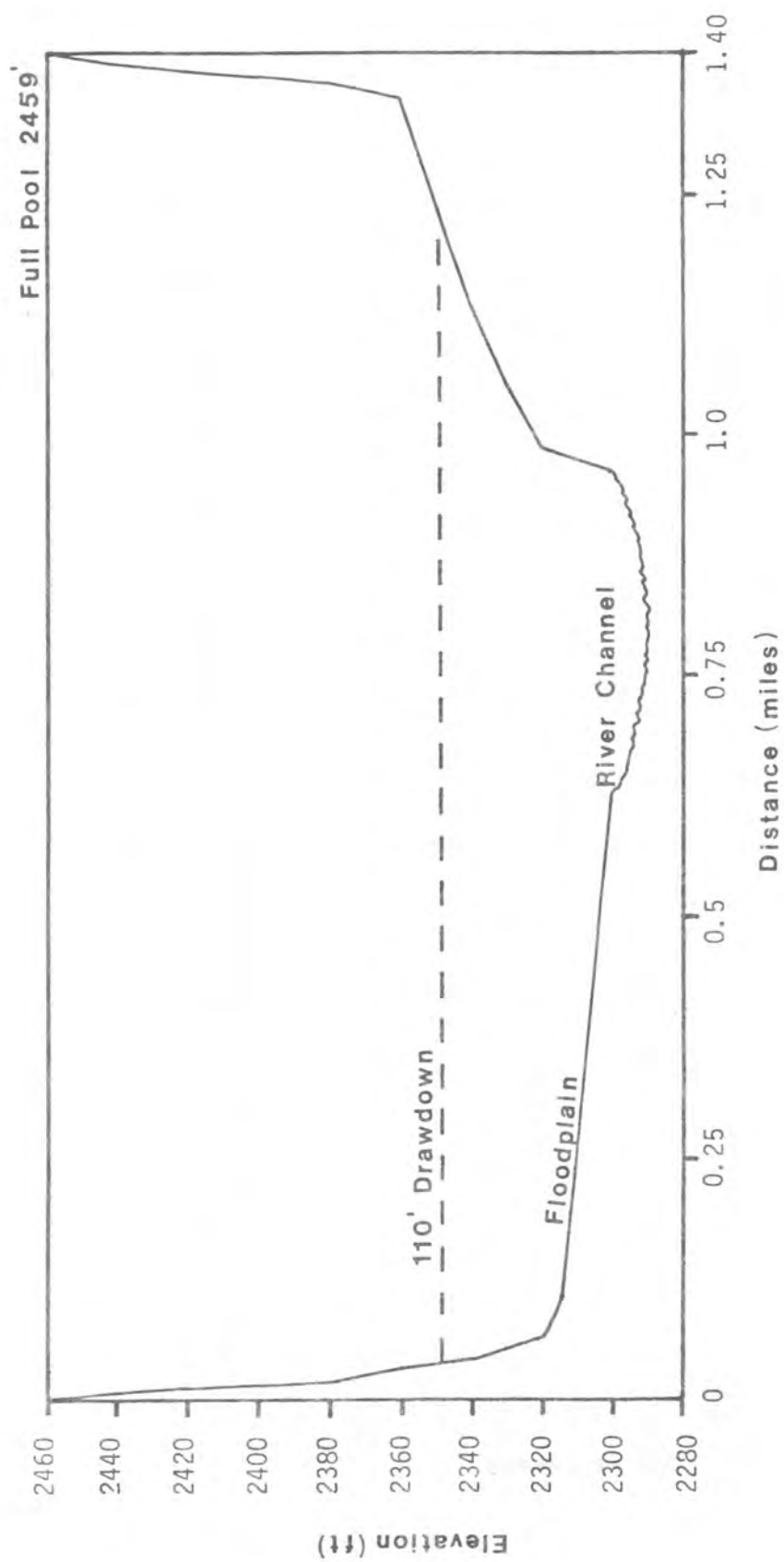


Figure 2. Typical Libby Reservoir cross-section showing location of floodplain in relation to 110-foot drawdown level. Location: 3 miles south of U.S.-Canada border (Midline W to E of Sec. 19 R27W, T37N and Sec. 24 R28W, T37N) near Murray Creek.

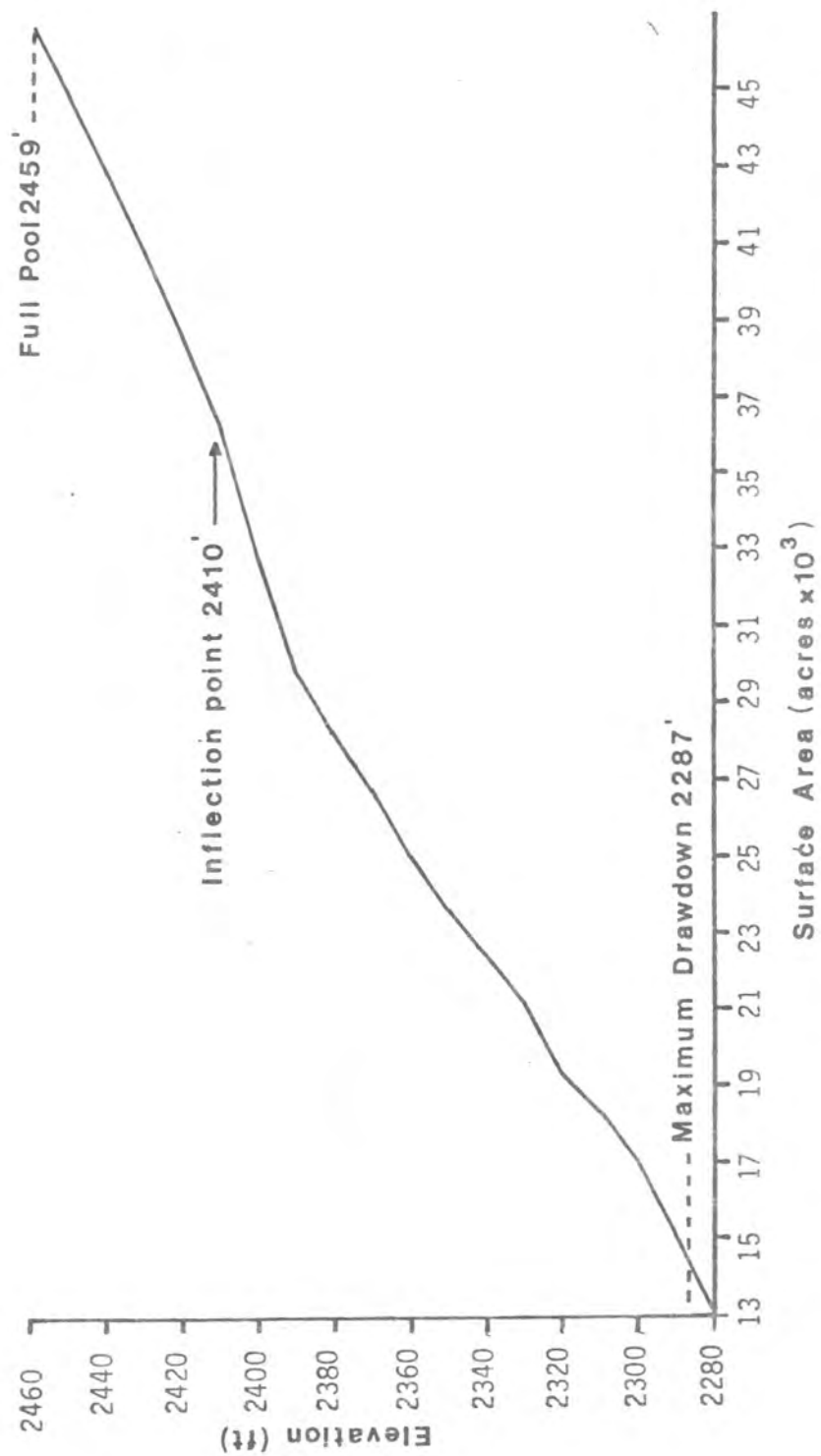


Figure 3. Water surface area vs. reservoir elevation for Libby Reservoir.

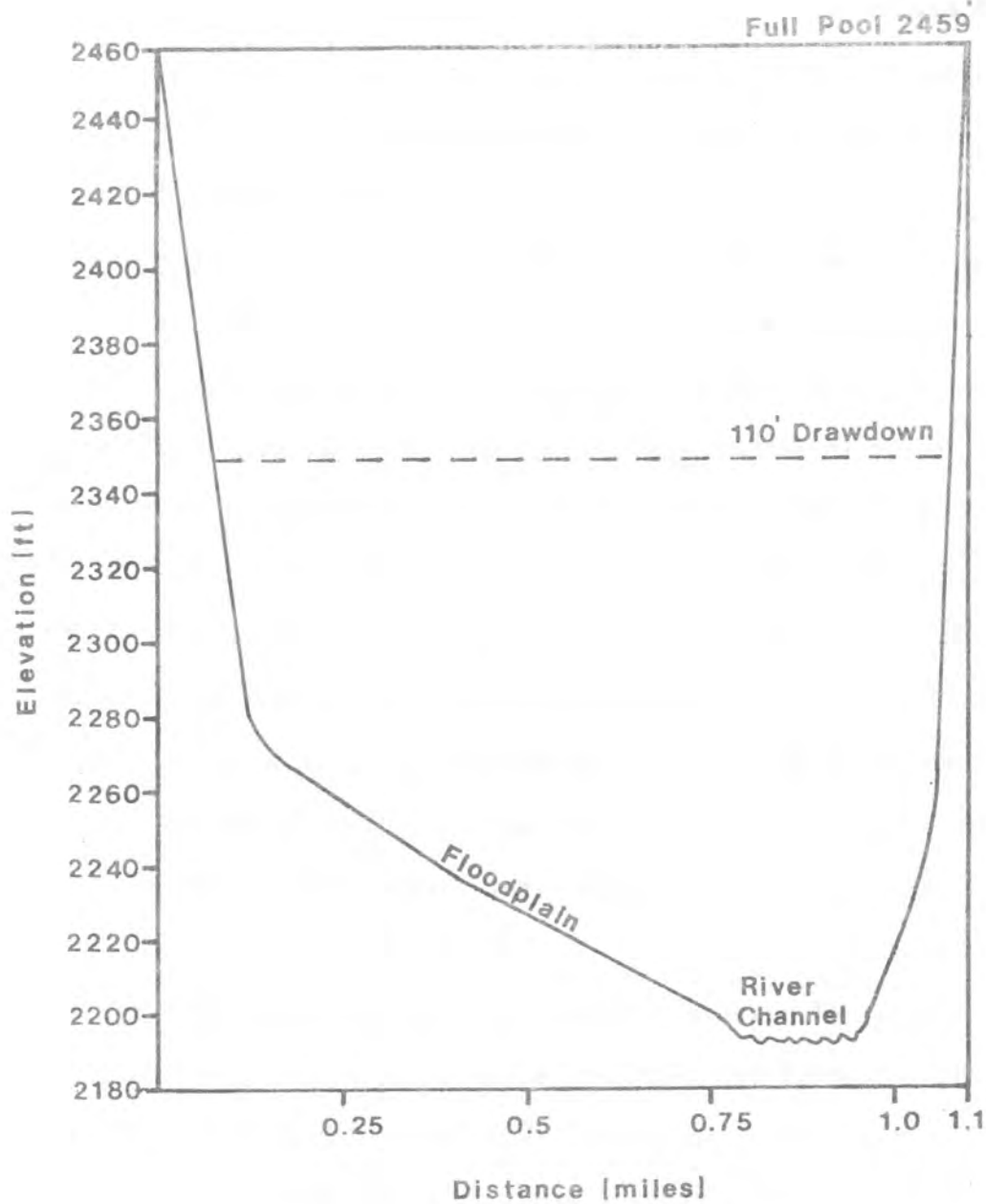


Figure 4. Typical Libby Reservoir cross-section showing location of floodplain in relation to 110-foot drawdown level. Location: 29½ miles south of U.S.-Canada border (North section boundary W to E of Sec. 6 and 5 R28W, T32N) near Tenmile Creek.

for rainbow and cutthroat trout (McMullin 1979). During most of the year, these two species were concentrated near the surface. Both species relied heavily on *Daphnia* as a winter food source. Cutthroat trout fed more heavily at times on terrestrial insects, while the larger rainbow trout were more piscivorous. Both species fed on aquatic dipterans to some extent with chironomid pupae making up a substantial part of the spring diet (McMullin 1979).

McMullin found that the density of benthic dipterans was less than half as great in samples taken from above the 172 foot maximum drawdown level as from samples taken below it. The colonization of benthic dipterans is inhibited in areas that are occasionally dewatered. This reduces the availability of chironomids, an important food source for trout and other fish. Oligochaetes were found to be as many as 1,300 times more numerous below the 172 foot maximum drawdown level than above it. While not an important trout food, oligochaetes may be important to some of the other fish species that larger trout forage on, especially redbside shiners.

The effects of massive drawdowns on the plankton populations are presently unquantified. *Daphnia* is the primary year-round source of food for trout in Lake Koocanusa. *Daphnia* supply as much as 98 percent of the caloric intake for small trout (<330 mm) during winter months (McMullin 1979). Changes in the composition or abundance of plankton, due to water level fluctuations which increase the turnover rate of the reservoir, could severely impact the fishery.

Libby Reservoir is a large, oligotrophic cold-water lake and thus productivity is not high. Water is cycled through the lake in about

eight months. Other reservoirs in the area such as Noxon Rapids and Cabinet Gorge on the Clark Fork of the Columbia River have two to 12 day exchange cycles and notably unproductive fisheries. This is partially a result of nutrients passing too rapidly through the system. The eight month cycle of Lake Koocanusa could be increased by retaining more water (reducing drawdown). This would have the eventual effect of stimulating productivity and ultimately would enhance the fishery.

The effects of large reservoir drawdowns on the passage of fish downstream through the turbines of the dam is also unquantified. The selective withdrawal system installed in the dam has decreased the incidence of this problem, but concentrating the fish in as little as 15 percent of the water, as occurs at maximum drawdown, would increase the likelihood of fish being passed downstream.

Spawning runs of rainbow and cutthroat trout into Lake Koocanusa tributaries occur as early as mid-April while the reservoir is still near low pool. Excessive drawdown may increase the difficulty encountered by these fish in reaching the spawning grounds and could potentially block some migrations.

Burbot have become an important gamefish in the reservoir. They spawn during the winter in shallow water one to ten feet deep (Brown 1971). The Kootenai Flats area is thought to be one of the major spawning grounds as concentrations of burbot occur there during the winter. Drawdowns of 60 feet or more begin to dewater the flats (Figure 1) and in some years, as drawdown proceeds, burbot eggs or fry may be stranded out of water.

Further studies of reservoir configuration and evaluation of species

interactions at various water levels would lead to a more clearly definable level of drawdown that would be acceptable in maintaining the Libby Reservoir fishery. Based on the findings that the rate of loss of surface area accelerates when drawdown elevation exceeds 2,410 feet, this would seem to be the most biologically acceptable limit to annual drawdown. However, this is not a practical limit in light of the fact that drawdown has exceeded 90 feet in each of the preceding eight years (Table 1).

Examination of the data show that 90-110 feet of drawdown would be a more practical limit. A drawdown of 110 feet would just begin to dewater the floodplain on a typical reservoir cross-section near the old Rexford townsite (Figure 2). The floodplain on a typical cross-section at Kootenai Flats would be almost totally dewatered (Figure 1). For sustained aquatic productivity, it is important that as much of this historic floodplain remain underwater as possible.

Since 1973, the proposed drawdown limit of 110 feet has been exceeded in four of eight years, but only once in the past five years. Adoption of this operational constraint in all but the most extreme water years would serve to further mitigate effects of Libby Dam on the fishery. We would not advocate 110 feet as a "desirable" level of drawdown because any level of drawdown is undesirable, but 110 feet is an acceptable maximum based on the information we have to date and one that would be consistent with requirements for refilling of Libby Reservoir.

LITERATURE CITED

- Brown, C.J.D. 1971. Fishes of Montana. Big Sky Books, Montana State University, Bozeman, Mt. 207pp.
- McMullin, S.L. 1979. The food habits and distribution of rainbow and cutthroat trout in Lake Koocanusa, Montana. M.S. Thesis, University of Idaho, Moscow, Id.

SUPPLEMENT II - ATTACHMENT A

SUMMARY

Supplement II - Attachment A

SUMMARY

The Montana Department of Fish, Wildlife and Parks (MDFWP), under provisions of an act passed by the 1969 Montana Legislature, filed for instream water rights for purposes of preserving fish and wildlife habitat in the 45.7 mile reach of the Flathead River from Flathead Lake to the confluence of the South Fork. The MDFWP filed on December 22, 1970 for the amounts listed below:

<u>Time Period</u>	<u>Amount (cfs)</u>
October 1 - March 31	3,625
April 1 - September 30	8,125

This reach of the Flathead River supports a high quality westslope cutthroat trout, trophy bull trout, and kokanee salmon fishery. Fishing pressure on the Flathead River during the summer of 1975 was estimated at 46,193 man-days with over 73% of the pressure occurring in the vicinity of Kalispell. The estimated harvest was 217,610 fish which included 86% kokanee, 7.1% westslope cutthroat trout, 3.5% mountain whitefish and 2.4% bull trout.

This reach of the Flathead River is extremely popular with recreational floaters even though flows are partly regulated by releases from Hungry Horse Dam (on the South Fork) and subject to extreme fluctuations. Waterfowl hunting along the river is also a popular fall activity.

Recent advances in the development of instream flow methodologies have enabled the MDFWP to more accurately define the flows that are needed to maintain the high quality trout and salmon fishery of this reach of the Flathead River at the existing level. The recently derived flow recommendations are less than the original filing for the periods of July 16 - April 30 and exceed the original filing for the period of May 1 - July 15.

For adjudication purposes, the final claim submitted by the MDFWP can be less than, but not exceed, the original filing of December 22, 1970. Consequently, the flow recommendations must be adjusted to the constraints imposed by the original filing. The final claim of the MDFWP is as follows:

<u>Time Period</u>	<u>Amount (cfs)</u>
August 1 - April 15	3,500
April 16 - April 30	6,650
May 1 - July 15	8,125
July 16 - July 31	5,402

The final claim amounts to a net flow reduction of 872,408 acre-feet from the original filing, a reduction of 20.5%.

The final claim, when adjusted to fall within the constraints of water availability for a median or normal water year, equals 3,343,421 acre-

feet of water per year, which is about 51.7% of the annual volume of water that is normally available at the U.S.G.S. gauging site near the upper end of this reach (5.7 miles downstream from the South Fork).

The instream flow methodologies, flow recommendations and other background information are thoroughly discussed in the following sections.

1. RIVER

Flathead River (from the inlet to Flathead Lake upstream to the mouth of the South Fork Flathead River).

2. GENERAL DESCRIPTION

Origin

The Flathead River originates in the Rocky Mountains of British Columbia. The river is named the Flathead River in Canada until crossing the Canadian border. At this point, it is known as the North Fork of the Flathead River down to the confluence of the Middle Fork where it is again named the Flathead River. From the confluence of the Middle Fork, the river flows approximately 13 miles through Badrock Canyon before entering the Flathead Valley. The South Fork enters the main river in the canyon about 10 miles downstream from the confluence of the North and Middle Forks.

The lower mainstem Flathead River above Flathead Lake is a low gradient river flowing through agricultural land. There are numerous islands, side channels, and oxbow lakes. The riparian zone consists of cottonwood, willow, alder, and birch. The subdivision of agricultural land along the river is increasing.

Stream Length

Flathead River (inlet to Flathead Lake upstream to the confluence of North and Middle Forks): 55.3 miles

Inlet to Flathead Lake upstream to the mouth of the South Fork: 45.7 miles

Mouth of the South Fork upstream to the mouth of the Middle Fork: 9.6 miles

Drainage Area

Total Flathead River (above Flathead Lake): 5571 square miles

Gradient

Total Flathead River (above Flathead Lake): 12.3 ft/mile (0.23%)

Flathead Lake inlet to South Fork: 2.8 ft/mile (0.05%)

South Fork to Middle Fork: 8.6 ft/mile (0.16%)

Flows

A U.S.G.S. gauge is located 5.7 miles downstream from the mouth of the South Fork. The South Fork contributes approximately one third of the river's flow and has been regulated by Hungry Horse Dam since September 21, 1951. The average discharge of the Flathead River for the 52 year period of record (1928-1980) is 9724 cfs (7,045,000 acre-feet per year) with a maximum estimated discharge of 176,000 cfs and a minimum of 798 cfs.

Water Quality

The Flathead River above Flathead Lake has an A-1 water quality classification from the State Water Quality Standards. Waters classified A-1 are suitable for drinking, culinary and food processing purposes after conventional treatment for removal of naturally present impurities. Water quality must be suitable for bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

The U.S.G.S. National Stream Quality Accounting Network has a site (12363000) at Columbia Falls (T30N, R20W, Sec. 17). During the water year October 1979 to September 1980 hardness as CaCO_3 (mg/l) ranged from 66 to 110, pH ranged from 7.4 to 8.3, D.O. ranged from 8.4 to 12.9, and total nitrogen ammonia (mg/l as N) ranged from .00 to .04. Many other water quality parameters are monitored. For a listing of results consult the U.S.G.S.'s "Water Resources Data for Montana: Volume 2. Upper Columbia River Basin" reports.

Recreational Usage

The Flathead upstream from its confluence with the South Fork is classified a Recreational River under the National Wild and Scenic River Act of 1976. The Flathead below the South Fork is extremely popular with recreational floaters, even though flows are partially regulated by Hungry Horse Dam.

A creel census in 1975 estimated fishing pressure on the mainstem Flathead River at 46,193 man-days, or approximately 835 man-days per river mile. Over 73 percent of the fishing pressure occurred in the area of Kalispell. The estimated harvest was 217,610 fish, of which 86 percent were kokanee. Other important species were west-slope cutthroat trout (15,557 - 7.1%), mountain whitefish (7,717 - 3.5%) and bull trout (5,300 - 2.4%).

Waterfowl hunters frequently use this section of river and the sloughs along the lower reaches.

Potential Environmental Problems

A potential dam site is located near Coram, Montana. Classification of the river under the National Wild and Scenic River Act and the proximity of Glacier National Park should preclude construction of the dam at this time. Some irrigation withdrawals are made in the Flathead Valley but there is no threat of dewatering. Minimum flows in the river below the South Fork have been much lower than historical averages since impoundment of the South Fork by Hungry Horse Dam (1951).

Previous Instream Claim

An act passed by the 1969 Montana Legislature (Chapter 345, Laws of

1969) enabled the MDFWP to file for instream water rights for purposes of preserving fish and wildlife habitat in 12 high quality trout streams. For the 45.7 mile reach of the Flathead River from Flathead Lake upstream to the mouth of the South Fork, the MDFWP filed for the amounts listed below:

<u>Time Period</u>	<u>Amount (cfs)</u>
October 1 - March 31	3,625
April 1 - September 30	8,125

The filing was recorded in Flathead County on December 22, 1970.

3. FISH POPULATIONS (Flathead Lake - South Fork)

There are at least 22 fish species present in the Flathead River upstream from Flathead Lake (Table 1). The bull trout, westslope cutthroat trout and kokanee salmon are the most important game species found in the river. It is necessary to understand their life history to adequately assess habitat requirements that are necessary to maintain the fishery. A brief life history is therefore presented for these three species.

Bull and Cutthroat Trout Life History

The bull trout population in the Flathead drainage is almost entirely adfluvial, living in a lake as subadults or adults and migrating into tributaries to spawn. The migratory pattern of bull trout is similar in the North and Middle Forks. These fish reside in Flathead Lake, begin moving up the lower Flathead River in early spring, and start to arrive in their spawning tributaries as early as late June. Many fish may hold in the North and Middle Forks until September before ascending the tributaries. Most spawning occurs during September and early October after which spawners return rapidly to Flathead Lake.

Three basic life history patterns have been identified throughout the range of westslope cutthroat trout. These patterns are migratory between lakes and streams, migratory from small tributaries to main rivers, and non-migratory stocks (Behnke 1971) which are referred to as adfluvial, fluvial and resident, respectively.

Adfluvial westslope cutthroat spawners begin moving up the lower Flathead as early as February and probably move into tributaries sometime in April or May. They spend a varying amount of time on the spawning grounds and most return to the main river around the time of peak runoff. Adult adfluvial cutthroat were found entering North Fork tributaries in May (Fraley et al. 1981). Block (1955) found spawners in North Fork streams on June 17 and Johnson (1963) felt cutthroat spawning peaked in mid-June. Time spent in the river between the tributaries and Flathead Lake appears quite variable. Snorkeling transects in the main North Fork showed very few adult adfluvial cutthroat remained in the river during July.

Table 1. A list of fish species in Flathead Lake and the Flathead River upstream from Flathead Lake and their relative abundance: C - common, U - uncommon, and R - rare.

Fish Species	Abundance	
	Flathead River	Flathead Lake
Cutthroat trout	C	C
Westslope (<i>Salmo clarki lewisi</i>)	C	C
Yellowstone (<i>Salmo clarki bouvieri</i>)	R	R
Bull trout (<i>Salvelinus confluentus</i>)	C	C
Rainbow trout (<i>Salmo gairdneri</i>)	U	R
Brook trout (<i>Salvelinus fontinalis</i>)	R ^{1/}	R
Lake trout (<i>Salvelinus namaycush</i>)	R ^{1/}	C
Kokanee (<i>Oncorhynchus nerka</i>)	C ^{1/}	C
Lake whitefish (<i>Coregonus clupeaformis</i>)	U ^{1/}	C
Pygmy whitefish (<i>Prosopium coulteri</i>)	U ^{1/}	C
Mountain whitefish (<i>Prosopium williamsoni</i>)	C	C
Arctic grayling (<i>Thymallus arcticus</i>)	R	-
Slimy sculpin (<i>Cottus cognatus</i>)	C	C
Shorthead sculpin (<i>Cottus confusus</i>)	C	?
Mottled sculpin (<i>Cottus bairdi</i>)	?	?
Longnose sucker (<i>Catostomus catostomus</i>)	U	C
Largescale sucker (<i>Catostomus macrocheilus</i>)	C	C
Peamouth (<i>Mylocheilus caurinus</i>)	C	C
Northern squawfish (<i>Ptychocheilus oregonensis</i>)	C	C
Northern pike (<i>Esox lucius</i>)	R ^{2/}	R
Redside shiner (<i>Richardsonius balteatus</i>)	R ^{2/}	C
Largemouth bass (<i>Micropterus salmoides</i>)	R ^{2/}	U
Pumpkinseed (<i>Lepomis gibbosus</i>)	R ^{2/}	R
Yellow perch (<i>Perca flavescens</i>)	R ^{2/}	C
Black bullhead (<i>Ictalurus melas</i>)	R ^{2/}	R

^{1/} Refers to seasonal abundance.

^{2/} Common in some sloughs along the lower river.

Juvenile cutthroat and bull trout spend from one to four growing seasons in the tributaries before moving into the main river. The majority spend two to three seasons in the tributaries. Adfluvial juvenile trout migrate from streams in late spring and early summer. They may spend several months in the river before entering Flathead Lake.

The mainstem Flathead River from Flathead Lake upriver to the mouth of the Middle Fork is used by adfluvial cutthroat and bull trout primarily as a migratory corridor and probably as an overwintering area for cutthroat and juvenile bull trout. There is also seasonal utilization by adfluvial cutthroat and bull trout in response to increased food abundance in the river. A fluvial (resident) population of rainbow and possibly cutthroat trout is also present in the mainstem throughout the year.

Kokanee Salmon Life History

Large numbers of migrating kokanee normally first appear in the lower Flathead River during September. The timing of the initial appearance is fairly constant, but the subsequent migration rate of kokanee varies from year to year (McMullin and Graham 1981). The mainstem Flathead River is used as a migration corridor as well as a kokanee spawning area.

Most spawning of kokanee occurs between mid-October and mid-December in the Flathead River system. Following spawning, the adults die. Eggs deposited in the gravel develop over the winter and the fry emerge and move downstream to Flathead Lake during the spring, primarily in April and May. After three to five growing seasons in the lake (four for the majority), the adult fish return to the spawning grounds to complete the life cycle.

This life cycle results in kokanee being present in the river in some form (egg, fry, or adult) during at least eight months of the year. Adequate flows from September through April for migration, spawning, incubation and emigration are all vital to the existence and continued contribution of kokanee to the fishery.

Fish Population and Movement Studies

McMullin and Graham (1981) initiated a study in 1979 on the mainstem Flathead River to document the relative abundance and movement of game species. During the study, three areas of the mainstem between the mouth of the Middle Fork and Flathead Lake were sampled using a boat-mounted electrofishing unit and a direct observation snorkeling technique. Seasonal population trends, relative abundance, and movement patterns were assessed for cutthroat, rainbow and bull trout as well as mountain whitefish and kokanee salmon. The information presented below is based on the results of this study.

Trout and Whitefish

Spawning adult cutthroat trout enter the mainstem in October and hold in the main river until water temperatures and increasing flows trigger upstream migration in the spring. Spawning occurs primarily in the tributaries to the upper drainage during May and June.

Juvenile cutthroat move downstream from the upper drainage to Flathead Lake beginning in April and continue throughout most of the year with the peak of migration to the upper mainstem, above the mouth of the South Fork, occurring in July.

Adult bull trout appear to migrate upstream through the mainstem in response to increasing spring flows and temperatures, moving into the lower mainstem in April with peak migrations occurring in May and June. Adults spawn in the upper drainage during September and early October.

Juvenile bull trout emigrate from upper drainage tributaries in late spring through the summer. The movement of juvenile bull trout after they leave the tributaries has not been well documented. Some juvenile bull trout are present in the mainstem portion of the river throughout the year.

Rainbow trout are most abundant in the upper mainstem with abundance decreasing progressively downstream.

Mountain whitefish are the most abundant species in the Flathead River. Mountain whitefish spawn in riffle areas of the mainstem in the fall. Dense concentrations of whitefish overwinter in the mainstem but movement patterns are complex and not well understood.

Kokanee

Over 100,000 kokanee migrated through the lower Flathead River enroute to spawning grounds in the Middle Fork and McDonald Creek during September and October 1981. In addition, large numbers of kokanee spawners were still entering the lower river during November, 1981 and some spawning probably occurred from mid-October through mid-December at various sites throughout the river system.

During 1981, the reach from Flathead Lake to the South Fork was searched for kokanee spawning sites (redds). About 8,000 redds were located with 1,000 of these in spring-fed areas and the rest located in the river channels where water level fluctuations could potentially cause dewatering of eggs and stranding of fry. Redds were located in water depths ranging from 0.1 feet to 12 feet and were distributed along the entire reach with concentrations in the areas where the greatest amount of channel development occurs.

Studies are currently being conducted to assess the effects of changing water levels on kokanee spawning, incubation and fry emergence. Preliminary

results indicate that redd dewatering during cold winter months results in excessive mortality of incubating eggs.

4. WILDLIFE (Flathead Lake - South Fork)

The riparian area along this reach of the Flathead River is well developed with numerous habitat types accomodating a wide array of wildlife species and providing recreational opportunity for hunters and trappers as well as nonconsumptive users.

Waterfowl

Canada geese, mallards, pintails, lesser scaup, teal, wood ducks, widgeon, mergansers, goldeneyes, and buffleheads are all seasonal users of the river. Most of these species also nest and rear young along this reach.

Upland Game Birds

Ruffed grouse are present in wooded areas throughout this reach. Ring-necked pheasants are abundant in suitable habitat, particularly below Columbia Falls. Local populations of Merriam's turkeys are also found along the lower portion of the reach, but no hunting season is presently held on them.

Bald Eagle and Osprey

Both bald eagles and ospreys nest and rear young along this reach of the Flathead. Ospreys migrate out of the area during winter months. Resident bald eagles are joined by large numbers of migrating birds that concentrate in the area during the fall to feed on dead and dying kokanee. During most years, some bald eagles are present along the river year-round.

Big Game

White-tailed deer are the primary big game species utilizing the riparian area on a year-round basis. In addition, there is some use by mule deer, moose, elk, mountain lion, and black bear.

Furbearers

Beaver, otter, muskrat, and mink are the primary furbearers associated with the river bottom. They provide a considerable amount of income during the trapping season to valley residents.

5. INSTREAM FLOW METHODOLOGIES (Flathead Lake - South Fork)

Recent advances in the development of instream flow methodologies have enabled the MDFWP to more accurately define the instream flow needs for the rivers of the state. The purpose of the following section is to discuss the instream flow methods the MDFWP has applied in recent years to the reach of the Flathead River between Flathead Lake and the confluence of the South Fork.

The method of the MDFWP divides the annual flow cycle for headwater rivers, such as the Flathead River, into two separate flow periods. They consist of a relatively brief snow runoff or high flow period, when a large percentage of the annual water yield is passed by the river, and a nonrunoff or low flow period which is characterized by relatively stable base flows. The high flow period generally occurs during the months of April, May, June and July while the remaining months encompass the low flow period. Separate flow recommendations are derived for each period.

A. Method for High Flow Period - Dominant Discharge/Channel Morphology Concept

It is generally accepted that the major force in the establishment and maintenance of a particular channel form in view of its bed and bank material is the annual high flow characteristics of the river. It is the high spring flows that determine the shape of the channel rather than the average or low flows.

The major functions of the high spring flows in the maintenance of channel form are bedload movement and sediment transport. It is the movement of the bed and bank material and subsequent deposition which are capable of covering already established bars with finer material which leads successively to vegetated islands. Increased discharge associated with spring runoff also results in a flushing action which removes deposited sediments and maintains suitable gravel conditions for aquatic insect production, fish spawning and egg incubation.

Reducing the high spring flows beyond the point where the major amount of bedload and sediment is transported would interrupt the ongoing channel processes and change the existing channel form and bottom substrates. A significantly altered channel would affect both the abundance and species composition of the present aquatic populations by altering the existing habitat types.

Several workers (Leopold, Wolman and Miller 1964, US Bureau of Reclamation 1973, and Emmett 1975) adhere to the concept that the form and configuration of river channels are shaped by and designed to accommodate a dominant discharge. The discharge which is most commonly referred to as a dominant discharge is the bankful discharge (Leopold, Wolman and Miller 1964, Emmett 1975). Bankful discharge is defined as that flow when water just begins to overflow onto the active flood plain.

Bankful discharge tends to have a constant frequency of occurrence among rivers (Emmett 1975). The recurrence interval for bankful discharge was determined by Emmett (1975) to be 1.5 years and is in close agreement with the frequency of bankful discharge reported by other studies (Leopold, Wolman and Miller 1964, Emmett 1972).

It is not presently known how long the bankful flow must be maintained to accomplish the necessary channel formation processes. Until studies

further clarify the necessary duration of the bankful discharge, a duration period of 24 hours is chosen. For this reach of the Flathead River the bankful discharge is, at present, undefined.

A gradual rising and receding of flows should be associated with the dominant discharge and the shape of the spring hydrograph should resemble that which occurs naturally. U.S.G.S. flow records were used to determine the time when the high flow period and peak flow normally occurs. Flows are increased from a base flow level to the dominant discharge in two-week intervals at the 80th percentile flow level, corresponding to the natural timing of the high flow period. For the Flathead River, April 16 through July 31 encompasses much of the high flow period.

The 80th percentile is the flow that is exceeded in eight of 10 years or, in other terms, in eight years out of 10 there is more water than the 80th percentile flowing in the river. The 80th percentile was chosen in part because of its compatibility with irrigation development. To economically develop efficient, full-service irrigation systems, a good water supply is considered necessary in about eight years out of 10, on the average (MDNRC, 1976). It is also our belief that the high flow months can withstand substantial withdrawals and not alter the basic functions of channel maintenance. The 80th percentile flows were estimated from U.S.G.S. flow records for the gauge at Columbia Falls.

B. Methods for Low Flow Period

1. Wetted Perimeter/Inflection Point Method

The wetted perimeter/inflection point method, as applied to riffle areas, was chosen for deriving low flow recommendations for the trout rivers of Montana. Wetted perimeter is the distance along the bottom and sides of a channel cross-section in contact with water (Figure 1). As the flow in the stream channel decreases, the wetted perimeter also decreases, but the rate of loss of wetted perimeter is not constant throughout the entire range of flows.

An example of a relationship between wetted perimeter and flow for a riffle cross-section is illustrated in Figure 2. There is a point, called an inflection point, on the plot of wetted perimeter versus flow at which the rate of loss of wetted perimeter is significantly changed. In the example (Figure 2), this inflection point occurs at an approximate flow of 500 cfs. Beyond the inflection point, large changes in flow cause only very small changes in wetted perimeter. Below the inflection point, the river begins to pull away from the riffle bottom, exposing the bottom at an accelerated rate. The flow recommendation is selected at or beyond this inflection point.

The maintenance of suitable flows in riffles is essential for the well-being of trout populations since the production of aquatic invertebrates, the principle food of trout, primarily occurs in riffle areas

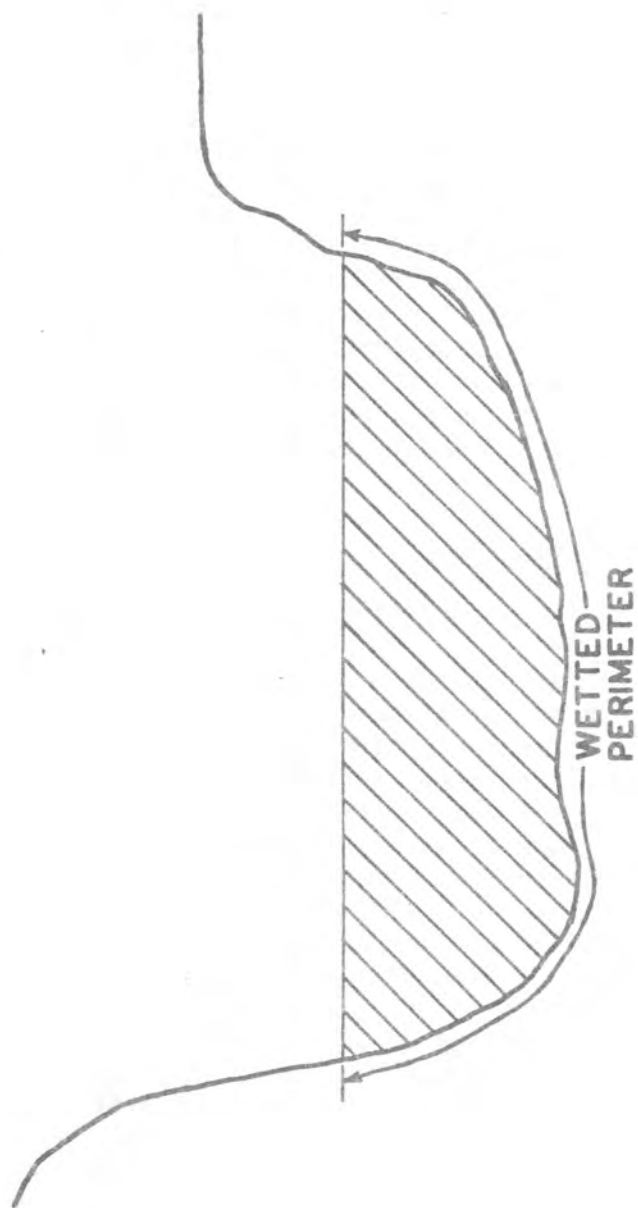


Figure 1. The wetted perimeter in a channel cross-section.

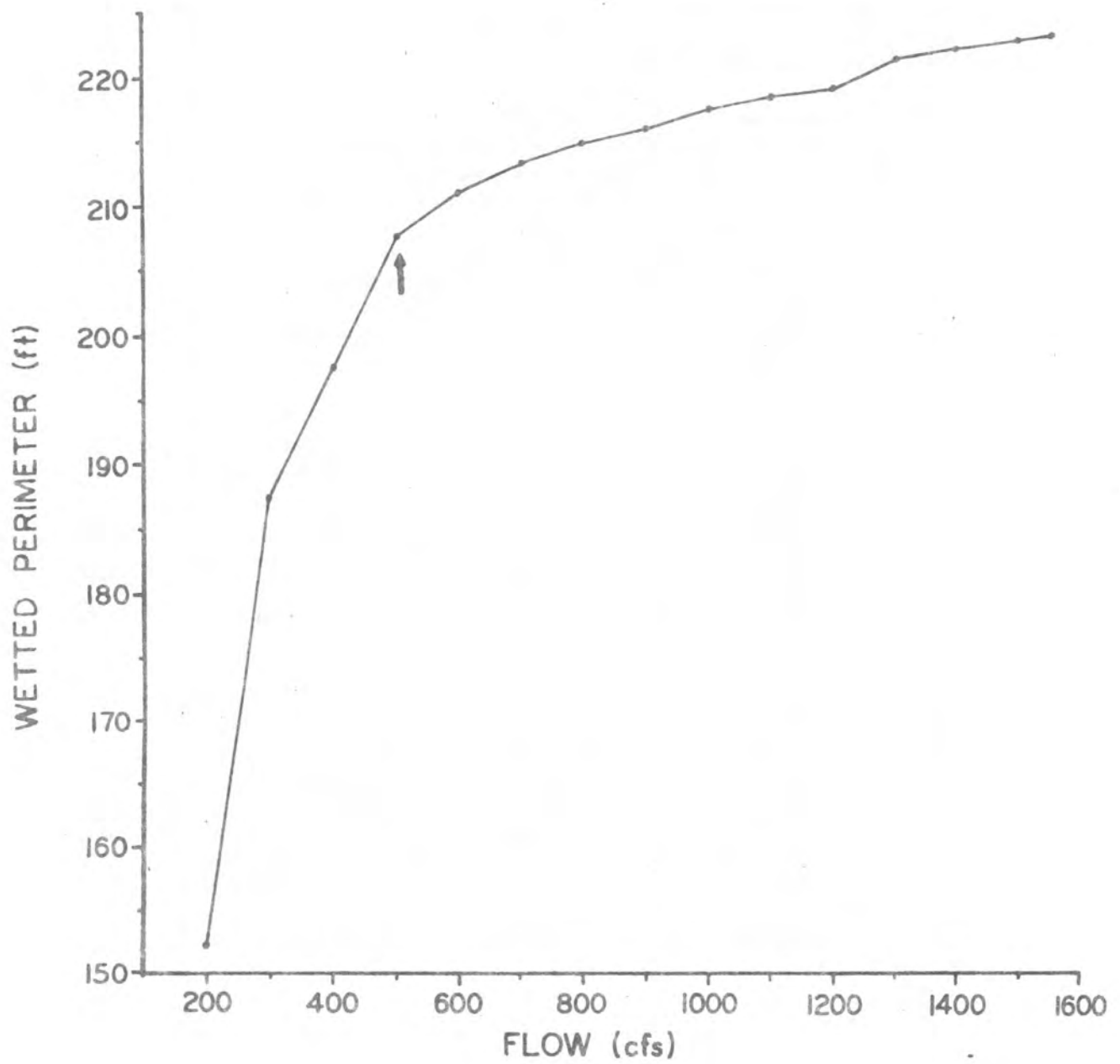


Figure 2. An example of a relationship between wetted perimeter and flow for a riffle cross-section.

(Hynes, 1970). It has also been demonstrated that riffles are critical areas for spawning sites of trout and shallow inshore areas are required for the rearing of trout fry (Sando 1981). Once flows are reduced below the inflection point, the riffle bottom is being exposed at an accelerated rate and the area available for food production and trout spawning and rearing greatly diminishes. At flows beyond the inflection point, the area available for these essential life processes is considered to approach the optimum.

Riffles are also the area of a stream most affected by flow reductions (Bovee 1974 and Nelson 1977). Consequently, the maintenance of suitable riffle conditions for food production and trout spawning and rearing areas will also maintain suitable conditions in pools and runs, areas normally inhabited by adult trout. Because riffles are the habitat most affected by flow reductions and are essential for the well-being of trout populations, they should receive the highest priority for instream protection.

The Montana Department of Fish, Wildlife and Parks completed a study in 1980 that validated the wetted perimeter method as applied to the trout rivers of southwest Montana (Nelson 1980a, 1980b and 1980c). In this study, instream flow recommendations were derived from the actual trout standing crop (numbers and pounds) and flow relationship for five reaches of four nationally acclaimed wild trout rivers. These recommendations were compared to those derived from the wetted perimeter/inflection point method. The study results showed that flows less than the inflection point are undesirable as recommendations since they lead to substantial reductions of the standing crops of adult trout.

The flow at the inflection point is not necessarily the preferred recommendation for all trout rivers. The "Blue Ribbon" rivers would generally require a higher flow in order to maintain the sport fishery resource at the existing level. For those rivers having a lower resource rating, the flow at the inflection point may be a satisfactory recommendation. In general, flows less than the inflection point are undesirable as flow recommendations regardless of the existing state of the river resource.

The wetted perimeter-flow relationships for the riffle areas are derived using a wetted perimeter predictive (WETP) computer program developed in 1980 by the MDFWP (Nelson 1980d). The WETP program uses a minimum of two sets (three sets are recommended) of stage (water surface elevation) measurements taken at different known discharges (flows) to establish a least-squares fit of log-stage versus log-discharge. Once the stage-discharge rating curve for each cross-section is determined, the stage at a flow of interest can be predicted. This rating curve, when coupled with the cross-section profile, is all that is needed to predict the wetted perimeter at most flows of interest.

The wetted perimeter/inflection point method was applied to a riffle area located near the middle of the reach of the Flathead River between the inlet to Flathead Lake and the mouth of its South Fork (T28N, R21W, Sec. 10). The WETP program was calibrated to field data collected at flows of 1,910, 7,440 and 26,200 cfs. The inflection point on the wetted perimeter-discharge relationship (see Figure 3) occurs at a flow of about 3,500 cfs. For adjudication purposes a flow of 3,500 cfs will be recommended for the low flow period.

2. Kokanee Spawning/Incubation Requirements

A study to quantify the flow needs of kokanee salmon in the regulated portion of the Flathead River below the mouth of the South Fork was begun in April 1979 and will continue until April 1, 1986. The study is focusing on the quantification of the spawning and incubation flows that are needed to produce adequate numbers of kokanee fry which, in turn, would maintain a stable lake fishery and an adequate run of spawning adults.

At present, the investigation has yielded considerable information on spawning requirements in the Flathead River, which will be further refined during the next four years. Conclusions and recommendations presented here represent the best available information on flows required to maintain and stabilize the kokanee fishery.

The greatest potential damage to kokanee spawning success occurs in years when there is a large disparity between the flows at the time of spawning and the lower mid-winter flows. Eggs deposited in redds in shallow water are subsequently dewatered. Examination of dewatered redds in 1981 showed almost complete mortality of green eggs deposited 0.2 feet above the water line after being dewatered for 40 hours. During 1981, a drop from a 4,000 cfs spawning flow to a 2,300 cfs incubation flow resulted in the dewatering of about 20 percent of the redds. This may or may not be an acceptable level of dewatering pending further investigation.

The most desirable flow regime would be a constant flow from mid-October through mid-December for spawning followed by the same or greater flows until fry emergence during April. A constant flow regime would necessarily be based on the natural low-flow time of year. During a median or normal water year, this occurs during the months of February and March at a flow of about 3,300cfs.

In order to ensure that excessive redd dewatering and subsequent egg mortality does not occur, the maximum flow during the spawning period (October 15 to December 15) should not be allowed to exceed 4,500 cfs. During the spawning and incubation period (October 15 to April 15), the minimum flow should not be allowed to fall below 3,500 cfs. The resultant flow differential of 1,000 cfs allows a margin of operational flexibility for Hungry Horse Dam, while at

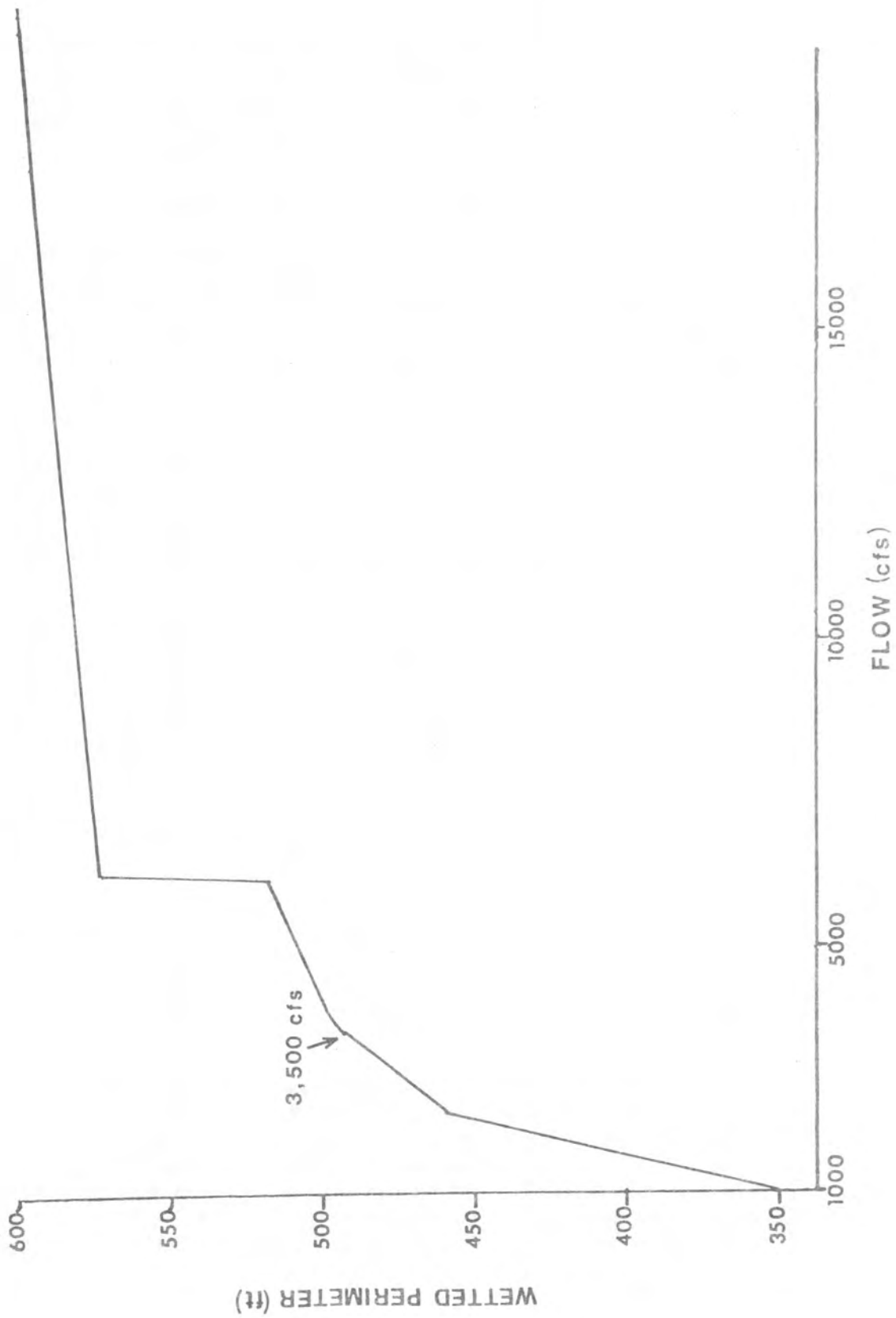


Figure 3. Relationship between wetted perimeter and flow for a riffle cross-section in the Flathead River.

the same time ensures that kokanee spawning success and egg survival will not be severely impacted.

The naturally occurring high flows during the months of April and May are essential in transporting kokanee fry downstream to Flathead Lake. The flow recommendations derived for the high flow period using the dominant discharge/channel morphology concept would meet the downstream passage requirement during the period fry are moving to the lake.

C. Summary of Methods

For the high flow period of April 16 through July 31, the flow recommendations are based on the 80th percentile flows using the dominant discharge/channel morphology concept. For the low flow period of August 1 through April 15, the recommendation is based on the wetted perimeter/inflection point method. The kokanee spawning and incubation period of October 15-April 15 is within the low flow period. The low flow recommendation of 3,500 cfs, which was derived from the wetted perimeter/inflection point methodology, would adequately address the needs of kokanee during this period.

6. FLOW RECOMMENDATIONS (Flathead Lake - South Fork)

The monthly flow recommendations derived from the combined kokanee spawning/incubation and wetted perimeter/inflection point method and the dominant discharge/channel morphology concept are listed in Table 2.

The flow recommendations, in addition to maintaining the resident cutthroat trout, rainbow trout, and mountain whitefish populations at the existing level, would also serve to:

- 1) facilitate the upstream passage of adult, adfluvial cutthroat trout in the spring and bull trout in the summer and fall to their spawning areas as well as their return to Flathead Lake;
- 2) facilitate the upstream passage of kokanee salmon in September, October and November to their spawning areas;
- 3) maintain favorable spawning and incubation habitat for kokanee salmon;
- 4) maintain favorable habitat for the rearing of juvenile cutthroat and bull trout; and
- 5) facilitate the downstream passage of juvenile trout and kokanee fry to Flathead Lake.

For adjudication purposes, these recommendations must be adjusted to the constraints imposed by the original instream filing of December

Table 2. Monthly flow recommendations for the Flathead River (from Flathead Lake upstream to the South Fork) compared to the original filing of December 22, 1970 and the final claim.

Time period	Flow Recommendations (cfs) ^{a/}	Original Filing (cfs) ^{b/}	Final Claim (cfs) ^{c/}
January	3,500	3,625	3,500
February	3,500	3,625	3,500
March	3,500	3,625	3,500
April 1-15	3,500	8,125	3,500
April 16-30	6,650	8,125	6,650
May 1-15	13,784	8,125	8,125
May 16-31	20,944 ^{d/}	8,125	8,125
June 1-15	20,720	8,125	8,125
June 16-30	13,267	8,125	8,125
July 1-15	8,519	8,125	8,125
July 16-31	5,402	8,125	5,402
August	3,500	8,125	3,500
September	3,500	8,125	3,500
October	3,500 ^{e/}	3,625	3,500
November	3,500 ^{e/}	3,625	3,500
December	3,500 ^{e/}	3,625	3,500

^{a/} Derived from the wetted perimeter/inflection point method, the kokanee spawning and incubation requirements and the dominant discharge/channel morphology concept.

^{b/} Flows as originally filed on December 22, 1970.

^{c/} Derived by adjusting the flow recommendations to the constraints imposed by the original instream filing of December 22, 1970.

^{d/} The approximate bankful discharge (presently undefined) should be maintained for 24 hours during this period.

^{e/} During the period of October 15 - December 15, flows should not exceed 4,500 cfs to prevent kokanee from spawning in areas subject to later dewatering.

22, 1970. This adjustment is necessary because the final claim can be less than, but not exceed, the original filing. The final claim is listed along with the original filing in Table 2. The final claim is less than the original filing for the period of July 16-April 30 and amounts to a net flow reduction of 872,408 acre-feet from the original filing, a reduction of 20.5 percent.

The final claim is compared to the median monthly flows of record, as derived from U.S.G.S. flow records for the gauge at Columbia Falls, in Table 3. The median provides a measure of water availability during a normal or typical water year. The median is the flow that is exceeded in five of 10 years or, in other terms, in five years out of 10 there is more water than the median flowing in the river. The final claim is less than the median flows for the periods of April 1 - August 31 and October 1 - January 31 and slightly exceeds the medians for February 1 - March 31 and September 1 - 30.

The final claim, when adjusted to fall within the constraints of water availability for a median or normal water year, equals 3,343,421 acre-feet of water per year, which is about 51.7 percent of the annual volume of water that is normally available at the U.S.G.S. gauging site on the Flathead River at Columbia Falls (5.7 miles downstream from the South Fork).

It should be recognized that the flow claimed by the Montana Department of Fish, Wildlife and Parks for fish and wildlife includes natural, unregulated flows from the North and Middle Forks that must be supplemented with regulated flows from the South Fork out of Hungry Horse Dam. Historically, the South Fork provided about one-third of the total flow of the main Flathead and while it still provides a similar volume of water annually, the pattern of flow has been significantly altered seasonally and daily. In order for the claim of the Montana Department of Fish, Wildlife and Parks to be met, a base flow from the South Fork must be provided.

Table 3. Comparison of the final instream claim for the Flathead River (from Flathead Lake upstream to the South Fork) to the approximate median flows of record.

Time Period	Final Claim (cfs)	Approximate median flows ^{a/}	
		cfs	Acre-feet
January	3,500	4,270	262,490
February	3,500	3,360	186,561
March	3,500	3,280	201,631
April 1-15	3,500	6,790	201,969
April 16-30	6,650	14,587	433,890
May 1-15	8,125	21,347	634,967
May 16-31	8,125	30,412	964,912
June 1-15	8,125	29,300	871,529
June 16-30	8,125	23,067	686,128
July 1-15	8,125	13,980	415,835
July 16-31	5,402	7,537	239,134
August	3,500	4,490	276,014
September	3,500	3,170	188,583
October	3,500	4,850	298,144
November	3,500	4,420	262,946
December	3,500	5,500	338,102
			<u>6,462,835^{b/}</u>

^{a/} Derived from a 49 year period of record (between 1931-1979 water years) for the USGS gauge station at Columbia Falls (5.7 miles downstream from the South Fork).

^{b/} Approximate volume of water normally available on an annual basis.

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SUPPLEMENT III - ATTACHMENT A

LETTER - CORPS OF ENGINEERS



DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124

NPS-PL-ER

Mr. Joe Huston
Montana Department of Fish, Wildlife & Parks
Post Office Box 67
Kalispell, Montana 59901

Dear Mr. Huston:

In accordance with your earlier request, we are supplying you with calculations showing the area of water surface at four different rates of discharge for a section of the Kootenai River below Libby Dam (inclosure 1). The calculations apply to the 11.1-mile section extending from the State Highway 37 bridge, 3.6 miles below Libby Dam, to a point 23 miles upstream from the St. Regis logging bridge at Libby. Problems with aerial photo coverage prevented us from extending the study section downstream to Libby as originally planned.

An x-y plot of the variables (inclosure 2) shows that the water surface area increases rapidly up to a discharge of about 4,000 cubic feet per second (c.f.s.) Beyond this point, each unit increase in discharge results in a much smaller increase in area, and a straight-line relationship is established up to a discharge of at least 22,000 c.f.s.

You may note that our action in increasing minimum flows from 2,000 to 4,000 c.f.s. has increased the permanently watered surface area in this section of the river from about 500 to 620 acres, an increase of 120 acres. This amounts to a 19-percent increase in area. Increasing minimum discharges beyond this point would apparently add little to the water surface area or to the overall biological productivity of this section of the river.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steven F. Dice", is written over the typed name.

Steven F. Dice
Contracting Officer's Representative

2 Incl
As stated

Libby Dam Project

Area discharge calculations for the Kootenai River study section river mile 218.3 (Highway 37 Bridge) to river mile 207.2^{1/} (2.3 miles upstream from Libby-Yaak Logging Bridge)

<u>Photo Date</u>	<u>Discharge (c.f.s.)</u>	<u>Water Surface Area (Acres)</u>
12 May 1973	3,060	578
14 October 1969	5,750	647
26 April 1977	16,000	761
10 December 1978	22,000	821 ^{2/}

^{1/}River miles as based upon the Kootenai River River Mile Index, Columbia Basin Inter-Agency Committee, Hydrologic Subcommittee, November 1965.

^{2/}Area as calculated from snowline indicating 9 December 1978 discharge.

TB
12 August 1981

LEBAY DAM PROJECT

KOOTENAI RIVER DISCHARGE-AREA RELATIONSHIP

WATER SURFACE AREA ~ ACRES $\times 10^2$

DISCHARGE ~ CFS $\times 10^3$

SUPPLEMENT III - ATTACHMENT B

LETTER - CORPS OF ENGINEERS



DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124

NPSEN-PL-ER

Patrick J. Graham, Chairman
Fish and Wildlife Ad Hoc Committee
Montana Department of Fish,
Wildlife and Parks
Post Office Box 67
Kalispell, Montana 59901

Dear Mr. Graham:

Inclosed are completed Hydroelectric Project Physical and Biological Inventory forms and supplemental data sheets for Libby Dam and Libby Reregulating Dam requested at the 14 July 1981 Northwest Power Planning Council meeting and in your letter to Mr. Thompson dated 20 July 1981.

Should you have any questions concerning this information, please contact Mr. Bonde at telephone (206) 764-3624.

Sincerely,

A handwritten signature in cursive script, reading "R.P. Sellevold", is positioned below the word "Sincerely,".

R.P. SELLEVOLD, P.E.
Chief, Engineering Division

3 Incl

1. Hydro Proj Inventory Form, Libby
2. Hydro Proj Inventory Form, Libby Rereg
3. Sup Data Sheet

EXISTING PROJECT AND BIOLOGICAL INVENTORY

EXISTING PROJECT		AND BIOLOGICAL INVENTORY	
1. General Information 1. F.I.C. License No. _____ 2. Date issued _____ 3. Date amended _____ 4. Date of initial operation <u>Mar 1972</u> 5. Owner/operator <u>U.S. ARMY CORPS ENGRS</u> 6. Project name <u>LIBBY DAM & RESERVOIR</u> 7. Location <u>Kootenai River Mile</u> 8. Nearest community <u>218.9</u> name <u>Libby</u> distance from dam <u>17 Miles W</u> population <u>3,300</u>		17. Post project recorded rate of flow years of record/source <u>9/USGS/USCE</u> min. <u>1,900 cfs</u> max. <u>47,200 cfs</u> avg. <u>10,710 cfs</u>	
8. Dam Statistics 1. Purpose <u>FLOOD CONTROL, POWER, REC.</u> 2. Present hydraulic capacity <u>23,000 cfs</u> 3. Present rated capacity <u>420,000 KW</u> 4. Future additional capacity <u>420,000</u> 5. Construction type <u>Concrete gravity</u> 6. Turbine No. <u>4 (8 ultimate)</u> Type <u>Francis</u> 7. Spillways No. <u>2</u> Type <u>Gated, Overflow</u> 8. Intakes No. <u>4 (8 ultimate)</u> Depth below max. pool <u>237</u>		9. Typical Water Quality Parameters 1. Date/time/depth _____ 2. pH _____ 3. Temp (°C) _____ 4. Cond. (umhos/cm) _____ 5. D.O. (mg/l) _____ 6. Other <u>*Detailed water quality data on both the reservoir and the river downstream is available in USCE and USGS publications.</u>	
9. Reservoir Morphometry 1. Elevation (m.s.l. max. pool) <u>2,459</u> 2. Elevation (m.s.l. min. pool) <u>2,287</u> 3. Drawdown (max.) <u>172 feet</u> 4. Drawdown (avg.) <u>100 feet</u> 5. Depth (max. pool) <u>350 feet</u> 6. Depth (mean, max. pool) <u>125 feet</u> 7. Surface area (max. pool) <u>46,500 acres</u> 8. Surface area (min. pool) <u>14,600 acres</u> 9. Surface area, possible exposure <u>31,900</u> 10. Total volume <u>5,869,392 acre ft.</u> 11. Active storage <u>4,979,468 acre ft.</u> 12. Dead storage <u>120,527 acre ft.</u> 13. Shoreline length (including islands) <u>224 miles</u> 14. Shoreline length developed _____ 15. Drainage area <u>8,985 square miles</u> 16. Pre-project recorded rate of flow years of record/source <u>61/USGS</u> min. <u>895 cfs (11 Jan 1930)</u> max. <u>121,000 cfs (21 June 1936)</u> avg. <u>12,110 cfs</u>		10. Cultural Characteristics 1. Project-owned lands (above max. pool) 2. Reservoir vicinity land ownership, est. ☒ private ☒ federal <u>100</u> ☒ State ☒ municipal _____ 3. Reservoir vicinity land use, est. ☒ forestry <u>95</u> ☒ agriculture <u>5</u> ☒ residential ☒ misc. _____ ☒ recreational _____ ☒ industrial _____ 4. Public access to reservoir No. developments (total) <u>11 (Ult. 22)</u> No. developments (w/boat launches) <u>6</u> 5. Transmission Facilities _____	
1/ powerhouse only.		11. Mitigation 1. Date implemented <u>1979</u> Measure <u>Murray Springs Hatchery</u> This facility is operated and maintained by the Montana Department of Fish, Wildlife, and Parks under contract with the Corps of Engineers. 2. Date implemented <u>1980</u> Measure <u>Libby Wildlife Lands</u> A total of 2,444 acres of wildlife lands has been acquired and will be deeded to the state of Montana for wildlife management purposes.	
		3. Date implemented <u>1969</u> Measure <u>Young Creek Barrier Dam.</u> Constructed by the Corps of Engineers and operated and maintained by the Montana Fish, Wildlife, and Parks Department.	
		4. Date implemented <u>1977</u> Measure <u>Selective Withdrawal System.</u> Constructed as a part of Libby Dam to control water conditions in the reservoir and in the river downstream from Libby Dam.	
		12. Primary Species List 1. Wildlife Species Rel. Ab. * Ref. a. White-tailed Deer <u>C</u> b. Mule Deer <u>C</u> c. Mountain Sheep <u>U</u> d. Black Bear <u>C</u> e. Elk <u>C</u> f. Moose <u>U</u> g. Bald Eagle <u>U</u> h. Canada Goose <u>U</u> i. _____ j. _____	
		2. Fish Species Rel. Ab. * Ref. a. Westslope Cutthroat <u>C</u> b. Rainbow <u>C</u> c. Mountain Whitefish <u>C</u> d. Bull Trout <u>C</u> e. Burbot <u>U</u> f. _____ g. _____ h. _____ i. _____ j. _____	
		3. Plant Species Rel. Ab. * Ref. a. _____ b. _____ c. _____ d. _____ e. _____ f. _____ g. _____ h. _____ i. _____ j. _____	
		13. References See addendum sheet for sources of additional or detailed information	

* Relative Abundance; C = Common;
U = Uncommon; T = Threatened;
F = Present, abundance, unknown.

POTENTIAL PROJECT

and Biological Resources

A. General Information 1. F.E.R.C. License No. _____ 2. Date issued _____ 3. Date amended _____ 4. Date of initial operation _____ 5. Owner/operator <u>US ARMY CORPS ENGRS</u> 6. Project name <u>LIBBY REREGULATING DAM</u> 7. Location <u>Kootenai River Mile</u> 8. Nearest community <u>208.9</u> <u>name Libby</u> <u>distance from dam 7 miles W.</u> <u>population 3,300</u>	17. Post project recorded rate of flow years of record/source <u>NA</u> min. _____ max. _____ avg. _____	3. Date implemented _____ Measure _____
B. Dam Statistics 1. Purpose <u>REREGULATION, POWER</u> 2. Present hydraulic capacity <u>25,000 cfs</u> 3. Present rated capacity <u>78,904 kW</u> 4. Future additional capacity <u>- kW</u> 5. Construction type <u>Concrete/Rockfill</u> 6. Turbine No. <u>4</u> Type <u>Horizontal Bulb</u> 7. Spillways No. <u>5</u> Type <u>Gated, Overflow</u> 8. Intakes No. <u>4</u> Depth below max. pool <u>122 feet</u> <u>invert</u>	C. Typical Water Quality Parameters 1. Date/time/depth _____ 2. pH _____ 3. Temp (°C) _____ 4. Cond. (umhos/cm) _____ 5. D.O. (mg/l) _____ 6. Other <u>*Detailed water quality data is available in USCE and USGS publication.</u> E. Cultural Characteristics 1. Project-owned lands (above max. pool) <u>I private 84 I federal 16</u> <u>I State I municipal</u> 2. Reservoir vicinity land ownership, est. <u>I forestry 70 I agriculture 20</u> <u>I residential 10 I misc. _____</u> <u>I recreational _____</u> <u>I industrial _____</u> 3. Public access to reservoir No. developments (total) <u>NA</u> No. developments (w/boat launches) <u>NA</u> 4. Transmission Facilities	4. Date implemented _____ Measure _____ C. Primary Species List 1. Wildlife Species Rel. Ab.* Ref. a. White-tailed Deer C b. Mule Deer C c. Black Bear C d. Elk C e. Moose U f. Bald Eagle U g. Canada Goose U h. _____ i. _____ j. _____
C. Reservoir Morphometry 1. Elevation (m.s.l. max. pool) <u>2,130</u> 2. Elevation (m.s.l. min. pool) <u>2,100</u> 3. Drawdown (max.) <u>30 feet</u> 4. Drawdown <u>24' summer/20' winter</u> 5. Depth (max. pool) <u>60 feet</u> 6. Depth (mean, max. pool) <u>28 feet</u> 7. Surface area (max. pool) <u>1,350 acres</u> 8. Surface area (min. pool) <u>590 acres</u> 9. Surface area, possible exposure <u>760 acres</u> 10. Total volume <u>35,500 acre feet</u> 11. Active storage <u>28,000 acre feet</u> 12. Dead storage <u>7,500 acre feet</u> 13. Shoreline length <u>20-miles</u> (including islands) 14. Shoreline length developed <u>-</u> 15. Drainage area <u>4,900</u> <u>7,055 sq. miles</u> 16. Pre-project recorded rate of flow years of record/source <u>61/USGS</u> min. <u>895 cfs (11 Jan 1930)</u> max. <u>121,000 cfs (21 Jun 1916)</u> avg. <u>12,110 cfs</u> 1/ Powerhouse only. Power statistics may be revised by future design modifications. 2/ Normal maximum daily.	F. Mitigation * 1. Date implemented _____ Measure <u>*See Libby Dam Mitigation</u> 2. Date implemented _____ Measure _____	2. Fish Species Rel. Ab.* Ref. a. Westslope Cutthroat C b. Rainbow C c. Mountain Whitefish C d. Bull Trout C e. Burbot U f. _____ g. _____ h. _____ i. _____ j. _____ 3. Plant Species Rel. Ab.* Ref. a. _____ b. _____ c. _____ d. _____ e. _____ f. _____ g. _____ h. _____ i. _____ j. _____ H. References See addendum sheet for sources of additional or detailed information

FOOTNOTES

1/ Libby Dam project includes the following:

a. Existing Condition. Libby Dam and reservoir and four-unit powerhouse are presently complete and operational.

b. Libby Additional Units and Reregulating Dam Project (LAURD). Expansion of the existing four-unit powerhouse to eight units and development of a reregulating reservoir to smooth the hydropeaking fluctuations of the four added units was planned for the mid-1980's. Early planning of Libby project anticipated the development of a reregulating dam to allow effectively unrestricted operation of the eight-unit powerhouse. Courts have found that Congress properly authorized the additional four units but had not properly consented to the reregulating dam. Recent congressional activity intends to limit further development to one unit only.

2/ Releases from Libby project (existing condition, four-unit powerhouse) will be regulated in accordance with the approved criteria given in 7/ below. Releases will normally range up to the 23,000-c.f.s., four-unit powerhouse hydraulic capacity, particularly during the winter heavy electric power demand periods. Summer releases will generally be comparatively moderate. Releases in excess of powerhouse hydraulic capacity may occasionally be required due to (1) drafting of reservoir storage in early spring to establish reservoir storage capacity for flood control regulation; and (2) regulating water releases during the spring runoff period, or immediately thereafter, to safely refill the reservoir and provide downstream flood control. Regulated releases from Libby Dam will vary seasonally from average monthly streamflows of 5,000 to 10,000 c.f.s. in the summer to 15,000 to 25,000 c.f.s. in the winter. Hourly and daily variations will occur due to hydropower generation up to the powerhouse hydraulic capacity. Seasonal streamflows are expected to remain essentially unchanged due to the LAURD development, and daily average streamflows at the reregulating dam and Libby Dam should be nearly the same, although hourly and daily fluctuations would be reduced at the reregulating dam.

3/ The eight-unit Libby Project (LAURD) hydraulic capacity will be approximately 46,000 c.f.s. and would be totally usable when the reregulating dam is operational.

4/ The reregulating dam will be regulated in accordance with the approved criteria (see 7/). The reregulating dam will be operated primarily for reregulation and secondarily for hydroelectric power. This operation is expected to produce fluctuations below the reregulating dam which are one-half the allowable stage fluctuations the majority of the time.

5/ Libby reservoir contains 4,979,468 acre-feet of usable storage between minimum pool, 2,287 feet, and normal full pool, 2,459 feet. The reservoir is normally filled during the spring snowmelt runoff, is held near full pool throughout the summer, and is drafted during the winter and early spring to a level which depends on power and flood control demands. Average drawdown is about 100 to 130 feet.

6/ The reregulating reservoir will fluctuate daily, depending on the magnitude of hydropeaking operations at Libby Dam. The total usable pondage capacity is 28,000 acres. Maximum daily drawdown will normally be about 6 feet in the summer and 20 feet in the winter, although special power operations may require greater use of pondage at any time.

7/ Approved operational criteria for Libby Dam.

LIBBY DAM

DOWNSTREAM FLUCTUATIONS AND FLOW CRITERIA

MINIMUM DISCHARGE

1. Normal - 4,000 c.f.s.
2. If required to refill - 3,000 c.f.s.
3. Short-duration power emergencies - 2,000 c.f.s.

MAXIMUM TAILWATER FLUCTUATION

1. May through September - 1 foot per hour, 4 feet per day.
2. October through April - 1 foot per 1/2 hour, 6 feet per day.

STABLE FLOWS BELOW 8,000 c.f.s. As long and as often as is feasible during the 1 May to 15 September period, on weekends and holidays, and from 3 hours before sunset to 1 hour after sunset on weekdays.

With the reregulating dam, the Libby Dam would be unrestricted except for requirement to provide sufficient outflow to meet minimum flows at the reregulating dam.

REREGULATING DAM. The above criteria (except the 2,000-c.f.s. rate for short duration power emergencies) will be applied to the reregulating dam.

SUPPLEMENT IV - ATTACHMENT A

MAP

The map provided to the council was too large and in too limited a supply to present with this document. Although it is informative, it is not essential to the understanding of documentation presented in Supplement IV. The map entitled "1980 Stream Evaluation Map State of Montana" can be obtained upon written request to the Montana Department of Fish, Wildlife and Parks, 1420 East Sixth Avenue, Helena, MT 59620.

SUPPLEMENT IV - ATTACHMENT B

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

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)

SER	REG-DRAINAGE- IAL WATER-REACH	CO.	WATER NAME	UPPER REACH BOUNDARY/LOWER REACH BOUNDARY-T, R & SEC	TRIBUTARY TO	LENGTH R S H (KM) V F S
A67	1-08-0020-000	29	ABBOTT CREEK	SOURCE	-30N19W05 FLATHEAD RIVER	9.7 4 4 4
442	3-22-0014-001	67	ADAIR CREEK	BONHOMN RANCH CROSS	-01S10E09 SHIELDS RIVER	6.0 3 4 3
A59	1-08-0060-000	29	ADDITION CREEK	SOURCE	-25N15W20 SO. FK. FLATHEAD R.	8.0 3 4 3
A02	1-07-0020-000	29	ADVENT CREEK	SOURCE	-33N25W34 SUNDAY CR.	4.8 4 4 4
A6V	1-08-0080-000	29	AENEAS CREEK	SOURCE	-27N18W01 GRAVES CR.	9.7 3 4 3
065	5-22-6804-195	95	AFTERBAY CREEK	HEADWATERS	-07S16E02 WEST ROSEBUD CREEK	2.6 4 4 4
AE8	4-20-0050-000	49	AHORN CREEK	FORKS	-21N11W17 WEST FORK SUN RIVER	4.8 4 4 4
335	4-18-0060-001	59	ALABAUGH CREEK	GRANDE RANCH	-08N09E36 S FK MUSSELSHELL R	5.2 4 4 4
AKE	3-01-9110-001	1	ALBERS SLOUGH	DRUMMY DITCH NO. 2	-05S07W20 BEAVERHEAD RIVER	19.3 3 4 3
A2P	1-05-0048-000	89	ALDER CREEK	SOURCE	-23N25W35 LITTLE THOMPSON R	8.0 4 4 4
A1B	1-07-0060-000	29	ALDER CREEK	SOURCE	-31N25W11 GOOD CR.	9.7 4 4 4
AUM	2-06-0038-200	39	ALDER CREEK	HEADWATERS	-08N17W06 ROCK CREEK	9.7 4 4 4
AGX	3-02-0075-000	1	ALDER CREEK	HEADWATERS	-01N11W19 BIG HOLE RIVER	11.4 4 4 4
896	3-01-0040-002	57	ALDER GULCH CREEK	VIRGINIA CITY	-06S04W14 RUBY RIVER	17.9 4 4 4
443	3-22-0021-000	67	ALDRIDGE CREEK	HEADWATERS	-08S07E36 MOL HERON CREEK	2.4 4 4 4
AFR	2-04-0030-001	49	ALICE CREEK	BEAR CREEK	-15N07W34 BLACKFOOT RIVER	11.9 3 3 4
A8A	6-15-0030-001	71	ALKALI CREEK	CONFLU. WITH W. ALKALI	-30N29E22 MILK RIVER	32.0 4 5 4
AUN	2-08-0076-200	63	ALLEN CREEK	HEADWATERS	-12N17W18 CLARK FORK	6.4 4 4 4
ALH	5-18-0120-000	107	AMERICAN FK MUSSELSHELL R	SOURCE	-08N16E33 MUSSELSHELL RIVER	51.2 4 4 4
444	3-22-0056-001	67	ANDERSON CREEK	HEADWATERS	-06S10E34 MILL CREEK	2.6 2 4 2
AHH	3-02-0125-001	1	ANDRUS CREEK	THAYER CREEK	-07S14W06 GOVERNOR CREEK	12.2 4 4 4
445	3-22-0084-000	67	ANTELOPE CREEK	HEADWATERS	-02N09E16 SHIELDS RIVER	12.9 4 5 4
A74	6-15-0060-001	105	ANTELOPE CREEK	HARDSCRABBLE CR CONF	-29N38E23 MILK RIVER	20.8 4 5 4
AKY	3-01-0135-001	1	ANTELOPE FLAT CREEK	SPRING	-13S08W03 SAGE CREEK	1.6 4 4 4
A7Q	1-07-0100-000	29	ANTICE CREEK	SOURCE	-33N23W14 SWIFT CR.	6.4 4 4 4
446	3-22-0133-000	67	AREA CREEK	HEADWATERS	-02S08E13 BILLMAN CREEK	8.0 4 4 4
BAN	4-16-0120-601	27	ARMELL'S CREEK	8 MI ABOVE MOUTH	-21N24E06 MISSOURI RIVER	12.9 4 4 4
049	5-22-0138-000	9	ARMSTRONG CREEK	2KM ABV E ROSEBUD	-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	-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	-15N10W33 BLACKFOOT RIVER	5.1 3 4 3
346	4-16-0140-002	45	ARROW CREEK	NEAR UPPER END	-18N10E24 MISSOURI RIVER	15.3 4 4 4
BQM	1-07-0140-001	29	ASHLEY CREEK	AIRPORT ROAD	-28N21W25 FLATHEAD RIVER	27.7 3 4 3

593	1-07-0140-002	29	ASHLEY CREEK	SMITH LAKE	-28N21W19	FLATHEAD RIVER	16-0	3	4	3
594	1-07-0140-003	29	ASHLEY CREEK	ASHLEY LAKE	-27N22W08	FLATHEAD RIVER	21-2	3	4	3
ANA	3-13-0240-000	57	ASPEN CREEK	HEADWATERS	-06S02E06	JACK CREEK	4-8	4	4	4
AII	3-17-0160-002	7	AVALANCHE CREEK	ROAD CROSSING	/FOREST SERVICE BNDRY-10N01E14	CANYON FERRY RESERV.	4-7	4	4	4
AB0	1-08-0360-001	77	BABCOCK CREEK	FURIOUS CR	/MOUTH	-19N13W33	YOUNGS CREEK	11-3	3	3
A0Y	3-09-0114-201	31	BACON RIND CREEK	SINK CREEK	/3.9 KM UP FROM MOUTH-10S05E27	W. FORK GALLATIN R.	1-3	3	3	4
788	5-22-0168-001	95	BAD CANYON CREEK	FOREST SERVICE BNDRY/MOUTH	-04S16E23	STILLWATER RIVER	9-3	4	4	4
162	5-22-0168-002	95	BAD CANYON CREEK	HEADWATERS	-04S15E01	STILLWATER RIVER	6-4	3	4	3
AE9	4-14-0065-000	73	BADGER CREEK	BADGER CABIN	-29N12W23	NO-FK-BADGER CREEK	1-6	3	4	3
291	4-14-0200-003	73	BADGER CREEK	N & S FORKS	-29N11W03	TWO MEDICINE RIVER	12-1	3	3	3
897	3-09-0152-001	31	BAKER CREEK	INTERSTATE	-01N03E01	GALLATIN RIVER	3-1	4	4	4
898	3-09-0152-002	31	BAKER CREEK	COUNTY ROAD	-01N03E13	GALLATIN RIVER	8-7	4	4	4
A6M	1-08-0400-000	29	BALL CREEK	SOURCE	-26N17W24	SULLIVAN CR.	8-0	3	4	3
A91	4-17-0200-000	49	BALSINGER CREEK	HEADWATERS	-14N06E30	TENDERFOOT CREEK	8-2	3	4	3
448	3-22-0182-000	67	BANGTAIL CREEK	HEADWATERS	-01N09E24	SHIELDS RIVER	16-4	3	4	3
ASV	1-08-0440-000	49	BAR CREEK	SOURCE	-18N11W08	DANAHER CR.	6-4	3	4	3
A4J	1-11-0180-000	53	BARNUM CREEK	SOURCE	-27N27W06	PLEASANT V. FISCHER R	11-3	4	4	4
396	4-20-0350-000	49	BARR CREEK	NEAR UPPER END	-20N08W01	WILLOW CREEK	9-7	3	3	4
995	1-11-0200-000	53	BARRON CREEK	HEADWATERS	-32N29W27	LAKE KOOCANUSA	10-9	3	4	3
AS2	1-08-0460-000	77	BARTLETT CREEK	SOURCE	-20N13W05	SO-FK. FLATHEAD R.	11-3	3	4	3
A2H	1-05-0176-000	89	BASIN CREEK	SOURCE	-23N27W08	FISHTRAP CR	3-2	4	4	4
ASX	1-08-0480-000	77	BASIN CREEK	SOURCE	-19N12W15	DANAHER CR.	11-3	3	4	3
AS8	1-08-0500-000	29	BASIN CREEK	SOURCE	-26N11W35	BOWL CR.	9-7	2	4	2
A45	1-11-0240-000	53	BASIN CREEK	SOURCE	-32N26W08	FORTINE CR.	4-8	4	4	4
AKX	3-01-0340-000	1	BASIN CREEK	SOURCE	-12S08W26	SAGE CREEK	21-4	4	4	4
AMA	3-10-0120-001	43	BASIN CREEK	JACK CREEK	-06N05W19	BOULDER RIVER	11-4	4	4	4
025	5-22-0238-005	9	BASIN CREEK	LAKE ZONE	-08S19E04	WEST FORK ROCK CREEK	-4	4	4	4
026	5-22-0238-006	9	BASIN CREEK	HEADWATERS	-08S19E07	WEST FORK ROCK CREEK	-2	4	4	4
AEJ	2-03-0200-002	81	BASS CR.	HEADWATERS	-10N20W33	BITTERROOT RIVER	11-3	4	4	4
AEK	2-03-0200-001	81	BASS CREEK	FS BNDRY	-10N20W34	BITTERROOT RIVER	3-2	4	4	4
449	3-22-0245-000	67	BASSETT CREEK	HEADWATERS	-08S08E30	YELLOWSTONE RIVER	7-2	4	4	4
A91	6-15-0200-000	5	BATTLE CREEK	CANADIAN BORDER	-33N20E34	MILK RIVER	96-0	4	5	4
743	6-15-0240-002	5	BEAN CREEK	TAYLOR DIVIDE FORK	-31N19E32	SNAKE CREEK	9-0	4	4	4
AMB	3-09-0190-001	31	BEAR CANYON CREEK	SKI LODGE	-02S06E14	ROCKY CREEK	7-2	4	4	4
958	1-05-0272-001	89	BEAR CREEK	BORDER OF SEC. 283	-23N26W07	THOMPSON RIVER	6-4	3	4	3
AA9	1-07-0200-000	29	BEAR CREEK	HEADWATERS	-27N19W26	SWAN RIVER	2-4	4	4	4
AB0	1-08-0540-001	29	BEAR CREEK	FOREST RT. 569	-29N15W31	W. FORK FLATHEAD R.	18-3	3	4	3
A36	1-11-0280-000	53	BEAR CREEK	SOURCE	-28N31W22	LIBBY CREEK	9-7	4	4	4
AU0	2-03-0225-201	63	BEAR CREEK	FOREST BOUNDARY	-12N22W26	LOLO CREEK	2-1	3	4	3
AUP	2-03-0225-202	63	BEAR CREEK	HEADWATERS	-12N22W25	LOLO CREEK	6-4	3	4	3

AV9 2-05-0288-200 63 BEAR CREEK
 ANB 3-13-0400-001 57 BEAR CREEK
 789 5-22-0294-000 9 BEAR CREEK
 451 3-22-0350-001 67 BEAR CREEK 01
 452 3-22-0350-002 67 BEAR CREEK 02
 44H 1-11-0290-000 29 BEAR SPRINGS CREEK
 957 1-05-0368-001 89 BEATRICE CREEK
 8AW 6-16-0195-001 71 BEAUCHAMP CREEK
 945 1-05-0384-000 89 BEAVER CREEK
 A13 1-07-0220-000 29 BEAVER CREEK
 595 1-07-0240-001 63 BEAVER CREEK
 596 1-07-0240-002 63 BEAVER CREEK
 597 1-07-0240-003 63 BEAVER CREEK
 A44 1-11-0300-000 53 BEAVER CREEK
 AFX 2-04-0390-001 49 BEAVER CREEK
 691 2-04-0390-002 49 BEAVER CREEK
 AJ3 3-01-0460-001 1 BEAVER CREEK
 AJM 3-09-0260-001 31 BEAVER CREEK
 ANC 3-13-0520-001 31 BEAVER CREEK
 Aqq 3-13-0520-203 31 BEAVER CREEK
 AIM 3-17-0480-001 7 BEAVER CREEK
 AIM 3-17-0480-002 7 BEAVER CREEK
 453 3-22-0390-000 67 BEAVER CREEK
 290 4-16-0200-001 27 BEAVER CREEK
 236 4-17-0448-001 59 BEAVER CREEK
 347 4-17-0496-001 49 BEAVER CREEK
 397 4-20-0450-000 49 BEAVER CREEK
 790 5-22-0392-000 95 BEAVER CREEK
 746 6-15-0320-002 41 BEAVER CREEK
 A9W 6-15-0400-001 105 BEAVER CREEK
 A9X 6-15-0400-002 71 BEAVER CREEK
 A9Y 6-15-0400-004 71 BEAVER CREEK
 8AB 6-16-0205-000 91 BEAVER CREEK
 786 7-12-0100-000 109 BEAVER CREEK
 744 6-15-0280-000 41 BEAVER CREEK 01
 745 6-15-0320-001 41 BEAVER CREEK 02
 AMC 3-01-0500-001 57 BEAVERHEAD RIVER
 AME 3-01-0500-002 27 BEAVERHEAD RIVER
 AME 3-01-0500-003 1 BEAVERHEAD RIVER
 AMF 3-01-0500-004 1 BEAVERHEAD RIVER

HEADWATERS /MOUTH
 HEADWATERS /MOUTH
 HEADWATERS /MOUTH
 DARROCH CREEK /MOUTH
 HEADWATERS /DARROCH CREEK
 SOURCE /MOUTH
 TRAIL CROSSING /MOUTH
 6 MI ABOVE MOUTH /MOUTH
 SOURCE /MOUTH
 SOURCE /MOUTH
 BRIDGE /MOUTH
 BRIDGE /BRIDGE
 HEADWATERS /BRIDGE
 SOURCE /MOUTH
 NATL FOREST BOUNDARY /MOUTH
 HEADWATERS /FOREST BOUNDARY
 SHINEBERGER CREEK /MOUTH
 5 KM ABOVE MOUTH /MOUTH
 HILGARD CREEK /MOUTH
 *7KM FROM SENTINEL /SENTINEL CREEK
 FOREST SERVICE BNDRY /MOUTH
 SOURCE /FOREST SERVICE BNDRY
 HEADWATERS /MOUTH
 2-1/2 MI ABOVE RR X /MOUTH
 UPPER END /MOUTH
 FORKS /MOUTH
 BRIDGE-SAWMILL FLATS /MOUTH
 HEADWATERS /MOUTH
 ROCKY BOY INDIAN RES/BEARPAW LAKE /MOUTH
 SEVEN MILE CREEK CON/MOUTH
 CREEK LEAVES INDIAN /SEVEN MILE CREEK
 SOURCE /CREEK ENTERS INDIAN
 CANADIAN BORDER /WHITETAIL CREEK CONF-37N51E25
 LAMESTER CREEK /NORTH DAKOTA BNDRY
 LWR. BEAVER CR. PARK /MOUTH
 BEARPAW LAKE /LWR.BEAVER CR. PARK
 STONE CREEK /MOUTH
 STODDEN DITCH /STONE CREEK
 GRASSHOPPER CR /STODDEN DITCH
 CLARK CANYON DAM /GRASSHOPPER CR

-15N20W06 MILL CREEK 6.4 4 4 4
 -06S01W03 O'DELL CREEK 33.8 4 5 4
 -08S22E11 CLARKS FORK YELL. R. 30.4 4 5 4
 -09S09E19 YELLOWSTONE RIVER 11.7 2 4 2
 -08S09E27 YELLOWSTONE RIVER 4.8 4 4 4
 -27N25W18 PLEASANT VALLEY F.R. 9.7 5 5 5
 -24N27W31 FISHTRAP CREEK 6.0 4 4 4
 -21N28E02 FT. PECK RESERVOIR 9.7 4 4 4
 -24N31W26 CLARK FORK 23.7 4 4 4
 -30N22W21 STILLWATER RIVER 4.8 4 4 4
 -19N16W06 SWAN RIVER 3.4 3 4 3
 -19N16W08 SWAN RIVER 14.6 3 4 3
 -18N17W11 SWAN RIVER 6.1 3 3 4
 -33N26W21 FORTINE CR. 4.8 4 4 4
 -14N09W22 KEEP COOL CREEK 6.4 4 4 4
 -14N09W04 KEEP COOL CR 5.6 2 2 4
 -14S07W21 JUNCTION CREEK 5.6 4 4 4
 -07S04E16 GALLATIN RIVER 5.0 4 4 4
 -11S03E21 QUAKE LAKE 9.0 4 4 4
 -10S03E33 MADISON RIVER 7.4 4 4 4
 -09N01E27 CANYON FERRY RESERV. 13.0 4 4 4
 -08N01W15 CANYON FERRY RES. 9.7 4 4 4
 -02S11E17 MISSION CREEK 4.8 4 4 4
 -15N17E05 COTTONWOOD CREEK 11.3 4 4 4
 -12N04E36 SMITH RIVER 10.6 4 5 4
 -12N02W19 MISSOURI RIVER 22.5 3 3 4
 -21N09W04 SUN RIVER 6.4 4 4 4
 -03S19E29 STILLWATER RIVER 19.3 4 4 4
 -30N16E33 MILK RIVER 24.5 3 4 3
 -31N36E30 MILK RIVER 120.0 4 5 4
 -28N32E18 MILK RIVER 208.0 4 5 4
 -26N25E35 MILK RIVER 23.0 4 4 4
 -37N51E25 BIG MUDDY CREEK 22.4 4 5 4
 -16N61E18 LITTLE MISSOURI R 85.6 3 4 3
 -32N15E01 MILK RIVER 24.1 3 3 3
 -31N15E23 MILK RIVER 12.9 3 4 3
 -03S06W22 JEFFERSON RIVER 45.7 3 3 4
 -06S08W12 JEFFERSON RIVER 14.3 3 3 4
 -07S08W08 JEFFERSON RIVER 20.6 2 2 3
 -08S10W25 JEFFERSON RIVER 20.4 1 1 3

AWA 2-05-0416-200	63 BEECHER CREEK	HEADWATERS	/MOUTH	-17N24W16	NINEMILE CREEK	2.0	4	4	4
AER 2-04-0420-000	63 BELMONT CREEK	HEADWATERS	/MOUTH	-14N16W24	BLACKFOOT RIVER	12.9	3	3	3
348 4-17-0544-001	13 BELT CREEK	BIG WILLOW CREEK	/MOUTH	-21N05E02	MISSOURI RIVER	35.4	4	4	4
349 4-17-0544-002	13 BELT CREEK	RICEVILLE BRIDGE	/MOUTH	-20N07E07	MISSOURI RIVER	43.1	3	3	3
AOR 4-17-0544-003	13 BELT CREEK	.5KM BELOW DRY FK.	/RICEVILLE BRIDGE	-17N06E23	MISSOURI RIVER	23.8	2	2	4
350 4-17-0544-004	13 BELT CREEK	MOUTH OF JEFFERSON	/O-5 KM BELOW DRY FK.	-16N07E33	MISSOURI RIVER	26.5	3	3	4
048 5-22-0425-000	9 BEN CREEK	SPRING	/AT MOUTH	-07S17E16	EAST ROSEBUD CREEK	2.0	4	4	4
075 5-22-6804-187	95 BEN CREEK	HEADWATERS	/MOUTH	-07S16E01	WEST ROSEBUD CREEK	2.0	4	4	4
AND 3-09-0304-001	31 BENHART CREEK	COUNTY ROAD	/MOUTH	-01N04E03	E.GALLATIN RIVER	6.0	3	3	4
454 3-22-0434-000	67 BENNETT CREEK	HEADWATERS	/MOUTH	-05N10E24	SHIELDS RIVER	7.2	3	3	4
AFA 4-14-0180-000	73 BENSON CREEK	HEADWATERS	/MOUTH	-29N13W12	SO.FK.TWO MEDICINE R	3.2	3	3	4
237 4-17-0560-000	59 BENTON GULCH	HEADWATERS	/MOUTH	-11N04E23	CAMAS CREEK	14.5	4	4	4
A5H 1-08-0640-000	29 BERGSICKER CREEK	SOURCE	/MOUTH	-27N15W05	LONG CR.	8.0	3	3	4
238 4-17-0576-001	59 BIG BIRCH CREEK	FOREST BOUNDARY	/MOUTH	-10N05E36	SMITH RIVER	20.6	4	4	4
239 4-17-0576-002	59 BIG BIRCH CREEK	NEAR FORKS	/FOREST BOUNDARY	-09N04E26	SMITH RIVER	6.3	4	4	4
AWB 2-05-0496-200	63 BIG BLUE CREEK	HEADWATERS	/MOUTH	-17N24W36	NINEMILE CREEK	6.4	4	4	4
969 1-11-0400-001	53 BIG CHERRY CREEK	END OF TRAIL	/MOUTH	-30N31W14	LIBBY CREEK	23.3	4	4	4
598 1-08-0680-000	29 BIG CREEK	HEADWATERS	/MOUTH	-33N20W22	N FORK FLATHEAD R	22.8	2	4	2
671 1-11-0420-000	53 BIG CREEK	N&S FORKS BIG CREEK /LIBBY RESERVOIR	/MOUTH	-34N29W03	KOOTENAI RIVER	11.7	4	4	4
ADP 2-05-0464-000	61 BIG CREEK	MIDDLE FORK BIG CR.	/MOUTH	-19N30W26	ST.REGIS RIVER	6.1	4	4	4
455 3-22-0476-001	67 BIG CREEK 01	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-06S07E17	YELLOWSTONE RIVER	3.9	2	4	2
456 3-22-0476-002	67 BIG CREEK 02	SMOKEY CREEK	/FOREST SERVICE BNDRY	-06S07E17	YELLOWSTONE RIVER	10.3	3	4	3
457 3-22-0476-003	67 BIG CREEK 03	HEADWATERS	/SMOKEY CREEK	-06S06E31	YELLOWSTONE RIVER	9.7	4	4	4
BAM 7-16-0245-601	33 BIG DRY CREEK	1 MI ABOVE MOUTH	/MOUTH	-20N42E23	FT. PECK RESERVOIR	1.6	3	4	3
ALI 5-18-0360-000	107 BIG ELK CREEK	SOURCE	/MOUTH	-08N13E26	MUSSELSHELL RIVER	36.7	4	4	4
A2K 1-05-0544-000	89 BIG HOLE CREEK	SOURCE	/MOUTH	-22N27W18	THOMPSON RIVER	6.4	4	4	4
AJV 3-02-0425-000	57 BIG HOLE RIVER 01	DIVIDE	/MOUTH	-03S06W21	JEFFERSON RIVER	79.7	1	1	3
AJM 3-02-0450-001	1 BIG HOLE RIVER 02	WISE RIVER	/DIVIDE	-01S09W20	JEFFERSON RIVER	18.8	1	1	1
AHE 3-02-0450-002	1 BIG HOLE RIVER 02	PINTLAR CREEK	/WISE RIVER	-01N11W34	JEFFERSON RIVER	50.4	1	2	1
AHD 3-02-0475-000	57 BIG HOLE RIVER 03	SKINNER LAKE	/PINTLAR CREEK	-01S14W08	JEFFERSON RIVER	84.5	1	2	1
AGA 5-22-0490-000	3 BIG HORN RIVER	RESERVATION LINE	/MOUTH	-05N34E28	YELLOWSTONE RIVER	73.9	3	3	3
399 4-20-0750-002	99 BIG MUDDY CREEK	ONE MILE ABOVE CLEIV/NEAR POWER	/MOUTH	-23N01W30	SUN RIVER	12.9	4	4	4
A9T 6-16-0280-001	85 BIG MUDDY CREEK	4 MILES WEST OF TOWN/MOUTH AT MISSOURI RI-28N55E33	/MOUTH	-28N55E33	MISSOURI RIVER	43.4	4	4	4
A9U 6-16-0280-002	85 BIG MUDDY CREEK	CREEK LEAVES INDIAN /4 MILES WEST OF FROI-30N55E20	/MOUTH	-30N55E20	MISSOURI RIVER	112.0	4	5	4
BOX 6-16-0280-003	85 BIG MUDDY CREEK	CONFLUENCE WHITETAIL/CREEK LEAVES INDIAN	/MOUTH	-33N55E12	MISSOURI RIVER	112.0	4	5	4
AKN 3-10-0680-001	43 BIG PIPESTONE CREEK	HOMESTAKE CREEK	/MOUTH	-01N04W11	JEFFERSON RIVER	15.1	4	5	4
AKM 3-10-0680-002	43 BIG PIPESTONE CREEK	DELMO LAKE	/HOMESTAKE CREEK	-02N06W13	JEFFERSON RIVER	10.1	3	3	4
A2Y 1-05-0560-000	89 BIG PRAIRIE CREEK	SOURCE	/MOUTH	-23N27W01	BEAR CR	4.8	4	4	4
960 1-05-0576-001	89 BIG ROCK CREEK	MANDY GULCH TRAIL	/MOUTH	-24N27W01	THOMPSON RIVER	11.7	4	4	4
ABL 1-08-0740-002	29 BIG SALMON CR	PENDANT CR.	/SPUD CR	-21N15W23	S.FK.FLATHEAD R.	10.1	3	4	3

ABM	1-08-0740-003	29	BIG SALMON CR	SOURCE	/PENDANT CR	-20N15W10	S.FK.FLATHEAD R.	4.8	3	4	3
ABK	1-08-0740-001	29	BIG SALMON CREEK	SPUD CREEK	/MOUTH	-22N14W26	S-FORK FLATHEAD R.	6.3	3	3	3
A90	6-15-0440-001	41	BIG SANDY CREEK	CHOUTEAU CO. LINE	/MOUTH	-33N15E32	MILK RIVER	62.0	4	5	4
AK4	3-01-6740-001	1	BIG SHEEP CREEK	IRRIGATION DIVERSION	/MOUTH	-13S09W10	RED ROCK RIVER	4.8	4	5	4
AK5	3-01-6740-002	1	BIG SHEEP CREEK	SHEARING PEN GULCH	/IRRIATION DIVERSION	-13S09W20	RED ROCK RIVER	11.9	3	3	3
AK3	3-01-6740-003	1	BIG SHEEP CREEK	SOURCE	/SHEARING PEN GULCH	-14S10W15	RED ROCK RIVER	12.7	4	4	4
AUQ	2-06-0551-200	39	BIG SPRING CREEK	HEADWATERS	/MOUTH	-08N17W27	ROCK CREEK	8.0	4	4	4
293	4-16-0300-002	27	BIG SPRING CREEK	2 MI ABOVE HANOVER	/MOUTH	-17N16E26	JUDITH RIVER	20.9	3	3	3
294	4-16-0300-003	27	BIG SPRING CREEK	HWY 19 BRIDGE	/2 MI ABOVE HANOVER	-16N17E36	JUDITH RIVER	9.7	2	2	3
292	4-16-0310-001	27	BIG SPRING CREEK	UPPER FISH HATCHERY	/HYW 19 BRIDGE	-15N18E10	JUDITH RIVER	20.8	2	2	3
AHR	3-02-0550-001	1	BIG SWAMP CREEK	FOREST SERVICE BNDRY	/MOUTH	-04S15W29	BIG HOLE RIVER	10.0	4	4	4
AHQ	3-02-0550-002	1	BIG SWAMP CREEK	HEADWATERS	/FOREST SERVICE	-05S16W16	BIG HOLE RIVER	11.7	4	4	4
791	5-22-0518-001	97	BIG TIMBER CREEK	S-FORK BIG TIMBER CR	/MOUTH	-01N14E12	YELLOWSTONE RIVER	17.7	4	5	4
792	5-22-0518-002	97	BIG TIMBER CREEK	FOREST SERVICE BNDRY	/S-FORK BIG TIMBER CR	-03N13E26	YELLOWSTONE RIVER	8.9	4	4	4
793	5-22-0518-003	97	BIG TIMBER CREEK	HEADWATERS	/FOREST SERVICE	-03N13E07	YELLOWSTONE RIVER	16.1	4	4	4
A94	6-15-0475-001	71	BIG WARM SPRING CREEK	FT.BELKNAP RES.	BOUND/CONFLUENCE WITH BEAVER	-26N30E07	BEAVER CREEK	64.0	4	5	4
398	4-20-0650-001	99	BIGGS CREEK	5.2 MI. ABOVE MOUTH	/MOUTH	-23N10W21	NO.FK SUN RIVER	8.4	4	4	4
A60	1-08-0720-000	29	BIGLOW CREEK	SOURCE	/MOUTH	-27N17W29	WHEELER CR.	3.2	4	4	4
A1J	1-07-0380-000	29	BILL CREEK	SOURCE	/MOUTH	-29N24W03	LOGAN CR.	3.2	4	4	4
AWC	2-05-0624-200	63	BILL CREEK	HEADWATERS	/MOUTH	-13N23W25	PETTY CREEK	7.0	4	4	4
458	3-22-0532-001	67	BILLMAN CREEK 01	1MI ABOVE FLYNN CR.	/MOUTH	-02S09E25	YELLOWSTONE RIVER	17.4	4	4	4
AH1	3-02-0575-001	1	BIRCH CREEK	BVRHD-WILLW CR DITCH	/MOUTH	-04S08W31	BIG HOLE RIVER	16.4	4	4	4
AHD	3-02-0575-002	1	BIRCH CREEK	HEADWATERS	/BEAVERHD-WILLW.CR.DT	-05S09W19	BIG HOLE RIVER	20.9	4	4	4
AEO	4-14-0240-001	73	BIRCH CREEK	CARTWRIGHT COULEE	/MOUTH	-31N05W16	TWO MEDICINE RIVER	25.7	4	5	4
295	4-14-0240-002	73	BIRCH CREEK	BIRCH (SWIFT) CR RES/CARTWRIGHT COULEE	/MOUTH	-30N05W33	TWO MEDICINE RIVER	60.2	4	4	4
A9J	4-17-0752-002	13	BIRD CREEK	HEADWATERS	/BLAINE CREEK	-17N01E22	MISSOURI RIVER	11.2	4	5	4
AWD	2-05-0640-200	63	BIRD CREEK	HEADWATERS	/MOUTH	-16N23W06	NINEMILE CREEK	4.8	3	4	3
AMG	3-10-0720-001	43	BISON CREEK	FOREST SERVICE BNDRY	/MOUTH	-06N06W22	BOULDER RIVER	13.8	3	4	3
AMH	3-10-0720-002	43	BISON CREEK	NEZ PERCE CREEK	/FOREST SERVICE	-05N06W21	BOULDER RIVER	8.2	4	4	4
689	2-03-0475-001	63	BITTERROOT RIVER	FLORENCE BRIDGE	/MOUTH	-13N20W27	CLARK FORK	36.9	2	2	3
690	2-03-0475-002	63	BITTERROOT RIVER	BELL CROSSING	/FLORENCE BRIDGE	-10N20W12	CLARK FORK	27.4	2	2	3
688	2-03-0500-000	81	BITTERROOT RIVER	ESW FORK BITTERROOT	/BELL CROSSING	-08N20W17	CLARK FORK	66.6	2	2	3
A57	1-08-0760-000	29	BLACK BEAR CREEK	SOURCE	/MOUTH	-23N14W22	SO.FK. FLATHEAD R.	11.3	3	4	3
694	2-04-0600-001	63	BLACKFOOT RIVER	CLEARWATER RIVER	/MOUTH	-13N18W21	CLARK FORK	52.9	1	1	3
693	2-04-0630-002	63	BLACKFOOT RIVER	ARRASTRA CREEK	/CLEARWATER RIVER	-14N14W16	CLARK FORK	69.2	2	2	4
692	2-04-0660-003	77	BLACKFOOT RIVER	HEADWATERS	/ARRASTRA CREEK	-14N10W29	CLARK FORK	47.5	3	3	4
AKB	3-01-0720-001	1	BLACKTAIL DEER CREEK	EAST BENCH CANAL	/MOUTH	-07S08W18	BEAVERHEAD RIVER	3.7	3	3	4
AKC	3-01-0720-002	1	BLACKTAIL DEER CREEK	2.4KM ABOVE E.BENCH	/EAST BENCH CANAL	-08S08W06	BEAVERHEAD RIVER	2.4	5	5	5
AKD	3-01-0720-003	1	BLACKTAIL DEER CREEK	WEST FORK BLACKTAIL	/2.4KM ABOVE E.BENCH	-08S08W07	BEAVERHEAD RIVER	39.8	3	3	4
400	4-20-0900-001	99	BLACKTAIL GULCH	2.2 MILE ABOVE MOUTH	/MOUTH	-21N09W03	SUN RIVER	3.5	4	4	4

ANE 3-13-0560-001	57 BLAINE SPRING CREEK	ENNIS FISH HATCHERY	/MOUTH	-07SD1W17	MADISON RIVER	8.5 3 4 3
100 5-22-0658-000	97 BLAKELY CREEK	HEADWATERS	/MOUTH	-04S12E25	BOULDER RIVER	4.3 4 4 4
AES 2-04-0690-000	63 BLANCHARD CREEK	HEADWATERS	/MOUTH	-14N14W04	CLEARWATER RIVER	19.0 3 4 3
A01 1-07-0620-000	29 BLESSED CREEK	SOURCE	/MOUTH	-33N25W35	SUNDAY CR.	3.2 4 4 4
AF3 2-03-0350-000	81 BLODGETT CREEK	SOURCE	/MOUTH	-06N21W12	BITTERROOT RIVER	36.2 3 4 3
AH4 3-01-0740-001	1 BLOODY DICK CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-09S13W36	HORSE PRAIRIE CREEK	17.1 3 3 4
AH5 3-01-0740-002	1 BLOODY DICK CREEK	PARK CREEK	/MOUTH	-09S15W23	HORSE PRAIRIE CREEK	1.0 2 2 4
AEN 2-03-0575-000	81 BLUE JOINT CREEK	HEADWATERS	/MOUTH	-02S22W04	PAINTED ROCKS LAKE	27.7 3 4 3
934 1-11-0500-000	53 BLUE SKY CREEK	SOURCE	/MOUTH	-36N25W12	GRAVE CREEK	9.7 3 4 3
794 5-22-0714-001	9 BLUEWATER CREEK	MCDONWELL COULEE	/MOUTH	-05S23E21	CLARKS FORK YELL. R.	14.5 4 4 4
795 5-22-0714-002	9 BLUEWATER CREEK	HEADWATERS	/MOUTH	-06S24E06	CLARKS FORK YELL RIV	6.4 3 3 3
799 1-11-0520-001	53 BOBTAIL CREEK	TERGE CR.	/MOUTH	-31N31W30	KOOTENAI RIVER	14.7 3 3 3
A27 1-05-0736-000	53 BOILING SPRINGS CREEK	SOURCE	/MOUTH	-26N27W11	LOWER THOMPSON LAKE	8.0 4 4 4
AEU 2-04-0750-001	63 BOLES CREEK	ELK MEADOW	/MOUTH	-16N15W30	PLACID CREEK	9.0 4 4 4
A48 1-07-0480-000	47 BOND CREEK	BOND LAKE	/MOUTH	-25N18W23	SWAN LAKE	9.3 4 4 4
695 2-06-0646-000	39 BOULDER CREEK	HEADWATERS	/MOUTH	-35N29W01	LAKE KOOCANUSA	8.4 4 4 4
AM1 3-10-0840-002	43 BOULDER RIVER	HEADWATERS	/MOUTH	-08N13W04	FLINT CREEK	17.7 3 4 3
AMJ 3-10-0840-003	43 BOULDER RIVER	COTTONWOOD CREEK	/MOUTH	-01N03W02	JEFFERSON RIVER	22.7 3 3 3
AMK 3-10-0840-004	43 BOULDER RIVER	BOULDER	/MOUTH	-03N02W31	JEFFERSON RIVER	48.9 4 4 4
AML 3-10-0840-004	43 BOULDER RIVER	BASIN	/BOULDER	-06N04W33	JEFFERSON RIVER	15.1 4 4 4
088 5-22-0756-001	95 BOULDER RIVER	HEADWATERS	/BASIN	-06N05W19	JEFFERSON RIVER	25.1 4 4 4
886 5-22-0742-000	97 BOULDER RIVER	NATURAL BRIDGE	/MOUTH	-03S12E26	YELLOWSTONE RIVER	14.4 4 4 4
A07 1-07-0540-000	53 BOWEN CREEK	SOURCE	/MOUTH	-01N14E12	YELLOWSTONE RIVER	49.2 3 3 4
A38 1-08-0820-000	29 BOWL CREEK	HEADWATERS	/MOUTH	-31N26W13	GOOD CR.	6.4 4 4 4
A5U 4-17-0992-000	13 BOX ELDER CREEK	NEAR HEADWATERS	/MOUTH	-26N11W20	STRAWBERRY CREEK	12.9 3 3 3
A8E 4-18-0630-000	69 BOX ELDER CREEK	HEADWATERS	/MOUTH	-21N05E21	MISSOURI RIVER	48.3 4 5 4
A90 6-15-0600-001	41 BOX ELDER CREEK	INDIAN RESERVATION	/MOUTH	-14N29E20	FLATWILLOW CREEK	112.6 4 4 4
785 7-12-0200-000	25 BOX ELDER CREEK	HIGHWAY 212	/MOUTH	-30N13E33	BIG SANDY CREEK	1.0 4 4 4
877 7-21-0088-001	21 BOX ELDER CREEK	COUNTY ROAD	/MOUTH	-02N62E28	LITTLE MISSOURI R	201.3 3 4 3
878 7-21-0090-001	21 BOX ELDER CREEK	FIRST RESERVOIR	/MOUTH	-18N57E30	YELLOWSTONE RIVER	32.2 4 5 4
459 3-22-0784-001	67 BRACKETT CREEK 01	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-17N57E18	BOXELDER CREEK	9.7 4 5 4
460 3-22-0784-002	31 BRACKETT CREEK 02	NORTH FORK BRACKETT /FOREST	/MOUTH	-01N05E03	SHIELDS RIVER	23.5 4 4 4
A76 6-15-0690-001	105 BRAZIL CREEK	BENTONITE ROAD CROSS/MOUTH	/MOUTH	-28N39E03	MILK RIVER	40.0 4 5 4
AH6 2-06-0684-001	39 BREWSTER CREEK	NORTH FORK	/MOUTH	-10N16W19	ROCK CREEK	5.8 4 4 4
ANF 3-09-0570-000	31 BRIDGER CREEK	HEADWATERS	/MOUTH	-01S06E31	E.GALLATIN RIVER	27.4 4 4 4
797 5-22-0798-002	97 BRIDGER CREEK	HEADWATERS	/KROME DITCH	-01S16E36	YELLOWSTONE RIVER	10.8 4 4 4
A82 4-17-1040-000	15 BRIGGS CREEK	NEAR HEADWATERS	/MOUTH	-20N09E28	HIGHWOOD CREEK	3.2 4 4 4
A47 1-11-0360-000	53 BRIMSTONE CREEK	SOURCE	/MOUTH	-34N25W17	FORTINE CR.	8.0 4 4 4
994 1-11-0640-000	53 BRISTOW CREEK	SOURCE	/MOUTH	-32N29W15	LAKE KOOCANUSA	11.6 3 4 3

SEC. 2

798	5-22-0826-001	67	BROADWATER RIVER	BROADWATER LAKE	/MOUTH	-09S15E28	CLARKS FORK YELL. R.	7.2	4	4	4
117	5-22-0850-000	97	BROWNLEE CREEK	HEADWATERS	/MOUTH	-04S13E26	EAST BOULDER RIVER	4.0	4	4	4
A6A	1-08-0920-000	29	BRUCE CREEK	SOURCE	/MOUTH	-25N15W30	ADDITION CR.	4.8	3	4	3
401	4-14-0680-001	29	BRUCE CREEK	1.5 MI. ABOVE MOUTH	/MOUTH	-26N09W19	NO FK TETON RIVER	2.4	4	4	4
A7S	1-07-0605-000	29	BRUSH CREEK	SOURCE	/MOUTH	-31N22W05	WHITEFISH LAKE	1.6	4	5	4
A6J	1-08-0940-000	29	BRUSH CREEK	SOURCE	/MOUTH	-26N16W04	HUNGRY HORSE RES	3.2	3	4	3
A0E	5-22-0865-000	9	BRUSH FORK WILLOW CREEK	HEADWATERS	/MOUTH	-07S20E08	WEST FK WILLOW CREEK	2.1	4	5	4
APL	3-09-0646-201	31	BUCK CREEK	4 MI. UPSTREAM	/MOUTH	-08S04E04	GALLATIN RIVER	6.4	4	4	4
APM	3-09-0646-202	31	BUCK CREEK	LYNN CREEK	/4 MI. UPSTREAM	-08S03E13	GALLATIN RIVER	1.9	4	4	4
APN	3-09-0646-203	31	BUCK CREEK	4 KM UP FROM LYNN CK/LYNN CREEK	/MOUTH	-08S03E15	GALLATIN RIVER	4.0	4	4	4
461	3-22-0868-000	59	BUCK CREEK	HEADWATERS	/MOUTH	-05N11E17	SHIELDS RIVER	6.4	4	4	4
047	5-22-0872-000	9	BUD CREEK	HEADWATERS	/AT MOUTH	-07S17E16	EAST ROSEBUD CREEK	3.0	4	4	4
076	5-22-0804-186	9	BUD CREEK	HEADWATERS	/MOUTH	-07S17E06	WEST ROSEBUD CR	2.0	4	4	4
219	5-22-4956-199	9	BUENA VISTA CREEK	HEADWATERS	/MOUTH	-09S18E26	ROCK CREEK	2.6	4	4	4
A18	1-05-0848-000	89	BUFFALO BILL CREEK	HEADWATERS	/MOUTH	-20N27W02	CLARK FORK	16.1	4	5	4
462	3-22-0882-001	67	BUFFALO FORK CREEK	HEADWATERS	/MOUTH	-09S11E24	SLOUGH CREEK	16.1	4	4	4
AHI	3-02-0875-001	1	BULL CREEK	NELLIE CREEK	/MOUTH	-06S14W08	GOVERNOR CREEK	7.9	4	4	4
600	1-05-0864-001	89	BULL RIVER	EAST FORK BULL CREEK/MOUTH	/MOUTH	-26N33W10	CLARK FORK	13.2	3	3	3
599	1-05-0864-002	89	BULL RIVER	BRIDGE	/MOUTH	-28N33W33	CLARK FORK	12.9	3	3	3
601	1-05-0864-003	89	BULL RIVER	THREE FORKS	/BRIDGE	-01S10E10	ADAIR CREEK	10.8	3	3	3
592	3-22-0906-001	67	BULLRUN CREEK	1 MI UP FROM MOUTH	/MOUTH	-24N21E34	MISSOURI RIVER	1.6	4	4	4
AGK	6-16-0600-400	5	BULLHACKER COULEE	SOURCE	/MOUTH	-24N14W20	S-FORK FLATHEAD R.	25.7	4	4	4
938	1-08-0980-001	29	BUNKER CREEK	FALLS	/MOUTH	-24N15W27	S-FK FLATHEAD R.	11.2	3	3	3
939	1-08-0980-002	29	BUNKER CREEK	SOURCE	/FALLS	-21N13W32	SO. FK FLATHEAD R.	14.5	3	4	3
A53	1-08-1000-000	77	BURNT CREEK	SOURCE	/MOUTH	-34N33W09	YAAK RIVER	11.3	3	4	3
AAH	1-11-0760-000	53	BURNT CREEK	HEADWATERS	/MOUTH	-08N19W11	BITTERROOT RIVER	6.6	4	4	4
696	2-03-0850-001	81	BURNT FORK CREEK	BURNT FORK LAKE	/N & S BURNT FORK CR.	-17N24W22	NINEMILE CREEK	7.9	3	3	3
AME	2-05-0944-200	63	BURNT FORK CREEK	HEADWATERS	/MOUTH	-07S19E18	E FK W RED LODGE CR	6.4	4	4	4
036	5-22-0910-001	9	BURNT FORK CREEK	HEADWATERS	/FOREST BOUNDARY	-04S13E14	EAST BOULDER RIVER	5.6	4	4	4
129	5-22-0915-000	97	BURNT GULCH	HEADWATERS	/MOUTH	-12N10E27	LOST FORK JUDITH R	4.0	4	4	4
A0Q	4-16-0660-000	45	BURRIS CREEK	HEADWATERS	/MOUTH	-04S18E13	ROSEBUD CREEK	3.8	3	4	3
799	5-22-0924-000	95	BUTCHER CREEK	HEADWATERS	/MOUTH	-16N23W35	NINEMILE CREEK	35.0	4	4	4
AMF	2-05-1008-200	63	BUTLER CREEK	HEADWATERS	/MOUTH	-09N17W20	ROCK CREEK	14.8	3	4	3
AUS	2-06-0874-200	39	BUTTE CABIN CREEK	MOUTH OF OASIS GULCH/MOUTH	/MOUTH	-12N05E11	SHEEP CREEK	7.2	3	4	3
240	4-17-1104-000	59	BUTTE CREEK	HEADWATERS	/MOUTH	-35N48E17	POPLAR RIVER	15.1	4	4	4
A8C	6-16-0685-001	19	BUTTE CREEK	1.5 MILES N OF FOUR	/MOUTH	-21N27E12	FT. PECK RESERVOIR	21.0	4	5	4
BAV	6-16-0710-001	71	C K CREEK	1 MI ABOVE MOUTH	/MOUTH	-11S03E15	QUAKE LAKE	17.7	4	4	4
ANG	3-13-0960-001	31	CABIN CREEK	CUB CREEK	/MOUTH	-11S03E11	MADISON RIVER	3.9	3	4	4
AQW	3-13-0960-203	31	CABIN CREEK	4.2 MI UP FROM MOUTH/2 MI. UP FROM MOUTH	/MOUTH	-11S04E06	MADISON RIVER	3.6	4	4	4
A0K	3-13-0960-204	31	CABIN CREEK	JUNCUS CREEK	/4.2 MI UP FROM MOUTH	-11S04E06	MADISON RIVER	3.4	4	4	4

A07	3-13-0960-205	31	CABIN CREEK	6 MI. UP FROM MOUTH	/5 MI. UP FROM MOUTH	-11S04E06	MADISON RIVER	1.6	4	4	4
A07	4-20-1200-000	99	CABIN CREEK	HEADWATERS	/MOUTH	-23N10W33	NO-FORK SUN RIVER	3.2	4	4	4
A37	1-11-0840-000	53	CABLE CREEK	SOURCE	/MOUTH	-28N31W22	BEAR CR.	4.8	4	4	4
A4G	2-05-1072-200	61	CACHE CREEK	HEADWATERS	/MOUTH	-12N24W08	SOUTH FORK FISH CR	20.9	3	3	3
A1P	3-09-0912-000	31	CACHE CREEK	SOURCE	/MOUTH	-09S03E10	TAYLOR FORK GALL R	6.4	3	4	3
464	3-22-0938-000	31	CACHE CREEK	HEADWATERS	/MOUTH	-03N07E27	FLATHEAD CR(SHIELDS)	12.1	4	4	4
A50	1-08-1100-000	49	CALF CREEK	SOURCE	/MOUTH	-18N11W08	DANAHER CR.	8.0	3	4	3
241	4-17-1168-000	59	CALF CREEK	HEADWATERS	/MOUTH	-12N06E04	SHEEP CREEK	9.0	4	4	4
A2L	1-05-1088-000	89	CALICO CREEK	SOURCE	/MOUTH	-22N27W04	THOMPSON RIVER	9.7	4	4	4
980	1-11-0860-001	53	CALLAHAN CR	FALLS	/MOUTH	-31N34W13	KOOTENAI RIVER	6.9	3	3	3
981	1-11-0860-002	53	CALLAHAN CREEK	SOURCE	/FALLS	-31N34W21	KOOTENAI RIVER	12.8	2	3	2
242	4-17-1184-001	59	CAMAS CREEK	FOREST BOUNDARY	/MOUTH	-11N04E23	SMITH RIVER	23.3	3	3	4
243	4-17-1184-002	59	CAMAS CREEK	HEADWATERS	/FOREST BOUNDARY	-09N04E15	SMITH RIVER	8.8	4	4	4
ASW	1-08-1120-000	77	CAMP CREEK	SOURCE	/MOUTH	-19N12W10	DANAHER CR.	8.0	3	4	3
ASV	1-11-0880-000	53	CAMP CREEK	SOURCE	/MOUTH	-29N33W06	LAKE CR.	12.9	4	4	4
AWH	2-05-1168-200	63	CAMP CREEK	HEADWATERS	/MOUTH	-17N24W26	NINEMILE CREEK	5.6	3	4	3
AH7	3-01-1200-000	1	CAMP CREEK	HEADWATERS	/MOUTH	-09S15W03	SELWAY CREEK	2.4	4	4	4
AHX	3-02-1000-001	57	CAMP CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-02S09W35	BIG HOLE RIVER	21.2	4	4	4
A17	3-09-0988-000	31	CAMP CREEK	SOURCE	/MOUTH	-01N03E01	GALLATIN RIVER	14.5	4	4	4
ACQ	1-08-1160-002	29	CANYON CR.	HEADWATERS	/DEPUY CREEK	-32N20W28	N-FK-FLATHEAD R.	12.8	4	4	4
ACP	1-08-1160-001	29	CANYON CREEK	DEPUY CREEK	/MOUTH	-32N20W27	N-FK-FLATHEAD RIVER	1.6	3	4	3
A6X	1-08-1180-000	29	CANYON CREEK	SOURCE	/MOUTH	-28N17W04	HUNGRY HORSE RES	4.8	3	4	3
602	1-11-0920-001	53	CANYON CREEK	FALLS-1.5MI UP MOUTH/MOUTH	/MOUTH	-31N29W28	KOOTENAI RIVER	2.4	4	4	4
603	1-11-0920-002	53	CANYON CREEK	HEADWATERS	/FALLS	-31N29W22	KOOTENAI RIVER	10.5	4	4	4
AGW	3-02-1050-001	93	CANYON CREEK	CAN. CR. RANGER STAT./MOUTH	/MOUTH	-01S09W32	BIG HOLE RIVER	20.9	4	4	4
465	3-22-0952-000	67	CANYON CREEK	HEADWATERS	/MOUTH	-01N09E14	SHIELDS CREEK	16.9	4	4	4
244	4-17-1216-001	49	CANYON CREEK	NEAR WILBORN	/MOUTH	-12N05W08	LIT PRICKLY PEAR CR	10.8	4	5	4
887	5-22-1022-001	95	CASTLE CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-04S15E26	W-FORK STILLWATER R.	8.0	3	4	3
181	5-22-1022-002	95	CASTLE CREEK	HEADWATERS	/-FS BOUNDARY	-04S14E25	WEST FK STILLWATER R	9.8	4	4	4
ASP	1-07-0720-000	47	CAT CREEK	SOURCE	/MOUTH	-22N17W36	DOG CR.	5.1	3	4	3
AMM	3-10-1600-001	43	CATARACT CREEK	HOODOO CREEK	/MOUTH	-06N05W20	BOULDER RIVER	9.3	4	4	4
AMN	3-10-1600-002	43	CATARACT CREEK	HEADWATERS	/HOODOO CREEK	-07N05W21	BOULDER RIVER	9.2	4	4	4
193	5-22-1050-000	97	CATHEDRAL CREEK	HEADWATERS	/MOUTH	-05S14E14	W.F. STILLWATER R.	4.6	4	4	4
A82	4-17-1304-000	59	CATLIN SPRING CREEK	SOURCE	/RAILROAD	-08N06E12	S FK SPRING CR	2.4	4	5	4
972	1-11-0980-001	53	CAYUSE CREEK	PONY CREEK	/MOUTH	-33N27W25	SWAMP CREEK	1.9	4	4	4
800	5-22-1064-000	97	CAYUSE CREEK	HEADWATERS	/MOUTH	-04N15E33	SWEETGRASS CREEK	20.1	4	4	4
672	1-07-0740-001	47	CEDAR CREEK	FATTY CREEK	/MOUTH	-23N17W18	SWAN RIVER	6.6	3	4	3
604	1-07-0740-002	47	CEDAR CREEK	HEADWATERS	/FATTY CREEK	-22N18W01	SWAN RIVER	6.8	3	4	3
992	1-11-1020-000	53	CEDAR CREEK	CEDAR LAKES	/MOUTH	-31N32W24	KOOTENAI RIVER	10.5	4	4	4
AWI	2-05-1264-200	63	CEDAR CREEK	HEADWATERS	/MOUTH	-16N23W34	NINEMILE CREEK	6.4	4	5	4

ADY	2-05-1280-000	61	CEDAR CREEK	HEADWATERS	/MOUTH	-16N26W03	CLARK FORK	24-8	3	3	3
466	3-22-1078-001	67	CEDAR CREEK	NORTH FORK CEDAR CR.	/MOUTH	-08S07E13	YELLOWSTONE RIVER	5-6	1	4	1
AWJ	3-25-1312-200	61	CEDAR LOG CREEK	HEADWATERS	/MOUTH	-13N25W19	WEST FORK FISH CREEK	16-0	3	4	3
213	5-22-1085-000	9	CHAIN CREEK	STATE LINE	/MOUTH	-09S18E25	ROCK CREEK	2-2	4	4	4
AS6	1-08-1420-000	29	CHALLENGE CREEK	SOURCE	/MOUTH	-29N13W32	GRANITE CR.	4-8	3	4	3
ABJ	2-04-1140-001	77	CHAMBERLAIN CREEK	MOUTH OF PEARSON CRE	/MOUTH	-15N13W32	BLACKFOOT RIVER	3-2	3	4	3
AS1	1-08-1440-000	29	CHARLIE CREEK	SOURCE	/MOUTH	-28N15W30	MID-FK. FLATHEAD R.	6-4	3	4	3
A4V	1-11-1035-000	53	CHARLIE CREEK	SOURCE	/MOUTH	-34N30W10	MAXINE CREEK	3-2	4	4	4
336	4-18-1080-000	59	CHECKERBOARD CREEK	NEAR HEADWATERS	/MOUTH	-09N09E01	N FK MUSSELSHELL R	8-1	3	3	4
ADY	1-07-0780-000	29	CHEPAT CREEK	SOURCE	/MOUTH	-34N24W05	STILLWATER RIVER	3-2	4	4	4
953	1-05-1360-000	89	CHERRY CREEK	SOURCE	/MOUTH	-21N29W23	CLARK FORK	17-4	4	4	4
ALM	3-10-1680-002	57	CHERRY CREEK	HEADWATERS	/CLANCY MINE TRAIL FK	-01S06W28	JEFFERSON RIVER	3-9	4	5	4
ANH	3-13-1160-000	57	CHERRY CREEK	HEADWATERS	/MOUTH	-02S01E36	MADISON RIVER	48-3	4	4	4
BAH	6-15-0900-001	105	CHERRY CREEK	SHIPP RANCH	/MOUTH AT MILE RIVER	-28N39E14	MILK RIVER	32-0	4	5	4
ALA	5-22-1124-001	95	CHICKEN CREEK	EWEL LAKE	/MOUTH	-07S16E02	WEST ROSEBUD CREEK	3-2	4	4	4
ALB	5-22-1124-002	95	CHICKEN CREEK	RAM LAKE	/JEWEL LAKE	-06S16E34	WEST ROSEBUD CREEK	2-4	4	4	4
ALC	5-22-1124-003	95	CHICKEN CREEK	HEADWATERS	/RAM LAKE	-06S16E33	WEST ROSEBUD CREEK	2-4	3	4	3
072	5-22-6804-190	95	CHICKEN CREEK	HEADWATERS	/MOUTH	-07S16E02	WEST ROSEBUD CREEK	5-6	4	4	4
959	1-05-1408-001	89	CHIPPY CREEK	BORDER SEC. 26827	/MOUTH	-23N27W01	THOMPSON RIVER	8-0	4	4	4
AS0	1-07-0800-000	47	CILLY CREEK	SOURCE	/MOUTH	-24N18W12	SWAN RIVER	8-4	3	4	3
467	3-22-1134-001	67	CINNABAR CREEK	LION CREEK	/MOUTH	-08S07E25	MOL HERON CREEK	6-3	4	4	4
AUT	2-20-1111-200	39	CINNAMON BEAR CREEK	HEADWATERS	/MOUTH	-09N17W20	ROCK CREEK	5-3	3	4	3
AE6	4-20-1350-000	99	CIRCLE CREEK	HEADWATERS	/MOUTH	-22N10W04	NO FORK SUN RIVER	3-2	4	4	4
AB6	1-08-1500-000	29	CLACK CREEK	HEADWATERS	/MOUTH	-26N12W13	MID-FK. FLATHEAD RIV.	6-3	3	4	3
AID	3-17-1488-001	43	CLANCY CREEK	ROWE GULCH	/MOUTH	-08N03W09	PRICKLY PEAR CREEK	10-3	4	4	4
933	1-11-1100-000	53	CLARENCE CREEK	HEADWATERS	/MOUTH	-36N25W14	GRAVE CREEK	3-5	3	4	3
A70	1-05-1440-001	89	CLARK FORK	THOMPSON FALLS DAM	/HIGHWAY 10A BRIDGE	-22N30W36	COLUMBIA RIVER	6-4	3	3	4
A72	1-05-1440-001	89	CLARK FORK	MOUTH SIEGEL CREEK	/MOUTH OF FLATHEAD RI	-19N25W34	COLUMBIA RIVER	8-0	2	2	3
A71	1-05-1440-002	89	CLARK FORK	MOUTH OF FLATHEAD RI	/THOMPSON FALLS DAM	-21N28W17	COLUMBIA RIVER	51-5	3	3	4
699	2-05-1456-002	89	CLARK FORK	SUPERIOR	/MOUTH SIEGAL CREEK	-18N25W17	PEND OREILLE RIVER	68-3	2	2	3
700	2-05-1456-003	61	CLARK FORK	BITTERROOT RIVER	/SUPERIOR	-17N26W34	PEND OREILLE RIVER	99-6	2	2	3
701	2-06-1121-001	63	CLARK FORK	ROCK CREEK	/BITTERROOT RIVER	-13N20W27	PEND OREILLE RIVER	47-5	2	2	3
B8N	2-06-1121-002	39	CLARK FORK	BEARMOUTH BRIDGE	/ROCK CREEK	-11N17W12	PEND OREILLE RIVER	31-7	3	3	3
B80	2-06-1121-003	39	CLARK FORK	LITTLE BLACKFOOT RIV/BEARMOUTH BRIDGE	/LITTLE BLACKFOOT R.	-11N14W14	PEND OREILLE RIVER	57-0	2	2	3
702	2-06-1140-001	77	CLARK FORK	WARM SPRINGS CREEK	/MOUTH	-09N10W24	PEND OREILLE RIVER	61-2	2	2	3
801	5-22-1162-000	111	CLARKS FORK	BRIDGER	/MOUTH	-02S24E24	YELLOWSTONE RIVER	65-3	4	4	4
803	5-22-1176-000	9	CLARKS FORK	STATE LINE	/BRIDGER	-06S23E22	YELLOWSTONE RIVER	46-2	3	3	3
802	5-22-1190-001	67	CLARKS FORK	LADY OF THE LAKE CR./STATE BORDER	/STATE BORDER	-09S15E34	YELLOWSTONE RIVER	5-0	4	4	4
923	1-08-1540-000	29	CLAYTON CREEK	CLAYTON L.	/HUNGRIY HORSE DAM	-29N18W35	S-FORK FLATHEAD R.	8-0	4	4	4
605	1-05-1472-000	89	CLEAR CREEK	HEADWATERS	/MOUTH	-21N30W13	PROSPECT CREEK	16-4	4	4	4

468	3-22-1218-000	67	CLEAR CREEK	HEADWATERS	/MOUTH	-05N11E17	SHIELDS RIVER	4.0	4	4	4
804	5-22-1204-000	9	CLEAR CREEK	HEADWATERS	/MOUTH	-05S21E28	ROCK CREEK	14.2	4	4	4
747	6-15-0960-000	5	CLEAR CREEK	EAST FORK	/MOUTH	-33N18E29	MILK RIVER	53.1	3	3	3
697	2-04-1290-001	63	CLEARWATER RIVER	LAKE INEZ	/MOUTH	-14N14W16	BLACKFOOT RIVER	27.0	3	3	3
698	2-04-1290-002	63	CLEARWATER RIVER	CLEARWATER LAKE	/INEZ LAKE	-18N15W31	BLACKFOOT RIVER	9.7	3	3	4
ADH	4-16-0840-000	45	CLEVELAND CREEK	HEADWATERS	/MOUTH	-13N10E31	MIDDLE FK JUDITH R	5.2	3	4	3
AKH	3-01-1380-001	1	CLOVER CREEK	2.3KM ABOVE E. FORK	/MOUTH	-13S05W25	WOLVERINE CREEK	10.5	4	4	4
606	1-08-1620-000	29	COAL CREEK	HEADWATERS	/MOUTH	-34N20W20	N FORK FLATHEAD R	24.8	2	4	2
BAG	6-16-0850-001	19	COAL CREEK	STANLEY RICHARDSON R	/MOUTH	-37N46E08	POPLAR RIVER	17.6	3	4	3
469	3-22-1239-001	67	COKE CREEK	COKE DALE	/MOUTH	-02S09E17	BILLMAN CREEK	4.8	2	4	2
607	1-07-0860-001	63	COLD CREEK	NORTH FORK COLD CR	/MOUTH	-21N17W23	SWAN RIVER	6.9	3	4	3
059	5-22-1244-000	95	COLD CREEK	HEADWATERS	/MOUTH	-06S17E27	WEST ROSEBUD CREEK	3.5	4	4	4
805	5-22-1260-001	9	COLE CREEK	1ST ROAD CROSSING	/MOUTH	-06S20E31	EAST RED LODGE CR	11.3	4	5	4
ACY	2-04-1350-000	63	COLT CREEK	COLT LAKE	/MOUTH	-18N16W12	CLEARWATER RIVER	7.2	3	4	3
A7J	1-08-1640-000	29	COLTS CREEK	SOURCE-BRITISH COLOM/MOUTH	/MOUTH	-37N22W09	NO. FK. FLATHEAD RIVER	1.6	2	4	2
A19	1-05-1568-000	89	COMBEST CREEK	SOURCE	/MOUTH	-20N26W32	CLARK FORK	11.3	4	5	4
AA2	1-07-0880-001	47	CONDON CREEK	TRAIL CROSSING	/MOUTH	-21N17W03	SWAN RIVER	8.5	3	4	3
A2J	1-05-1616-000	89	COOL CREEK	SOURCE	/MOUTH	-24N28W09	FISHTRAP CR	4.0	4	5	4
ABA	1-07-0900-000	63	COONEY CREEK	HEADWATERS	/MOUTH	-20N17W01	SWAN RIVER	4.8	3	4	3
A3A	1-05-1632-000	89	COOPERS GULCH	SOURCE	/MOUTH	-21N31W29	PROSPECT CR	9.7	4	4	4
A4Q	1-11-1360-000	53	COPELAND CREEK	SOURCE	/MOUTH	-34N30W04	SOUTH FK. BIG CR	6.4	4	4	4
A3U	1-11-1380-000	53	COPPER CREEK	SOURCE	/MOUTH	-30N33W18	LAKE CR	6.4	4	4	4
A4U	2-04-1440-001	49	COPPER CREEK	RED CR	/MOUTH	-15N08W36	LANDERS FK. BLKFOOT R	18.7	4	4	4
AC9	2-06-1292-001	39	COPPER CREEK	LUTZ CREEK	/MOUTH	-04N16W25	MIDDLE FORK ROCK CR	5.5	4	4	4
A1D	1-07-0940-000	29	CORDROY CREEK	SOURCE	/MOUTH	-31N25W01	GOOD CR	4.8	4	4	4
BA4	3-01-1500-001	1	CORRAL CREEK	BLM BOUNDARY	/MOUTH	-14S01E16	RED ROCK CREEK	3.2	2	4	2
214	5-22-1316-000	9	CORRAL CREEK	HEADWATERS	/MOUTH	-08S19E36	ROCK CREEK	2.3	4	4	4
879	7-21-0120-001	21	COTTON CREEK	2MI. ABOVE MOUTH	/MOUTH	-16N56E05	YELLOWSTONE RIVER	3.2	4	5	4
703	2-04-1470-000	77	COTTONWOOD CREEK	COTTONWOOD LAKES	/MOUTH	-15N13W29	BLACKFOOT RIVER	19.3	3	3	3
AL1	2-06-1368-000	77	COTTONWOOD CREEK	JUNCTION OF NORTH &	/MOUTH	-08N09W33	CLARK FORK	14.5	4	4	4
ARX	3-01-1620-202	57	COTTONWOOD CREEK	4-8 KM UP FROM MOUTH/4.0 KM UP FROM MOUTH	/MOUTH	-10S03W23	RUBY RIVER	.8	4	4	4
474	3-22-1358-000	67	COTTONWOOD CREEK	HEADWATERS	/MOUTH	-06S06E27	BIG CREEK (YELL)	9.7	4	4	4
470	3-22-1365-000	67	COTTONWOOD CREEK	HEADWATERS	/MOUTH	-08S07E27	CINNABAR CREEK	4.8	4	4	4
471	3-22-1372-000	67	COTTONWOOD CREEK	HEADWATERS	/MOUTH	-03N08E01	POTTER CR (FLATHEAD)	16.1	4	5	4
352	4-16-0760-001	15	COTTONWOOD CREEK	NEAR FOREST BOUNDARY/CHOUTEAU CO. LINE	/MOUTH	-19N11E17	ARROW CREEK	12.1	4	4	4
296	4-16-0900-001	27	COTTONWOOD CREEK	2 MI ABOVE GLENGARRY/MOUTH	/MOUTH	-16N17E28	BIG SPRING CREEK	15.9	4	4	4
A81	4-17-1728-001	49	COTTONWOOD CREEK	1/2 MILE ABOVE RANCH/MOUTH	/MOUTH	-14N03W35	MISSOURI RIVER	3.6	4	4	4
337	4-18-1380-001	59	COTTONWOOD CREEK	FOREST BOUNDARY	/MOUTH	-08N10E24	S FK MUSSELSHELL R	10.4	4	4	4
A0S	4-18-1380-002	59	COTTONWOOD CREEK	FOREST LAKE	/FOREST BNDRY	-06N10E12	S FK MUSSELSHELL R	5.6	4	4	4
A0T	4-18-1380-003	59	COTTONWOOD CREEK	SOURCE	/FOREST LAKE	-06N10E26	S FK MUSSELSHELL R	3.2	2	3	2

AOK 4-16-1100-000	45 DEADHORSE CREEK	NEAR HEADWATERS	/MOUTH	-11N10E13 SOUTH FORK JUDITH R	4.0 3 4 3
AK2 3-01-1940-000	1 DEADMAN CREEK	SOURCE	/MOUTH	-15S10W10 BIG SHEEP CREEK	21.9 4 4 4
353 4-17-2064-001	13 DEARBORN RIVER	FOREST BOUNDARY	/MOUTH	-16N02W19 MISSOURI RIVER	75.6 3 4 3
354 4-17-2064-002	49 DEARBORN RIVER	NEAR HEADWATERS	/FOREST BOUNDARY	-18N07W31 MISSOURI RIVER	22.8 3 3 4
952 1-05-1872-000	89 DEEP CREEK	SOURCE	/MOUTH	-23N30W21 CLARK FORK	8.0 4 4 4
914 1-11-1720-000	53 DEEP CREEK	HEADWATERS	/MOUTH	-29N31W14 BIG CHERRY CREEK	6.6 4 4 4
970 1-11-1740-000	53 DEEP CREEK	SOURCE	/MOUTH	-35N26W25 FORTINE CREEK	16.2 3 4 3
AD4 2-05-1904-000	61 DEEP CREEK	HEADWATERS	/MOUTH	-16N25W32 CLARK FORK	7.7 4 4 4
A06 2-05-1920-001	63 DEEP CREEK	1MI ABOVE MOUTH	/MOUTH	-14N21W35 CLARK FORK	1.6 4 4 4
AD5 2-05-1920-002	63 DEEP CREEK	HEADWATERS	/MOUTH	-14N21W34 CLARK FORK	4.7 4 4 4
AG2 3-02-1625-001	23 DEEP CREEK	FRENCH CREEK	/MI ABOVE MOUTH	-02N12W32 BIG HOLE RIVER	2.4 4 4 4
AIQ 3-17-2080-001	7 DEEP CREEK	COUNTY ROAD	/MOUTH	-06N02E17 MISSOURI RIVER	4.0 4 4 4
AIP 3-17-2080-002	7 DEEP CREEK	FOREST SERVICE BNDY/COUNTY ROAD	/MOUTH	-06N02E11 MISSOURI RIVER	18.8 4 4 4
AIO 3-17-2080-003	7 DEEP CREEK	HEADWATERS	/FOREST SERVICE	-07N04E29 MISSOURI RIVER	15.4 4 4 4
477 3-22-1680-000	67 DEEP CREEK	HEADWATERS	/MOUTH	-05N10E22 SHIELDS RIVER	8.0 4 4 4
BB0 4-14-1280-001	99 DEEP CREEK	PISHGUN RD	/MOUTH	-24N04W33 TETON RIVER	41.0 3 4 3
404 4-14-1280-002	99 DEEP CREEK	FORKS	/PISHGUN ROAD	-23N06W28 TETON RIVER	22.5 3 4 3
246 4-17-2096-002	13 DEEP CREEK (DRY FORK)	FORKS	/DEVILS CANYON	-15N04E11 SMITH RIVER	5.0 2 3 2
478 3-22-1694-001	67 DEEP CREEK 01	HIGHWAY 540	/MOUTH	-03S09E35 YELLOWSTONE RIVER	1.6 5 5 5
479 3-22-1694-002	67 DEEP CREEK 02	N&S FORK DEEP CREEK	/HIGHWAY 540	-03S09E36 YELLOWSTONE RIVER	3.5 4 4 4
AF9 4-17-2096-001	13 DEEP CREEK (DRY FORK)	DEVILS CANYON	/MOUTH	-16N04E30 SMITH RIVER	9.6 4 4 4
A46 1-11-1680-000	53 DEER CREEK	SOURCE	/MOUTH	-28N27W25 PLEASANT VALLEY F. R.	6.4 5 5 5
AC7 2-04-1680-000	63 DEER CREEK	HEADWATERS	/MOUTH	-17N15W20 SEELY LAKE	10.6 4 4 4
ADM 2-05-1938-001	61 DEER CREEK	CRONIE CREEK	/MOUTH	-19N30W25 ST. REGIS RIVER	4.5 3 4 3
AUX 2-06-1596-201	63 DEER CREEK	FOREST BOUNDARY	/MOUTH AT RR KING	-13N18W28 CLARK FORK	1.3 4 4 4
AUY 2-06-1596-202	63 DEER CREEK	JUNCTION WITH EAST F/FOREST BOUNDARY	/MOUTH	-13N18W32 CLARK FORK	3.8 4 4 4
A26 1-05-1984-000	89 DEER HORN CREEK	SOURCE	/MOUTH	-23N27W32 THOMPSON R	6.4 4 4 4
704 2-06-1615-000	77 DEMPSEY CREEK	HEADWATERS	/MOUTH	-07N09W33 CLARK FORK	19.3 4 4 4
AWK 2-05-2064-200	63 DEVILS CREEK	HEADWATERS	/MOUTH	-17N25W14 NINEMILE CREEK	5.4 3 3 4
ASM 1-08-2180-000	29 DICKEY CREEK	SOURCE	/MOUTH	-29N16W02 MID.FK. FLATHEAD R.	9.7 3 4 3
A42 1-11-1760-000	53 DICKEY CREEK	1KM.ABOVE ELK CR.	/MOUTH	-34N25W08 MURPHY LAKE	3.2 4 4 4
AB1 1-08-2200-001	29 DIRTYFACE CREEK	HEADWATERS	/MOUTH	-28N16W12 M.FK.FLATHEAD R.	4.2 3 3 3
188 5-22-6678-198	97 DISPUTE CREEK	HEADWATERS	/MOUTH	-05S14E30 WEST FK STILLWATER R	2.5 4 4 4
A4Y 1-11-1785-000	53 DIVIDE CREEK	SOURCE	/MOUTH	-37N24W20 WEASEL CR.	4.8 4 4 4
AGO 3-02-1725-001	93 DIVIDE CREEK	EAST FORK DIVIDE CR.	/MOUTH	-01S09W20 BIG HOLE RIVER	18.5 4 4 4
927 1-11-1820-000	53 DODGE CREEK	HEADWATERS	/MOUTH	-37N28W35 LAKE KOOCANUSA	12.2 4 4 4
AEB 2-06-1691-002	77 DOG CR	SOURCE	/BLOSSBURG	-10N06W16 L-BLACKFOOT R.	17.7 4 4 4
AAS 1-07-1180-001	47 DOG CREEK	TRAIL CROSSING	/MOUTH	-21N17W03 CONDON CREEK	6.0 3 4 3
AEC 2-06-1691-001	77 DOG CREEK	BLOSSBURG	/MOUTH	-09N06W06 LITTLE BLACKFOOT RIV.	9.7 4 4 4
ACD 1-08-2280-000	29 DOLLY VARDEN CREEK	HEADWATERS	/MOUTH	-27N13W26 SCHAFER CREEK	13.5 3 3 3

A7H	1-07-1210-000	47	DONALDSON CREEK	SOURCE	/MOUTH	-25N22W11	LAKE MARY ROMAN	1.6	4	5	4
915	1-08-2300-001	29	DORIS CREEK	SENECA CREEK	/HUNGRIE HORSE DAM	-29N19W02	S. FORK FLATHEAD R	3.9	3	3	3
A8G	2-01-1830-001	77	DOUGLAS CREEK	OVANCO-HELVILLE ROAD	/MOUTH	-13N11W08	NEVADA CREEK	3.2	4	4	4
705	2-06-1729-001	39	DOUGLAS CREEK	SETTLING POND	/MOUTH	-09N13W10	FLINT CREEK	1.5	4	4	4
407	4-20-1632-001	99	DRAIN CANAL NO. 12	2.2 MI. ABOVE MOUTH	/MOUTH	-22N01W14	SPRING COULEE	3.5	4	4	4
406	4-20-1633-001	99	DRAIN CANAL NO. 13	FORKS	/MOUTH	-22N01W24	MUDDY CREEK	3.2	4	5	4
405	4-20-1628-001	99	DRAIN CANAL NO. 8	NEAR UPPER END	/MOUTH	-23N01W30	MUDDY CREEK	6.8	4	5	4
ADC	5-22-1830-000	9	DRAPER FORK WILLOW CREEK	HEADWATERS	/MOUTH	-07S20E16	WILLOW CREEK	2.9	4	5	4
AKR	3-10-2160-001	57	DRY BOULDER CREEK	ROAD CROSSING	/MOUTH	-01S05W32	JEFFERSON RIVER	8.0	5	5	5
AKQ	3-10-2160-002	57	DRY BOULDER CREEK	HEADWATERS	/ROAD CROSSING	-02S05W28	JEFFERSON RIVER	6.1	4	4	4
A3F	1-03-2128-000	89	DRY CREEK	SOURCE	/MOUTH	-21N29W07	PROSPECT CR.	6.4	4	4	4
A3Y	1-11-1880-000	53	DRY CREEK	SOURCE	/MOUTH	-29N33W07	LAKE CR.	9.7	4	5	4
ADW	2-03-2160-001	61	DRY CREEK	DRY FORK DRY CREEK	/MOUTH	-17N26W19	CLARK FORK	4.8	4	5	4
ADV	2-03-2160-002	61	DRY CREEK	TORINO CREEK	/DRY FORK DRY CREEK	-17N27W27	CLARK FORK	10.5	3	4	3
ANJ	3-09-1520-001	31	DRY CREEK	COUNTY BRIDGE	/MOUTH	-01N04E03	E-GALLATIN RIVER	5.6	4	4	4
ANK	3-10-2240-001	43	DRY CREEK	HUNTING GULCH	/MOUTH	-04N03W01	BOULDER RIVER	9.7	5	5	5
ANL	3-10-2240-002	43	DRY CREEK	HEADWATERS	/HUNTING GULCH	-05N02W06	BOULDER R	6.0	4	4	4
AIS	3-17-2336-001	7	DRY CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-06N02E27	MISSOURI RIVER	12.9	4	4	4
AIR	3-17-2336-002	7	DRY CREEK	SOURCE	/FOREST SERVICE BNDRY	-06N03E24	MISSOURI RIVER	11.3	4	4	4
480	3-22-1848-000	67	DRY CREEK	HEADWATERS	/MOUTH	-02S09E25	YELLOWSTONE RIVER	8.0	3	4	3
481	3-22-1869-000	67	DRY CREEK	HEADWATERS	/MOUTH	-04S08E23	TRAIL CREEK	5.6	4	4	4
482	3-22-1876-000	67	DRY CREEK	HEADWATERS	/MOUTH	-03N08E20	FLATHEAD CR(SHIELDS)	9.3	4	4	4
807	5-22-1834-000	9	DRY CREEK	JCT OF N & S FORKS	/MOUTH	-07S22E25	CLARKS FORK YELL RIV	5.2	4	4	4
355	4-17-2352-002	13	DRY FORK BELT CREEK	NEAR UPPER END	/MOUTH OF GALENA CR	-15N08E13	BELT CREEK	4.7	3	4	3
130	5-22-1904-000	97	DRY FORK CREEK	HEADWATERS	/MOUTH	-04S13E11	EAST BOULDER RIVER	4.8	4	4	4
298	4-16-1260-001	45	DRY WOLF CREEK	1.8 MI ABOVE FS CAMP/1.8 MI BELOW FS CAMP	/MOUTH	-14N09E01	RUNNING WOLF CREEK	5.8	3	4	3
ANM	3-13-1880-000	31	DUCK CREEK	YELLOWSTONE PARK LINE	/MOUTH	-12S05E20	HEBGEN LAKE	5.0	2	2	3
A1H	3-17-2432-001	7	DUCK CREEK	IRRIGATION DITCH	/MOUTH	-08N02E08	CANYON FERRY RESERV.	6.4	4	4	4
A1G	3-17-2432-002	7	DUCK CREEK	GOLD MINES	/IRRIGATION DITCH	-08N02E11	CANYON FERRY RESERV.	3.2	4	4	4
408	4-20-1800-000	99	DUCK CREEK	NEAR UPPER END	/DIVERSION DAM	-21N03W26	SUN RIVER	9.7	4	4	4
A62	1-08-2380-000	29	DUDLEY CREEK	SOURCE	/MOUTH	-30N18W36	TROUT CR.	3.2	3	4	3
591	3-22-1974-000	67	DUGOUT CREEK	HEADWATERS	/MOUTH	-05N11E17	SHIELDS RIVER	12.6	4	4	4
BA8	2-04-1980-000	77	DUNHAM CREEK	SOURCE	/MOUTH	-16N12W31	MONTURE CREEK	20.1	3	4	3
983	1-11-1940-001	53	DUNN CREEK	WYOMA CREEK	/MOUTH	-30N29W09	KOOTENAI RIVER	10.1	4	4	4
A1P	1-07-1260-000	29	DUNSIRE CREEK	SOURCE	/MOUTH	-30N25W08	SHEPPARD CR.	3.2	4	4	4
299	4-14-1640-001	73	DUPUYER CREEK	L FRANCES DIVERSION	/MOUTH	-30N06W36	BIRCH CREEK	13.5	4	4	4
300	4-14-1640-002	73	DUPUYER CREEK	FORKS	/L FRANCES DIVERSION	-29N06W28	BIRCH CREEK	38.3	3	3	4
008	5-22-1975-000	9	DUTCH CREEK	HEADWATERS	/MOUTH	-08S19E02	WEST FORK ROCK CREEK	2.4	4	4	4
301	4-16-1340-001	27	E FK BIG SPRING CREEK	5 MI ABOVE HEATH	/MOUTH	-15N19E31	BIG SPRING CREEK	20.0	3	4	3
483	3-22-1988-000	67	EAGLE CREEK	HEADWATERS	/MOUTH	-09S08E24	YELLOWSTONE RIVER	6.4	4	4	4

356	4-16-1320-002	15	EAGLE CREEK	HILL CO. LINE	/WARRICK ROAD	-27N15E33	MISSOURI RIVER	12.4	4	4	4
247	4-17-2480-000	59	EAGLE CREEK	FOREST BOUNDARY	/MOUTH	-12N04E11	SMITH RIVER	13.4	4	4	4
888	5-22-2002-001	97	EAST BOULDER RIVER	FOREST SERVICE BNDRY	/MOUTH	-02S13E33	BOULDER RIVER	9.3	4	4	4
106	5-22-2002-002	97	EAST BOULDER RIVER	ROAD CROSSING	/-FS BOUNDARY	-03S13E29	BOULDER RIVER	10.0	4	4	4
107	5-22-2002-003	97	EAST BOULDER RIVER	LOW END PLACER BASIN/ROAD CROSSING	/MOUTH	-04S13E02	BOULDER RIVER	7.6	4	4	4
902	1-11-1980-000	53	EAST FISHER RIVER	HEADWATERS	/MOUTH	-26N29W09	FISHER RIVER	20.4	4	4	4
085	5-22-2058-001	95	EAST FISHTAIL CREEK	HEADWATERS	/-FS. BOUNDARY	-05S16E25	FISHTAIL CREEK	16.0	4	4	4
AJ8	3-01-2380-001	1	EAST FK BLACKTAIL DEER CR	NATIONAL FOREST BOUN/MOUTH	/MOUTH	-11S06W05	BLACKTAIL DEER CREEK	26.2	3	3	4
BBJ	3-01-2380-002	1	EAST FK BLACKTAIL DEER CR	HEADWATERS	/NATIONAL FOREST BOUN	-11S05W35	BLACKTAIL DEER CREEK	7.4	4	4	4
AEZ	2-04-2130-002	49	EAST FK N.FK BLACKFOOT R.	PARKER LAKE	/MEADOW CR	-16N10W12	N.FK BLACKFOOT R	4.0	4	4	4
AEY	2-04-2130-001	77	EAST FK N.FK BLACKFOOT R.	MEADOW CREEK	/MOUTH	-17N10W28	N.FK BLACKFOOT R.	9.3	4	4	4
AEX	2-04-2130-003	49	EAST FK N.FK BLACKFOOT R.	SOURCE	/PARKER LAKE	-16N09W09	N.FK BLACKFOOT R.	3.2	4	4	4
037	5-22-2192-001	9	EAST FK WEST RED LODGE CR	HEADWATERS	/FOREST BOUNDARY	-07S18E01	W. RED LODGE CREEK	5.3	4	4	4
484	3-22-2072-000	67	EAST FORK BEAR CREEK	HEADWATERS	/MOUTH	-08S09E15	BEAR CR.(YELLOWSTON)	7.2	4	4	4
ADN	2-05-2240-001	61	EAST FORK BIG CREEK	MCKINNEY CREEK	/MOUTH	-19N30W33	BIG CREEK	2.4	3	4	3
706	2-03-1950-001	81	EAST FORK BITTERROOT RIVER	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-02N20W07	BITTERROOT RIVER	11.4	3	3	3
707	2-03-1950-002	81	EAST FORK BITTERROOT RIVER	HEADWATERS	/FOREST SERVICE BNDRY	-02N20W35	BITTERROOT RIVER	59.5	2	2	2
687	1-03-2272-000	89	EAST FORK BULL RIVER	HEADWATERS	/MOUTH	-27N33W12	BULL RIVER	11.3	4	4	4
80U	5-22-2086-000	9	EAST FORK BUTCHER CREEK	FOREST SERVICE BOUND/MOUTH	/MOUTH	-06S18E23	BUTCHER CREEK	3.4	4	5	4
A3E	1-03-2304-000	89	EAST FORK CROW CREEK	SOURCE	/MOUTH	-20N31W04	CROW CR.	4.8	4	4	4
A3G	1-03-2320-000	89	EAST FORK DRY CREEK	SOURCE	/MOUTH	-21N29W31	DRY CR.	11.3	4	4	4
A25	1-03-2336-000	89	EAST FORK ELK CREEK	SOURCE	/MOUTH	-26N34W16	ELK CR.	12.9	4	4	4
357	4-17-2544-001	49	EAST FORK FALLS CREEK	NEAR HEADWATERS	/MOUTH	-17N07W15	DEARBORN RIVER	7.4	4	4	4
889	5-22-2044-002	95	EAST FORK FIDDLER CREEK	FOREST SERVICE BNDRY/MTH	/MOUTH	-05S17E27	FIDDLER CR.	8.5	4	4	4
A67	3-02-1900-000	23	EAST FORK FISHTAIL CREEK	HEADWATERS	/MOUTH	-02N13W30	FISHTAIL CREEK	12.9	4	4	4
248	4-17-2560-000	13	EAST FORK HOUND CREEK	NEAR HEADWATERS	/MOUTH	-14N01E10	HOUND CREEK	11.6	4	4	4
AM0	3-09-1672-001	31	EAST FORK HYALITE CREEK	FLANDERS CREEK	/HYALITE RESERVOIR	-04S06E23	HYALITE RESERVOIR	3.5	1	4	1
AJZ	2-03-2000-200	63	EAST FORK LOLO CREEK	HEADWATERS	/MOUTH	-11N23W18	LOLO CREEK	11.2	3	4	3
485	3-22-2128-000	67	EAST FORK MILL CREEK	UPPER SAGE CREEK	/MOUTH	-06S09E13	MILL CREEK	4.7	4	4	4
A7Y	6-16-1415-000	19	EAST FORK POPLAR RIVER	INTERNATIONAL BOUNDA/MOUTH	/MOUTH	-36N48E33	POPLAR RIVER	29.0	4	5	4
ADB	2-06-1938-001	39	EAST FORK ROCK CREEK	EAST FORK RESERVOIR	/MOUTH	-05N15W08	ROCK CREEK	12.9	3	4	3
486	3-22-2156-000	67	EAST FORK ROCK CREEK	HEADWATERS	/MOUTH	-03N11E27	ROCK CREEK(SHIELDS)	3.2	3	4	3
AMP	3-01-2520-001	57	EAST FORK RUBY RIVER	3.4MI ABOVE MOUTH	/MOUTH	-11S03W05	RUBY RIVER	5.5	4	4	4
A2C	1-05-2416-000	89	EAST FORK SWAMP CREEK	SOURCE	/MOUTH	-20N27W23	SWAMP CREEK	6.4	4	4	4
A7N	1-07-1300-000	29	EAST FORK SWIFT CREEK	SOURCE	/MOUTH	-33N23W03	SWIFT CR.	12.9	4	4	4
A27	1-05-2448-000	89	EAST FORK TROUT CREEK	SOURCE	/MOUTH	-23N32W05	TROUT CR.	11.3	4	4	4
AAE	1-11-2060-000	53	EAST FORK YAAK RIVER	HEADWATERS	/MOUTH	-37N31W22	YAAK RIVER	25.7	4	4	4
A16	3-09-1710-001	31	EAST GALLATIN RIVER	SMITH CREEK	/MOUTH	-02N03E27	GALLATIN RIVER	19.8	3	3	3
A15	3-09-1710-002	31	EAST GALLATIN RIVER	HYALITE CREEK	/SMITH CREEK	-01N04E02	GALLATIN RIVER	16.3	3	3	3
A14	3-09-1710-003	31	EAST GALLATIN RIVER	BOZEMAN CREEK	/HYALITE CREEK	-01N05E32	GALLATIN RIVER	19.8	2	2	3

BBI 3-09-1710-004 31 EAST GALLATIN RIVER
 ATY 3-13-2040-201 57 EAST HAMMOND CREEK
 864 5-22-2254-001 95 EAST ROSEBUD CREEK
 042 5-22-2254-002 9 EAST ROSEBUD CREEK
 861 5-22-2254-003 9 EAST ROSEBUD CREEK
 A1X 1-07-1310-000 29 EAST SANKO CREEK
 A2E 1-05-2496-000 89 EDDY CREEK
 973 1-11-2080-000 53 EDNA CREEK
 249 4-17-2592-000 59 EIGHT MILE CREEK
 487 3-22-2268-001 67 EIGHT MILE CREEK 01
 488 3-22-2268-002 67 EIGHT MILE CREEK 02
 489 3-22-2282-000 67 ELBOW CREEK
 302 4-14-1860-001 73 ELBOW CREEK
 084 5-22-2288-001 95 ELBOW CREEK
 808 5-22-2296-000 9 ELBOW CREEK
 490 3-22-2303-000 67 ELBRIDGE CREEK
 916 1-05-2560-000 89 ELK CREEK
 610 1-07-1340-001 63 ELK CREEK
 AB2 1-08-2520-001 29 ELK CREEK
 907 1-11-2120-000 53 ELK CREEK
 AEV 2-04-2190-001 63 ELK CREEK
 AFO 2-04-2190-002 63 ELK CREEK
 AK9 3-01-2620-001 1 ELK CREEK
 ANN 3-13-2120-000 31 ELK CREEK
 491 3-22-2326-001 67 ELK CREEK
 251 4-17-2606-000 13 ELK CREEK
 250 4-17-2608-000 59 ELK CREEK
 409 4-20-2000-001 49 ELK CREEK
 809 5-22-2352-000 97 ELK CREEK
 ANO 3-13-2160-001 57 ELK RIVER
 AGS 3-02-2100-000 1 ELKHORN CREEK
 358 4-17-2624-000 49 ELKHORN CREEK
 922 1-08-2560-000 29 EMERY CREEK
 492 3-22-2366-001 67 EMIGRANT CREEK 01
 493 3-22-2366-002 67 EMIGRANT CREEK 02
 494 3-22-2366-003 67 EMIGRANT CREEK 03
 495 3-22-2368-000 67 EMIGRANT SPRING CREEK
 ASK 1-08-2620-000 29 ESSEX CREEK
 AUN 2-05-2640-200 63 EUSTACHE CREEK
 ASB 1-05-2656-000 89 EVANS GULCH

HEADWATERS (ROCKY CR/BOZEMAN CREEK
 6.4 KM UP FROM MOUTH/MOUTH
 EAST ROSEBUD LAKE /MOUTH
 5KM S OF E ROSEBUD /E ROSEBUD LAKE
 FOSSIL LAKE /5KM S OF E ROSEBUD
 SOURCE /MOUTH
 SOURCE /MOUTH
 HEADWATERS /MOUTH
 FORKS /MOUTH
 2 MI BELOW FS BNDRY /MOUTH
 NORTH FORK EIGHTMILE/2 MI BELOW FS BNDRY
 HEADWATERS /MOUTH
 NEAR UPPER END /MOUTH
 HEADWATERS /FOREST BOUNDARY
 HEADWATERS /MOUTH
 E.8W.FK.ELK CR. /MOUTH
 NORTH FORK ELK CR /MOUTH
 1KM.ABOVE MOUTH /MOUTH
 SOURCE /MOUTH
 CAP WALLACE GULCH /MOUTH
 HEADWATERS /CAP WALLACE GULCH
 McDONALDS POND /SWAN LAKE
 HEADWATERS /MOUTH
 N&S FORK ELK CREEK /MOUTH
 HEADWATERS /MOUTH
 HEADWATERS /MOUTH
 FOREST BOUNDARY /MOUTH
 HEADWATERS /MOUTH
 HELL ROARING CREEK /MOUTH
 HEADWATERS /MOUTH(LACY CR.)
 HEADWATERS /MOUTH
 SOURCE /HUNGRY HORSE RES
 CHICO /MOUTH
 FRIDLEY CREEK /CHICO
 FORK IN MINE TRAILS /FRIDLEY CREEK
 ORIGIN /MOUTH
 SOURCE /MOUTH
 HEADWATERS /MOUTH
 SOURCE /MOUTH

-01S06E31 GALLATIN RIVER 8.5 2 2 4
 -06S02E06 HAMMOND CREEK 6.4 4 4 4
 -04S18E13 ROSEBUD CREEK 38.6 3 3 4
 -07S17E28 ROSEBUD CREEK 5.4 4 4 4
 -07S17E28 ROSEBUD CREEK 17.7 3 3 3
 -31N24W27 SANKO CR. 3.2 4 4 4
 -21N27W32 CLARK FORK 9.7 4 4 4
 -33N26W02 FORTINE CREEK 11.9 4 5 4
 -10N08E15 NORTH FK SMITH RIVER 1.4 4 4 4
 -05S08E14 YELLOWSTONE RIVER 6.4 4 4 4
 -04S08E33 YELLOWSTONE RIVER 7.9 4 4 4
 -04S09E33 YELLOWSTONE RIVER 20.9 4 4 4
 -28N12W11 SO FK BIG BADGER CR 3.9 4 4 4
 -05S16E25 FIDDLER CREEK 3.4 4 4 4
 -04S23E34 CLARKS FORK YELL. R. 57.9 4 5 4
 -02S08E27 COKE CR (BILLMAN CR) 4.8 3 4 3
 -27N34W35 CLARK FORK 9.3 3 3 3
 -21N17W26 SWAN RIVER 14.3 3 3 3
 -28N16W14 DIRTYFACE CR. 1.0 3 4 3
 -26N29W01 FISHER RIVER 15.0 4 4 5
 -14N15W26 BLACKFOOT RIVER 7.6 4 4 4
 -13N14W09 BLACKFOOT RIVER 8.7 4 4 4
 -14S01W10 RED ROCK CREEK 6.9 3 3 4
 -02S02E19 MADISON RIVER 11.3 4 5 4
 -03N09E08 SHIELDS RIVER 9.5 3 4 3
 -14N01E10 HOUND CREEK 9.8 4 4 4
 -11N04E35 CAMAS CREEK 10.6 4 4 4
 -20N05W06 SUN RIVER 36.8 3 3 3
 -03S13E10 EAST BOULDER RIVER 7.2 2 3 2
 -12S01E17 W.FK. MADISON RIVER 1.4 4 4 4
 -03S12W05 WISE RIVER 10.1 3 4 3
 -13N02W06 WILLOW CREEK 11.3 2 4 2
 -30N18W17 S.FORK FLATHEAD R. 11.7 2 2 3
 -06S08E04 YELLOWSTONE RIVER 5.6 4 5 4
 -06S08E14 YELLOWSTONE RIVER 4.2 4 4 4
 -06S08E25 YELLOWSTONE RIVER 4.8 4 4 4
 -06S08E08 YELLOWSTONE RIVER 1.6 1 4 1
 -29N16W14 MID.FK. FLATHEAD R. 9.7 3 4 3
 -17N25W13 NINEMILE CREEK 5.2 4 4 4
 -21N31W30 PROSPECT CR. 8.0 4 4 4

A10	1-07-1380-000	29	EVERS CREEK	SOURCE	/MOUTH	-31N23W08	LOGAN CR.	9.7	4	4	4
496	3-22-2394-000	31	FAIRY LAKE CREEK	FAIRY LAKE	/MOUTH	-02N07E03	CACHE CREEK	11.3	4	4	4
AA4	1-07-1420-000	63	FALLS CREEK	SOURCE	/MOUTH	-21N17W24	SMITH CREEK	2.6	4	4	4
497	3-22-2408-000	67	FALLS CREEK	HEADWATERS	/MOUTH	-01N10E32	SHIELDS RIVER	19.3	4	4	4
359	4-17-2688-000	49	FALLS CREEK	FORKS	/MOUTH	-18N07W27	DEARBORN RIVER	5.8	4	4	4
094	5-22-2415-001	67	FALLS CREEK	STUDY AREA BOUNDARY	/MOUTH	-04S12E15	BOULDER RIVER	1.6	4	4	4
498	3-22-2457-000	67	FERRY CREEK	HEADWATERS	/MOUTH	-02S10E05	YELLOWSTONE RIVER	4.8	4	4	4
890	5-22-2464-000	95	FIDDLER CREEK	SOURCE	/MOUTH	-05S17E23	W. ROSEBUD CR.	9.7	4	4	4
AET	2-04-2370-000	63	FINLEY CREEK	HEADWATERS	/MOUTH	-16N16W24	PLACID CREEK	5.5	4	4	4
AWO	2-05-2720-000	63	FIRE CREEK	HEADWATERS	/MOUTH	-16N23W21	NINEMILE CREEK	8.0	4	4	4
ADO	2-05-2752-001	61	FIRST CREEK	TRAIL 536 CROSSING	/MOUTH	-16N25W20	CLARK FORK	5.0	4	4	4
A7A	1-07-1490-000	29	FISH CREEK	SOURCE	/MOUTH	-28N24W15	ASHLEY LAKE	3.2	4	5	4
708	2-05-2768-001	61	FISH CREEK	WEST FORK FISH CREEK	/MOUTH	-14N25W01	CLARK FORK	23.3	1	2	1
AKO	3-10-2760-001	43	FISH CREEK	LITTLE FISH CREEK	/MOUTH	-01N04W29	JEFFERSON RIVER	14.5	4	5	4
AKP	3-10-2760-002	43	FISH CREEK	ROARING BROOK CREEK	/LITTLE FISH CREEK	-01S05W06	JEFFERSON RIVER	4.7	4	4	4
787	5-22-2484-000	67	FISHER CREEK	HEADWATERS	/MOUTH	-09S15E17	CLARKS FORK YELL. R.	6.4	4	4	4
A9E	4-17-2768-000	59	FISHER CREEK	HEADWATERS	/MOUTH	-14N05E22	TENDERFOOT CR	2.1	3	4	3
612	1-11-2320-001	53	FISHER RIVER	WOLF CREEK	/MOUTH	-30N29W17	KOOTENAI RIVER	18.0	3	3	3
613	1-11-2320-002	53	FISHER RIVER	LOON LAKE	/WOLF CREEK	-29N29W34	KOOTENAI RIVER	51.8	3	3	3
891	5-22-2492-001	95	FISHTAIL CREEK	FS BNDRY	/MOUTH	-04S18E28	W. ROSEBUD CREEK	19.6	3	3	4
614	1-05-2800-001	89	FISHTAIL CREEK	FISHTAIL LAKE	/MOUTH	-23N27W33	THOMPSON RIVER	23.0	3	3	4
AG4	3-02-2200-001	23	FISHTAIL CREEK	EAST FORK FISHTAIL	/MOUTH	-01N13W04	BIG HOLE RIVER	4.0	4	4	4
AG5	3-02-2200-002	23	FISHTAIL CREEK	W8MID. FORK FISHTAIL	/EAST FORK FISHTAIL	-02N13W30	BIG HOLE RIVER	10.0	4	4	4
AAR	1-07-1500-000	29	FITZSIMMONS CREEK	HEADWATERS	/MOUTH	-34N24W05	STILLWATER RIVER	6.4	3	4	3
611	1-11-2340-001	53	FIVE MILE CREEK	SOUTH FORK FIVE MILE	/LIBBY RESERVOIR	-32N28W17	KOOTENAI RIVER	8.4	3	4	3
338	4-18-2580-000	59	FLAGSTAFF CREEK	NEAR HEADWATERS	/MOUTH	-09N10E08	N FK MUSSELSHELL R	7.2	4	4	4
ADX	2-05-2816-000	61	FLAT CREEK	HEADWATERS	/MOUTH	-17N26W34	CLARK FORK	9.3	4	4	4
A89	4-17-2800-000	13	FLAT CREEK	HEADWATERS	/MOUTH	-17N03W29	DEARBORN R	48.0	4	4	4
499	3-22-2548-000	67	FLATHEAD CREEK	N. FORK FLATHEAD CR.	/MOUTH	-03N09E18	SHIELDS RIVER	19.2	3	4	3
615	1-07-1560-001	29	FLATHEAD RIVER	FOYS BEND	/FLATHEAD LAKE	-27N20W34	CLARK FORK	28.2	1	3	1
616	1-07-1560-002	29	FLATHEAD RIVER	MOUTH SOUTH FORK	/FOYS BEND	-28N21W34	CLARK FORK	38.0	1	1	1
617	1-07-1560-003	29	FLATHEAD RIVER	N8MID FORKS FLATHEAD	/MOUTH SOUTH FORK	-30N20W01	CLARK FORK	14.3	1	3	1
AL8	1-07-1540-001	89	FLATHEAD RIVER 01	INDIAN RESERVATION	/MOUTH	-19N25W34	CLARK FORK	6.4	3	3	3
ABD	4-18-2640-001	69	FLATWILLOW CREEK	EAST OF TYLER SIDING	/MOUTH	-14N30E33	MUSSELSHELL RIVER	96.5	4	5	4
334	4-18-2640-002	27	FLATWILLOW CREEK	CONFLUENCE OF FORKS	/EAST OF TYLER SIDING	-12N23E15	MUSSELSHELL RIVER	6.2	3	3	3
500	3-22-2562-001	67	FLESHMAN CREEK 01	SPRING CREEK	/MOUTH	-02S09E24	YELLOWSTONE RIVER	9.5	4	4	4
501	3-22-2562-002	67	FLESHMAN CREEK 02	HEADWATERS	/SPRING CREEK	-02S09E06	YELLOWSTONE RIVER	8.9	3	4	3
709	2-06-2242-001	39	FLINT CREEK	PHILLIPSBURG	/MOUTH	-10N12W06	CLARK FORK	42.0	3	3	3
710	2-06-2242-002	39	FLINT CREEK	GEORGETOWN LAKE	/MOUTH	-07N14W26	CLARK FORK	17.5	3	3	4
991	1-11-2440-001	53	FLOWER CREEK	SOUTH FORK FLOWER CR	/MOUTH	-31N31W33	KOOTENAI RIVER	8.9	4	4	4

204	5-22-2583-000	95	FLUME CREEK	HEADWATERS	/MOUTH	-05S15E28 STILLWATER RIVER	6.4	4	4	4
A20	1-05-2864-000	89	FOOL HEN CREEK	SOURCE	/MOUTH	-22N25W08 LITTLE THOMPSON R	4.8	4	4	5
410	4-20-2150-001	49	FORD CREEK	FOREST BOUNDARY	/N14N RES. DIVERSION	-20N08W26 SMITH CREEK	10.0	4	4	4
411	4-20-2150-002	49	FORD CREEK	NEAR UPPER END	/FOREST BOUNDARY	-10N08W06 SMITH CREEK	6.6	4	4	4
A6R	1-08-2820-000	29	FOREST CREEK	SOURCE	/MOUTH	-27N17W15 HUNGRY HORSE RES	6.4	3	4	3
120	5-22-2598-000	97	FORGE CREEK	HEADWATERS	/MOUTH	-03S13E02 EAST BOULDER RIVER	3.5	4	4	4
064	5-22-6804-196	95	FORGET IT CREEK	HEADWATERS	/MOUTH AT W ROSEBUD L	-07S16E02 WEST ROSEBUD CREEK	1	3	4	3
673	1-11-2460-001	53	FORTINE CREEK	FLATHEAD TUNNEL (RR)	/MOUTH	-32N26W15 TOBACCO RIVER	37.7	2	4	2
668	1-11-2460-002	53	FORTINE CREEK	HEADWATERS	/FLATHEAD TUNNEL RR	-32N26W08 TOBACCO RIVER	7.4	3	4	3
A4X	1-11-2480-000	53	FOUNDATION CREEK	SOURCE	/MOUTH	-37N24W29 GRAVE CR.	3.2	4	4	4
252	4-17-2816-002	59	FOUR MILE CREEK	HEADWATERS	/DIVERSION	-09N08E08 N FK SMITH RIVER	10.0	4	4	4
BA0	6-16-1570-001	71	FOURCHETTE CREEK	9 MI ABOVE MOUTH	/MOUTH	-22N31E05 FT. PECK RESERVOIR	14.5	4	4	4
967	1-11-2500-001	53	FOURTH OF JULY CREEK	BRAMLET CREEK	/MOUTH	-22N30W04 WEST FISHER RIVER	2.9	4	4	4
AHF	3-02-2275-000	1	FOX CREEK	N&S FORK FOX CREEK	/MOUTH	-06S14W30 GOVERNOR CREEK	9.0	4	4	4
S02	3-22-2632-000	67	FOX CREEK	HEADWATERS	/MOUTH	-01N08E03 BRACKETT CREEK	4.8	4	4	4
AGI	7-21-0250-000	83	FOX CREEK	FORKS	/MOUTH	-22N59E19 YELLOWSTONE RIVER	6.8	3	4	3
A7I	1-07-1575-000	47	FREELAND CREEK	SOURCE	/MOUTH	-25N22W15 LAKE MARY RONAN	1.6	4	5	4
253	4-17-2864-000	59	FREEMAN CREEK	2.7 MI UP NORTH FORK/MOUTH	/MOUTH	-13N03E27 ROCK CREEK	16.1	4	4	4
AG0	3-02-2350-001	23	FRENCH CREEK	CALIFORNIA CREEK	/MOUTH	-02N12W21 DEEP CREEK	15.4	3	3	4
A9A	4-17-2875-000	59	FRENCH CREEK	HEADWATERS	/MOUTH	-13N01E25 ROCK CREEK	3.9	3	5	3
A9R	6-15-1680-000	71	FRENCHMAN CREEK	CANADIAN BORDER	/MOUTH	-32N34E23 MILK RIVER	120.0	3	4	3
S03	3-22-2674-001	67	FRIDLEY CREEK 01	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-05S08E33 YELLOWSTONE RIVER	5.6	4	4	4
S04	3-22-2674-002	67	FRIDLEY CREEK 02	NEEDLE CREEK	/FOREST SERVICE BNDRY	-03S07E36 YELLOWSTONE RIVER	5.0	3	3	4
AJA	3-09-2090-000	31	GALLATIN RIVER 01	EAST GALLATIN RIVER	/MOUTH	-02N02E09 MISSOURI RIVER	20.1	2	2	3
AJB	3-09-6916-002	31	GALLATIN RIVER 03	PARK LINE	/W.FK. GALLATIN R.	-06S04E32 MISSOURI RIVER	29.0	2	2	3
AJE	3-09-6878-001	31	GALLATIN RIVER 02	BAKER CREEK	/EAST GALLATIN R	-02N03E27 MISSOURI RIVER	5.1	2	2	3
B8G	3-09-6878-002	31	GALLATIN RIVER 02	CAMERON BRIDGE	/BAKER CREEK	-01N03E01 MISSOURI RIVER	11.6	3	3	3
AJC	3-09-6878-003	31	GALLATIN RIVER 02	GALLATIN GATEWAY	/CAMERON BRIDGE	-03S04E10 MISSOURI RIVER	19.3	2	2	3
AJD	3-09-6878-004	31	GALLATIN RIVER 02	SPANISH CREEK	/GALLATIN GATEWAY	-03S04E10 MISSOURI RIVER	15.7	1	1	3
AF8	3-09-6916-001	31	GALLATIN RIVER 03	W.FK. GALLATIN R.	/SPANISH CREEK	-04S04E18 MISSOURI RIVER	32.8	1	1	3
A12	4-20-2350-001	49	GATES CREEK	NEAR UPPER END	/MOUTH	-23N10W05 NO FK SUN RIVER	6.8	4	4	4
ATZ	3-13-2360-201	57	GAZELLE CREEK	8.2 KM UP FROM MOUTH/MOUTH	/MOUTH	-11S01E10 WEST FK MADISON R	8.2	3	4	3
ATO	3-13-2360-202	57	GAZELLE CREEK	HEADWATERS	/8.2 KM UPSTREAM FROM	-11S01W24 WEST FK MADISON R	8.4	4	4	4
A8X	4-17-3270-000	59	GEIS CREEK	HEADWATERS	/MOUTH	-11N08E27 N FK SMITH R	5.5	4	4	4
A1E	1-07-1600-000	29	GERGEN CREEK	SOURCE	/MOUTH	-31N25W01 GOOD CR.	4.8	4	4	4
ADI	2-06-2489-001	63	GILBERT CREEK	RESERVOIR	/MOUTH	-11N17W25 ROCK CREEK	2.9	3	4	3
618	1-07-1700-000	63	GLACIER CREEK	GLACIER LAKE	/MOUTH	-21N17W36 SWAN RIVER	22.9	3	4	3
880	7-21-0275-001	21	GLENDIVE CREEK	ALLARD	/MOUTH	-16N55E24 YELLOWSTONE RIVER	16.1	4	5	4
AFJ	4-20-2400-000	49	GLENN CREEK	SOURCE AT N. + S. FO	/MOUTH	-22N10W04 NO.FORK SUN RIVER	3.8	4	4	4
A29	1-05-3088-000	89	GLIDDEN GULCH	SOURCE	/MOUTH	-21N32W13 PROSPECT CR.	14.5	4	4	4

619	1-07-1720-001	47	GOAT CREEK	HEADWATERS	/MOUTH	-23N17W18	SWAN RIVER	15.0	3	4	3
A3R	1-11-2620-000	53	GOAT CREEK	SOURCE	/MOUTH	-31N34W19	CALLAHAN CR.	8.0	4	4	4
505	3-22-2730-000	59	GOAT CREEK	HEADWATERS	/MOUTH	-05N10E18	SMITH CREEK (SHIELDS)	2.9	3	4	3
AEQ	2-04-2610-001	63	GOLD CREEK	END OF ROAD	/MOUTH	-13N16W06	BLACKFOOT RIVER	17.4	3	4	3
AU1	2-04-2610-203	63	GOLD CREEK	BOULDER LAKE JUTLET	/START	-15N17W22	BLACKFOOT RIVER	10.9	3	4	3
ACZ	2-06-2584-001	77	GOLD CREEK	CREVICE CREEK	/MOUTH	-10N10W31	CLARK FORK	10.1	4	4	4
AGU	3-02-2400-001	1	GOLD CREEK	S. FORK GOLD CREEK	/MOUTH	-02S12W33	WISE RIVER	3.1	4	4	4
AAQ	1-07-1760-001	29	GOOD CREEK	BOWEN CR.	/MOUTH	-31N23W03	STILLWATER RIVER	32.2	3	4	3
ABP	1-08-3040-001	77	GORDON CREEK	SHAW CREEK	/MOUTH	-20N13W23	S. FORK FLATHEAD R.	20.0	3	3	3
ABV	1-08-3060-001	29	GORGE CREEK	SUNBURST LAKE FORK	/MOUTH	-24N15W26	BUNKER CREEK	12.9	3	4	3
AHJ	3-02-2525-001	1	GOVERNOR CREEK	FOREST SERVICE BNDRY	/MOUTH	-05S15W26	BIG HOLE RIVER	18.3	1	4	1
101	5-22-2772-000	97	GRAHAM CREEK	HEADWATERS	/MOUTH	-04S12E23	BOULDER RIVER	5.4	4	4	4
AB5	1-08-3080-000	29	GRANITE CREEK	DODGE CREEK	/MOUTH	-28N14W35	M. FORK FLATHEAD R.	11.9	2	3	2
968	1-11-2700-000	53	GRANITE CREEK	GRANITE LAKE	/MOUTH	-30N31W35	BIG CHERRY CR.	14.7	3	3	3
AU2	2-03-2375-200	63	GRANITE CREEK	HEADWATERS	/MOUTH	-11N23W07	LOLO CREEK	12.0	3	4	3
AL7	2-06-2698-001	63	GRANT CREEK	HEADWATERS	/I-90 BRIDGE	-13N19W05	CLARK FORK	16.9	3	4	3
AJ7	3-01-3100-001	1	GRASSHOPPER CREEK	RESERVOIR CREEK	/MOUTH	-08S10W25	BEAVERHEAD RIVER	25.7	4	4	4
AJ6	3-01-3100-002	1	GRASSHOPPER CREEK	NATIONAL FOREST BOUN/RESERVOIR CREEK	/MOUTH	-08S12W01	BEAVERHEAD RIVER	38.6	4	4	4
674	1-11-2720-000	53	GRAVE CREEK	HEADWATERS	/MOUTH	-35N26W15	TOBACCO RIVER	27.8	3	3	3
951	1-03-3184-000	89	GRAVES CREEK	SOURCE	/MOUTH	-22N30W11	CLARK FORK	12.9	3	3	3
921	1-08-3100-000	29	GRAVES CREEK	SOURCE	/HUNGRY HORSE RESER.	-27N17W06	S. FORK FLATHEAD R	14.5	2	2	3
ANP	3-13-2440-000	31	GRAYLING CREEK	PARK BOUNDARY	/MOUTH	-12S05E18	HEBGEN LAKE	7.4	2	2	3
O95	5-22-2846-001	97	GREAT FALLS CREEK	STUDY AREA BOUNDARY	/MOUTH	-04S12E23	BOULDER RIVER	1.8	4	4	4
507	3-22-2853-000	31	GREEN CANYON CREEK	HEADWATERS	/MOUTH	-03N07E26	FLATHEAD CREEK	4.8	3	4	3
A69	1-07-1770-000	29	GREEN MOUNTAIN CREEK	SOURCE	/MOUTH	-28N24W23	ASHLEY LAKE	3.2	4	5	4
AU4	2-06-2793-200	63	GREENOUGH CREEK	HEADWATERS	/MOUTH	-12N17W21	CLARK FORK	7.6	3	4	3
ATC	1-07-1780-000	29	GREGG CREEK	SOURCE	/MOUTH	-31N25W11	GOOD CR.	8.0	4	4	4
AAS	1-07-1800-000	29	GRIFFIN CREEK	HEADWATERS	/MOUTH	-30N24W08	LOGAN CREEK	24.9	3	4	3
881	7-21-0340-001	21	GRIFFITH CREEK	INTERSTATE 94	/MOUTH	-16N56E34	KRUG CREEK	6.4	4	5	4
AU5	2-06-2831-200	39	GRIZZLY CREEK	HEADWATERS	/MOUTH	-10N16W31	RANCH CREEK	5.3	3	4	3
810	5-22-2898-000	95	GROVE CREEK	HEADWATERS	/MOUTH	-03S18E34	STILLWATER RIVER	12.9	4	4	4
AW5	2-03-3264-200	63	GUS CREEK	HEADWATERS	/MOUTH	-13N23W11	PETTY CREEK	6.6	4	4	4
A72	5-18-2910-400	65	HALF BREED CREEK	MAJERUS SPRING POND	/MOUTH	-08N25E22	MUSSELSHELL RIVER	12.5	3	5	3
A9V	4-18-2940-001	27	HALF MOON CR	HEADWATERS	/FOREST BOUNDARY	-12N19E01	N FK FLATWILLOW CR	6.4	3	4	3
ACK	1-08-3240-001	29	HALLOWAT CREEK	SECTION LINE 22-23	/MOUTH	-33N21W33	BIG CREEK	9.7	3	4	3
ANQ	3-13-2500-001	57	HAMMOND CREEK	HAMMOND CR. FS STAT.	/MOUTH	-06S02E06	JACK CREEK	2.1	4	4	4
508	3-22-2968-000	67	HAMMOND CREEK	HEADWATERS	/MOUTH	-29N25W02	ROCK CR (SHIELDS)	6.4	3	4	3
A1N	1-07-1880-000	29	HAND CREEK	SOURCE	/MOUTH	-06S42E13	TONGUE RIVER	71.9	2	4	2
769	7-21-0400-000	87	HANGING WOMAN CREEK	MT-WYO BORDER	/MOUTH	-14N08E19	BELT CREEK	5.6	3	4	3
A83	4-17-3344-000	13	HARLEY CREEK	HEADWATERS	/MOUTH						

811	5-22-2996-001	9 HARNEY CREEK	FOREST SERVICE BNDRY/MOUTH	-06S20E19	EAST RED LODGE CREEK	12.4	4	5	4
Q33	5-22-2996-002	9 HARNEY CREEK	HEADWATERS	-07S19E15	EAST RED LODGE CREEK	3.2	3	4	3
A3W	1-08-3260-000	29 HARRIS CREEK	SOURCE	-28N17W10	HUNGRY HORSE RES	4.8	3	4	3
A0L	4-16-1660-001	45 HARRISON CREEK	COLLINS CREEK	-13N10E31	MIDDLE FK JUDITH R	10.5	3	4	3
A03	1-07-1920-000	29 HARVEY CREEK	SOURCE	-33N25W25	SUNDAY CR.	4.8	4	4	4
A0U	1-07-1940-000	29 HASKILL CREEK	SOURCE	-30N21W05	WHITEFISH RIVER	16.1	4	4	4
ACF	1-08-3340-000	29 HAY CREEK	HAY LK	-34N21W02	N.FORK FLATHEAD R.	20.6	3	4	3
ACG	7-12-0250-000	109 HAY CREEK	SOURCE	-15N60E17	BEAVER CREEK	9.0	4	5	4
413	4-14-2360-001	73 HAYWOOD CREEK	1 MILE ABOVE MOUTH	-28N10W28	NO FK BIRCH CREEK	1.6	3	5	3
A0N	4-16-1740-000	45 HELL CREEK	HEADWATERS	-13N09E26	CLEVELAND CREEK	8.0	3	4	3
B9Q	3-01-3340-001	1 HELL ROARING CREEK	ROAD CROSSING	-14S01E13	RED ROCK CREEK	1.8	3	4	3
AK1	3-01-3340-002	1 HELL ROARING CREEK	HEADWATERS	-14S01E24	RED ROCK CREEK	8.5	4	5	4
ALU	3-13-2560-000	57 HELLROARING CREEK	SOURCE	-11S01W31	ELK RIVER	5.5	4	4	4
S09	3-22-3069-001	67 HELLROARING CREEK	EAST BRANCH	-09S10E23	YELLOWSTONE RIVER	24.3	4	4	4
O55	5-22-3038-000	9 HELLROARING CREEK	HEADWATERS-SYLVAN LK/MOUTH	-07S17E01	EAST ROSEBUD CREEK	8.0	4	4	4
216	5-22-3052-000	9 HELLROARING CREEK	HEADWATERS	-09S19E18	ROCK CREEK	3.8	4	4	4
A5U	1-07-2000-000	63 HEMLOCK CREEK	SOURCE	-20N17W34	KRAFT CR.	6.0	3	4	3
620	1-07-2060-000	29 HERRIG CREEK	LAKE AT SOURCE	-28N25W36	LITTLE BITTERROOT R	9.7	3	5	3
ANS	3-10-3400-002	43 HIGH ORE CREEK	SOURCE	-06N05W02	BOULDER RIVER	16.0	4	5	4
A87	4-17-3450-001	15 HIGHWOOD CREEK	SHEPARD CROSSING	-22N06E08	MISSOURI R	30.6	3	3	3
361	4-17-3450-002	15 HIGHWOOD CREEK	FOREST BNDRY	-21N07E06	MISSOURI RIVER	9.2	3	3	4
362	4-17-3450-003	15 HIGHWOOD CREEK	CHOUTEAU CO. LINE	-20N09E20	MISSOURI RIVER	22.5	4	4	4
ACH	7-21-0420-000	21 HODGES CREEK	SOURCE	-15N57E33	GLENDAVE CREEK	14.5	4	4	4
812	5-22-3136-001	9 HOGAN CREEK	FOREST SERVICE BNDRY/MOUTH	-06S19E12	WEST RED LODGE CREEK	5.0	3	4	3
ADe	2-06-3078-000	39 HOGBACK CREEK	HEADWATERS	-08N17W35	ROCK CREEK	4.8	3	4	3
A6N	1-08-3480-000	27 HOKE CREEK	SOURCE	-27N17W13	HUNGRY HORSE RES	12.9	3	4	3
A51	1-08-3500-000	77 HOLBROOK CREEK	SOURCE	-23N13W08	SO.FK. FLATHEAD R.	8.4	4	4	4
A3D	1-07-2120-002	63 HOLLAND CR.	FALLS	-20N16W36	SWAN RIVER	3.2	4	4	4
A3E	1-07-2120-003	63 HOLLAND CR.	UPPER HOLLAND LK	-20N16W36	SWAN RIVER	6.0	3	4	3
A3C	1-07-2120-001	63 HOLLAND CREEK	HOLLAND LAKE	-19N16W06	SWAN RIVER	4.8	4	4	4
A2F	1-05-3488-000	89 HONEYMOON CREEK	SOURCE	-22N28W16	WEST FK THOMPSON R	8.0	4	4	4
A48	1-11-3060-000	53 HOODOO CREEK	SOURCE	-28N30W09	LIBBY CR.	6.4	3	3	3
A84	4-17-3568-000	13 HOOVER CREEK	HEADWATERS	-15N07E36	BELT CREEK	2.6	4	4	4
AE4	2-06-3135-001	49 HOPE CREEK	BEAVER PONDS	-11N06W29	DOG CREEK	19.5	3	4	3
511	3-22-3208-001	67 HORSE CREEK	FOREST SERVICE BNDRY/MOUTH	-03N09E29	SHIELDS RIVER	30.5	4	4	4
ANT	3-13-2680-000	57 HORSE CREEK	HEADWATERS	-10S01E17	MADISON RIVER	3.2	4	4	4
512	3-22-3185-000	31 HORSE CREEK	HEADWATERS	-01N07E02	BRACKETT CREEK	12.9	3	4	3
510	3-22-3192-000	67 HORSE CREEK	HEADWATERS	-07S06E34	TOM MINER CREEK	22.4	4	5	4
A97	6-16-1765-001	55 HORSE CREEK	COUNTY ROAD 252	-19N48E11	REDWATER RIVER	29.0	3	4	3
AH3	3-01-3500-001	1 HORSE PRAIRIE CREEK	BLOODY DICK CREEK	-10S11W11	BEAVERHEAD RIVER				
			/CLARK CANYON RES.						

AM2	3-01-3500-002	1	HORSE PRAIRIE CREEK	MAYDEN CREEK	/BLOODY DICK CREEK	-09S13W36	BEAVERHEAD RIVER	16.7	4	4	4
ANU	3-13-2720-001	57	HOT SPRINGS CREEK	BURNT CREEK	/MOUTH	-03S01E10	MADISON RIVER	9.7	4	4	4
254	4-17-3600-000	13	HOUND CREEK	FORKS	/MOUTH	-17N03E20	SMITH RIVER	45.7	3	3	4
AU7	2-03-2750-200	63	HOWARD CREEK	HEADWATERS	/MOUTH	-12N23W25	LOLO CREEK	9.2	3	4	3
221	5-22-4956-197	9	HOWELL GULCH	HEADWATERS	/MOUTH	-08S20E17	ROCK CREEK	3.2	4	4	4
069	5-22-3248-001	95	HUCKLEBERRY CREEK	HUCKLEBERRY L OUTLET	/MOUTH	-07S15E13	W. ROSEBUD CREEK	.8	4	4	4
AL5	2-03-2775-000	81	HUGHES CREEK	HEADWATERS	/MOUTH	-02S22W34	W-FK BITTERROOT R	26.1	4	4	4
920	1-08-3580-000	29	HUNGRY HORSE CREEK	SOURCE	/MOUTH	-30N18W21	S-FORK FLATHEAD R.	9.7	3	3	3
AU8	2-06-3201-200	39	HUTSIMPILAR CREEK	HEADWATERS	/MOUTH	-08N17W20	ROCK CREEK	4.0	4	4	4
AMQ	3-09-2546-001	31	HYALITE CREEK	COUNTY ROAD	/MOUTH	-01S05E05	GALLATIN RIVER	5.6	4	4	4
AMR	3-09-2546-002	31	HYALITE CREEK	FOREST SERVICE BNDRY	/MOUTH	-02S05E20	GALLATIN RIVER	18.2	4	4	4
AMS	3-09-2546-003	31	HYALITE CREEK	HYLITE RESERVOIR	/FOREST SERVICE BNDRY	-03S05E14	GALLATIN RIVER	14.6	4	4	4
AWT	3-09-2546-004	31	HYALITE CREEK	GROITO FALLS	/HYALITE RESERVOIR	-04S06E23	GALLATIN RIVER	3.1	1	4	1
513	3-22-3276-000	67	HYALITE CREEK	HEADWATERS	/MOUTH	-06S07E17	BIG CREEK (YELL.)	8.0	4	4	4
A30	1-11-3170-000	53	IDAMONT CREEK	IDAHO BOUNDARY	/MOUTH	-32N34W12	STAR CR.	4.8	4	4	4
911	1-11-3200-001	53	INDIAN CREEK	DEROZIER CREEK	/MOUTH	-36N27W09	TOBACCO RIVER	6.4	4	5	4
912	1-11-3200-002	53	INDIAN CREEK	HEADWATERS	/DEROZIER CREEK	-37N26W31	TOBACCO RIVER	3.4	4	5	4
AWT	2-05-3616-200	61	INDIAN CREEK	HEADWATERS	/MOUTH	-13N26W25	WEST FORK FISH CREEK	3.2	2	4	2
AMU	3-01-3600-002	57	INDIAN CREEK	RED PINE MINE	/BN RAILROAD BRIDGE	-04S05W27	RUBY RIVER	10.6	4	4	4
ANV	3-13-2800-001	57	INDIAN CREEK	INDIAN CREEK DITCH	/MOUTH	-08S01W25	MADISON RIVER	7.9	4	4	4
ANW	3-13-2800-002	57	INDIAN CREEK	NO MAN CREEK	/INDIAN CREEK DITCH	-08S01E26	MADISON RIVER	4.8	4	4	4
A9H	4-17-3728-000	59	INDIAN CREEK	HEADWATERS	/MOUTH	-12N06E11	SHEEP CREEK	5.5	4	4	4
AFI	4-20-3100-000	49	INDIAN CREEK	HEADWATERS	/MOUTH	-21N11W07	WEST FORK SUN RIVER	3.2	4	4	4
A10	1-07-2200-000	29	INGALLS CREEK	SOURCE	/MOUTH	-30N25W35	GRIFFIN CR.	4.8	4	4	4
986	1-11-3220-000	53	IRON CREEK	HEADWATERS	/MOUTH	-30N33W07	LAKE CREEK	5.5	4	4	4
186	5-22-3360-000	97	IRON CREEK	HEADWATERS	/MOUTH	-05S14E12	W.F. STILLWATER R.	9.3	4	4	4
A85	4-17-3780-000	59	IRON MINES CREEK	FORKS	/MOUTH	-14N06E35	TENDERFOOT CREEK	3.2	3	4	3
071	5-22-6804-191	95	IRRELEVANT CREEK	HEADWATERS	/MOUTH	-07S16E02	WEST ROSEBUD CREEK	1.6	4	4	4
A43	1-11-3250-000	53	IVOR CREEK	SOURCE	/MOUTH	-33N26W02	EDNA CREEK	1.6	4	4	4
ANX	3-13-2880-001	57	JACK CREEK	FOREST SERVICE BNDRY	/MOUTH	-05S01W14	MADISON RIVER	14.5	4	4	4
ANY	3-13-2880-002	57	JACK CREEK	LEVI CREEK	/FOREST SERVICE BNDRY	-05S01E34	MADISON RIVER	5.6	4	4	4
813	5-22-3381-000	95	JACK STRAW(STONE) CREEK	HEADWATERS	/MOUTH	-03S18E33	STILLWATER RIVER	16.1	4	5	4
A4L	1-11-3260-000	53	JACKSON CREEK	SOURCE	/MOUTH	-31N29W16	LAKE KOOCANUSA	1.6	4	4	4
AMW	3-09-2622-002	31	JACKSON CREEK	HEADWATERS	/MOUTH	-02S07E15	EAST GALLATIN RIVER	6.5	4	4	4
AS6	3-02-2875-201	1	JACOBSON CREEK	2-9 KM UP FROM MOUTH	/MOUTH	-03S12W34	ELKHORN CREEK	2.9	4	4	4
363	4-17-3824-000	13	JEFFERSON CREEK	FORKS	/MOUTH	-13N08E10	BELT CREEK	5.5	3	4	3
AKS	3-10-3840-001	31	JEFFERSON RIVER	PIPESTONE CREEK	/MOUTH	-02N02E17	MISSOURI RIVER	73.1	2	2	4
AKT	3-10-3840-002	31	JEFFERSON RIVER	FISH CREEK	/BIG PIPESTONE CREEK	-01N04W11	MISSOURI RIVER	18.7	2	2	4
AKU	3-10-3840-003	31	JEFFERSON RIVER	HEADWATERS	/FISH CREEK	-01N04W29	MISSOURI RIVER	30.7	2	2	4
AGV	3-02-2950-001	93	JERRY CREEK	LIBBY CREEK	/MOUTH	-01N11W36	BIG HOLE RIVER	12.1	4	4	4

AW 1-07-2240-000	47 JIM CREEK	JIM LK.	/MOUTH	-22N17W21 SWAN RIVER	11.2 3 3 3
904 1-11-3280-000	53 JIM CREEK	SOURCE	/MOUTH	-33N26W11 FORTINE CREEK	8.7 4 4 4
814 5-22-3388-000	95 JOE HILL CREEK	HEADWATERS	/MOUTH	-03S20E06 STILLWATER RIVER	18.3 4 5 4
A12 1-07-2300-000	29 JOHNSON CREEK	SOURCE	/MOUTH	-31N24W26 LOGAN CR.	1.6 4 4 4
BAK 3-02-3000-000	1 JOHNSON CREEK	SOURCE	/MOUTH	-02S16W03 N FORK BIG HOLE R	22.5 4 4 4
A65 1-08-3720-000	29 JONES CREEK	SOURCE	/MOUTH	-27N18W01 AENEAS CR.	3.2 3 3 3
AJS 3-02-3025-001	1 JOSEPH CREEK	ANDERSON CREEK	/MOUTH	-02S18W15 TRAIL CREEK	8.0 4 4 4
AG9 4-16-1800-000	27 JUDITH RIVER 01	WARMSPRING CR	/MISSOURI RIVER	-23N16E26 MISSOURI RIVER	64.4 3 4 3
AGC 4-16-1820-001	27 JUDITH RIVER 02	ROSS FORK CR	/WARMSPRING CR	-18N16E08 MISSOURI RIVER	48.3 3 3 3
AGD 4-16-1820-002	27 JUDITH RIVER 02	ANTELOPE CR	/ROSS FORK CR	-15N16E08 MISSOURI RIVER	27.4 4 4 4
3Q3 4-16-1820-003	45 JUDITH RIVER 02	FORKS	/ANTELOPE CREEK	-14N14E18 MISSOURI RIVER	35.2 3 3 4
AJ2 3-01-3900-001	1 JUNCTION CREEK	BEAVER CREEK	/MOUTH	-13S08W33 RED ROCK RIVER	27.7 4 4 4
955 1-05-3744-001	89 JUNGLE CREEK	BORDER SEC. 19&24	/MOUTH	-23N27W33 FISHTRAP CREEK	6.1 4 4 4
A69 1-08-3780-000	29 KATE CREEK	SOURCE	/MOUTH	-27N18W25 WHEELER CR.	3.2 4 4 4
AR1 3-01-3920-201	1 KATE CREEK	4.5 KM UP FROM MOUTH	/MOUTH	-12S12W12 MEDICINE LODGE CREEK	4.5 4 4 4
A4E 1-11-3350-000	53 KAVALLA CREEK	SOURCE	/MOUTH	-29N27W17 WOLF CR.	6.4 4 5 4
590 3-22-3420-000	67 KAY CREEK	HEADWATERS	/MOUTH	-01N10E30 SHIELDS RIVER	5.6 3 4 3
987 1-11-3380-000	53 KEELER CREEK	SOURCE	/MOUTH	-30N33W17 LAKE CREEK	30.4 3 4 3
A9M 4-17-3920-000	59 KEEP COOL CREEK	HEADWATERS	/MOUTH	-11N04E29 THOMAS CR	2.4 4 4 4
AWV 2-05-3792-200	63 KENNEDY CREEK	HEADWATERS	/MOUTH	-16N23W27 NINEMILE CREEK	8.8 4 5 4
ACL 1-08-3840-001	29 KLETOMUS CREEK	MOOSE LAKE	/MOUTH	-33N22W25 HALLOWAT CREEK	4.7 3 4 3
675 1-11-3500-001	53 KOOTENAI RIVER	FALLS	/STATE LINE	-33N34W20 COLUMBIA RIVER	32.8 1 2 1
669 1-11-3500-002	53 KOOTENAI RIVER	LIBBY DAM	/FALLS	-31N33W13 COLUMBIA RIVER	43.1 1 1 3
AST 1-07-2340-000	63 KRAFT CREEK	SOURCE	/MOUTH	-20N17W27 GLACIER CR.	9.2 3 4 3
882 7-21-0425-000	21 KRUG CREEK	KRUG CR SCHOOL RD.	/MOUTH	-16N56E33 GLENDIVE CREEK	17.7 4 5 4
AG2 3-02-3175-002	23 LA MARCHE CREEK	WEST FORK LA MARCHE	/FOREST SERVICE BNDRY	-02N13W21 BIG HOLE RIVER	7.1 3 4 3
AGQ 3-02-3150-001	1 LACY CREEK	HEADWATERS	/MOUTH	-03S12W05 WISE RIVER	11.9 4 4 4
222 5-22-4956-196	9 LADUALA CREEK	HEADWATERS	/STATE LINE-WYO	-09S18E34 ROCK CREEK	2.6 4 4 4
815 5-22-3444-300	67 LADY OF THE LAKE CREEK	LADY OF THE LAKE	/MOUTH	-09S15E17 CLARKS FORK YELL. R.	2.7 4 4 4
AF5 1-08-3956-000	29 LAKE CREEK	SOURCE	/MOUTH	-27N13W07 MID. FK. FLATHEAD R.	4.8 3 4 3
984 1-11-3540-300	53 LAKE CREEK	BULL LAKE	/MOUTH	-31N33W18 KOOTENAI RIVER	22.2 2 2 3
929 1-11-3560-000	53 LAKE CREEK	SOURCE	/MOUTH	-33N27W25 SWAMP CREEK	6.6 4 5 4
AU9 2-06-3420-200	63 LAKE CREEK	CARTER LAKE	/MOUTH	-15N18W21 RATTLESNAKE CREEK	3.6 4 4 4
255 4-17-4016-001	59 LAKE CREEK	FOREST BOUNDARY	/MOUTH	-10N08E19 N FK SMITH RIVER	11.7 4 5 4
217 5-22-3472-000	9 LAKE FORK ROCK CREEK	HEADWATERS	/MOUTH	-08S19E34 ROCK CREEK	8.5 4 4 4
A9C 4-17-4032-000	49 LAMB CREEK	NEAR HEADWATERS	/MOUTH	-12N08E33 SHEEP CR	1.6 4 4 4
883 7-12-0280-001	109 LAMESTEER CREEK	COUNTY ROAD	/MOUTH	-12N06E07 BEAVER CREEK	11.3 4 5 4
AFM 2-04-3120-001	49 LANDERS FORK BLACKFOOT R.	FALLS CREEK	/MOUTH	-14N08W13 BLACKFOOT RIVER	18.0 3 4 3
AFS 2-04-3120-002	49 LANDERS FORK BLACKFOOT R.	SOURCE	/FALLS CREEK	-16N08W35 BLACKFOOT R.	26.4 3 4 3
A25 1-11-3600-000	53 LANG CREEK	SOURCE	/MOUTH	-35N32W03 YAAK RIVER	9.7 4 4 4

A77	6-15-2045-001	71	LARB CREEK	HAMMOND RANCH	/MOUTH	-31N34E26	BEAVER CREEK	56.0	4	5	4
905	1-11-3630-000	53	LAUGHING WATER CREEK	HEADWATERS	/MOUTH	-34N25W05	MURPHY LAKE	3.5	4	4	4
A2W	1-05-3920-000	89	LAZIER CREEK	SOURCE	/MOUTH	-25N27W23	THOMPSON RIVER	9.7	5	5	5
A7R	1-07-2380-000	29	LAZY CREEK	SOURCE	/MOUTH	-31N22W05	WHITEFISH LAKE	11.3	4	4	4
A06	1-07-2400-000	29	LE BEAU CREEK	SOURCE	/MOUTH	-33N24W36	MARTIN CR.	6.4	4	4	4
AMX	3-01-4240-001	57	LEDFOORD CREEK	BATTLE RANCH	/MOUTH	-09S04W03	RUBY RIVER	4.0	4	4	4
AVA	2-03-3125-200	63	LEE CREEK	HEADWATERS	/MOUTH	-11N23W18	WEST FK. LOLO CREEK	4.6	3	4	3
AFG	4-14-2880-000	73	LEE CREEK	HEADWATERS	/MOUTH	-29N12W27	NORTH BADGER CREEK	3.2	3	4	3
A35	1-11-3640-000	53	LEIGH CREEK	SOURCE	/MOUTH	-28N31W03	CHERRY CR.	6.4	4	4	4
A40	1-11-3650-000	53	LEWIS CREEK	SOURCE	/MOUTH	-37N24W32	GRAVE CR.	6.4	4	4	4
514	3-22-3584-000	67	LEWIS CREEK	HEADWATERS	/MOUTH	-06S06E13	BIG CREEK	7.7	4	4	4
621	1-11-3660-001	53	LIBBY CREEK	US HIGHWAY 2 BRIDGE	/MOUTH	-30N31W02	KOOTENAI RIVER	20.8	3	3	3
873	1-11-3660-002	53	LIBBY CREEK	HEADWATERS	/US HIGHWAY 2 BRIDGE	-28N30W04	KOOTENAI RIVER	21.4	3	4	3
A0W	3-09-2964-202	57	LIGHTNING CREEK	2.4 KM UP FROM MOUTH/1.1 KM UP FROM MOUTH	/MOUTH	-09S03E20	TAYLOR FORK GALL R	1.3	4	4	4
190	5-22-3598-001	97	LIGHTNING CREEK	HALF MI. ABOVE MOUTH/MOUTH	/MOUTH	-05S14E30	WEST FK STILLWATER R	8.4	4	4	4
A52	1-08-4160-000	49	LIMESTONE CREEK	SOURCE	/MOUTH	-18N11W20	DANAHER CR.	8.0	3	4	3
AXL	3-01-4340-000	1	LIMESTONE CREEK	HEADWATERS	/MOUTH	-13S01E28	ELK LAKE-RED ROCK R	4.5	4	4	4
080	5-22-3644-000	95	LINE CREEK	HEADWATERS	/AT MOUTH	-06S17E28	WEST ROSEBUD CREEK	5.8	3	4	3
622	1-07-2420-000	47	LION CREEK	HEADWATERS	/MOUTH	-22N17W08	SWAN RIVER	22.4	3	3	3
515	3-22-3647-000	67	LION CREEK	HEADWATERS	/MOUTH	-08S07E32	CINNABAR CREEK	3.6	4	4	4
A1Q	1-07-2440-000	29	LITTLE CREEK	SOURCE	/MOUTH	-30N25W09	SHEPPARD CR.	3.2	4	4	4
AKW	3-01-4360-000	1	LITTLE BASIN CREEK	SOURCE	/MOUTH	-13S07W02	SHAIN CREEK	10.3	4	4	4
946	1-05-4016-000	89	LITTLE BEAVER CREEK	SOURCE	/MOUTH	-23N30W30	BEAVER CREEK	8.7	4	4	4
884	7-12-0290-000	109	LITTLE BEAVER CREEK	NORTH DAKOTA BORDER	/MOUTH	-16N06E33	BEAVER CREEK	8.0	3	3	3
364	4-17-4096-000	13	LITTLE BELT CREEK	MAIN AND BALDY CREEK/MOUTH	/MOUTH	-19N06E02	BELT CREEK	21.9	3	3	3
256	4-17-4112-000	59	LITTLE BIRCH CREEK	HEADWATERS	/MOUTH	-09N05E02	BIG BIRCH CREEK	15.1	4	4	4
623	1-07-2460-001	29	LITTLE BITTERROOT RIVER	HUBBART DAM	/N BORDER INDIAN RES	-25N24W34	FLATHEAD RIVER	11.3	4	4	4
624	1-07-2460-002	29	LITTLE BITTERROOT RIVER	LITTLE BITTERROOT L /HUBBART RESERVOIR	/MOUTH	-25N24W06	FLATHEAD RIVER	24.1	4	4	4
712	2-06-3591-000	77	LITTLE BLACKFOOT RIVER	HEADWATERS	/ELLISTON	-09N07W01	CLARK FORK	30.4	3	3	3
711	2-06-3772-000	77	LITTLE BLACKFOOT RIVER	ELLISTON	/MOUTH	-09N10W24	CLARK FORK	37.2	3	3	4
AWW	2-05-4032-200	63	LITTLE BLUE CREEK	HEADWATERS	/MOUTH	-17N24W36	NINEMILE CREEK	5.2	4	5	4
AMY	3-10-4160-001	43	LITTLE BOULDER RIVER	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-05N04W10	BOULDER RIVER	6.9	3	4	3
AMZ	3-10-4160-002	43	LITTLE BOULDER RIVER	HEADWATERS	/FOREST SERVICE BNDRY	-05N04W08	BOULDER RIVER	13.8	4	4	4
750	6-15-2080-000	41	LITTLE BOXELDER CREEK	HEADWATERS	/MOUTH	-32N17E04	MILK RIVER	39.1	4	4	4
A4A	1-11-3900-000	53	LITTLE CHERRY CREEK	SOURCE	/MOUTH	-28N30W19	LIBBY CR.	4.8	4	4	4
713	2-05-4096-001	61	LITTLE JOE CREEK	N&S FORK LITTLE JOE/MOUTH	/MOUTH	-18N28W26	ST. REGIS RIVER	3.7	3	3	3
AHP	3-02-3475-001	1	LITTLE LAKE CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-04S15W33	BIG HOLE RIVER	9.3	4	4	4
AHO	3-02-3475-002	1	LITTLE LAKE CREEK	HEADWATERS	/FOREST SERVICE BNDRY	-05S16W23	BIG HOLE RIVER	8.5	4	4	4
516	3-22-3724-001	67	LITTLE MISSION CREEK	HEADWATERS	/MOUTH	-02S11E33	MISSION CREEK	6.1	2	4	2
784	7-12-0300-000	11	LITTLE MISSOURI RIVER	SOUTH DAKOTA BORDER /WYOMING BORDER	/MOUTH	-09S59E36	MISSOURI RIVER	110.1	3	4	3

A4W	1-11-3970-000	53	LITTLE NORTH FORK CREEK	SOURCE	/MOUTH	-35N29W32 BIG CR.	9.7	4	4	4
365	4-17-4208-000	45	LITTLE OTTER CREEK	NEAR UPPER END	/MOUTH	-17N08E05 OTTER CREEK	11.3	4	4	4
370	7-21-0550-000	75	LITTLE POWDER RIVER	MT-WYO. BORDER	/MOUTH	-04S32E20 POWDER RIVER	106.9	3	4	3
366	4-17-4224-001	49	LITTLE PRICKLY PEAR CREEK	CANYON CREEK	/MOUTH	-15N03W29 MISSOURI RIVER	43.0	3	3	4
367	4-17-4224-002	49	LITTLE PRICKLY PEAR CREEK	NEAR HEADWATERS	/CANYON CREEK	-12N05W09 MISSOURI RIVER	13.8	3	3	4
964	1-05-4080-001	89	LITTLE ROCK CREEK	BORDER SEC-21&28	/MOUTH	-23N27W25 LITTLE THOMPSON RIV.	5.5	4	4	4
892	5-22-3752-002	95	LITTLE ROCKY CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-04S16E28 STILLWATER RIVER	7.1	3	5	3
ABH	1-08-4220-002	29	LITTLE SALMON CR	HEADWATERS	/CHASM CR	-22N15W24 S.FK-FLATHEAD R.	16.6	3	4	3
ABG	1-08-4220-001	29	LITTLE SALMON CREEK	CHASM CR.	/MOUTH	-22N14W23 S.FK-FLATHEAD RIVER	8.7	3	4	3
AK6	3-01-4480-001	1	LITTLE SHEEP CREEK	ROAD CROSSING	/MOUTH	-13S09W15 RED ROCK RIVER	12.6	5	5	5
AK7	3-01-4480-002	89	LITTLE SHEEP CREEK	RANCH ON FS	/ROAD CROSSING	-14S09W24 RED ROCK RIVER	6.0	4	4	4
625	1-05-4112-000	89	LITTLE THOMPSON RIVER	HEADWATERS	/MOUTH	-23N27W26 THOMPSON RIVER	23.8	4	4	4
517	3-22-3770-000	67	LITTLE TRAIL CREEK	HEADWATERS	/MOUTH	-09S08E08 YELLOWSTONE RIVER	8.0	4	4	4
414	4-20-3500-001	49	LITTLE WILLOW CREEK	NEAR UPPER END	/MOUTH	-20N08W29 WILLOW CREEK	5.1	4	4	4
997	1-11-3980-000	53	LITTLE WOLF CREEK	SOURCE	/MOUTH	-29N27W03 WOLF CREEK	19.4	4	4	4
A9Q	6-15-2240-000	41	LODGE CREEK	CANADIAN BORDER	/MOUTH	-33N20E31 MILK RIVER	120.0	4	5	4
ACA	1-08-4240-001	29	LODGEPOLE CREEK	DRUMMING CREEK	/MOUTH	-27N13W10 MORRISON CREEK	6.9	2	4	2
817	5-22-3808-001	95	LODGEPOLE CREEK	LIMESTONE SPRING	/MOUTH	-04S15E29 CASTLE CREEK	2.9	3	4	3
AGL	5-22-3808-002	95	LODGEPOLE CREEK	NAT'L FOREST BOUND	/LIMESTONE SPRING	-04S15E20 CASTLE CREEK	2.4	4	4	4
175	5-22-3808-003	95	LODGEPOLE CREEK	HEADWATERS	/-FS BOUNDARY	-04S15E08 WEST FK STILLWATER R	3.2	4	5	4
A96	6-15-2280-002	5	LODGEPOLE CREEK	SOURCE	/INDIAN RESERVATION	-26N25E30 S.FORK PEOPLES CREEK	4.8	4	4	4
518	3-22-3794-000	67	LODGEPOLE CREEK (LOWER)	HEADWATERS	/MOUTH	-05N10E23 SHIELDS RIVER	3.9	4	4	4
519	3-22-3798-000	67	LODGEPOLE CREEK (UPPER)	HEADWATERS	/MOUTH	-05N11E16 SHIELDS RIVER	4.5	4	4	4
626	1-07-2500-001	29	LOGAN CREEK	TALLY LAKE	/MOUTH	-31N23W03 STILLWATER RIVER	12.4	2	2	3
627	1-07-2500-002	29	LOGAN CREEK	CYCLONE CREEK	/TALLY LAKE	-31N23W31 STILLWATER RIVER	15.1	4	4	3
A3Q	1-08-4260-000	29	LOGAN CREEK	SOURCE	/MOUTH	-28N17W35 HUNGRY HORSE RES	6.4	3	4	3
368	4-17-4304-000	13	LOGGING CREEK	IDAHO BOUNDARY	/MOUTH	-32N34W12 STAR CR.	3.2	4	4	4
714	2-03-3475-001	63	LOLO CREEK	NEAR UPPER END	/MOUTH	-16N06E22 BELT CREEK	15.1	4	4	4
AGE	7-21-0650-000	83	LOMETREE CREEK	HEADWATERS	/MOUTH	-11N20W01 BITTERROOT RIVER	45.3	2	2	3
AB3	1-08-4280-001	29	LONG CREEK	NATURAL CORRAL	/AIRPORT	-23N59E31 YELLOWSTONE RIVER	9.7	3	4	3
AKG	3-01-4560-000	1	LONG CREEK	NYE CREEK	/MOUTH	-28N15W29 M.FORK FLATHEAD R.	5.6	2	3	2
AK8	3-01-4570-001	1	LONG CREEK	SOURCE	/MOUTH	-11S08W15 SAGE CREEK	11.3	4	4	4
AGY	3-02-6400-001	93	LONG TOM CREEK	NATL FOREST BOUNDARY/MOUTH	/MOUTH	-14S04W08 RED ROCK RIVER	14.0	4	4	4
A7L	1-08-4300-000	29	LOOKOUT CREEK	FISH LAKE CREEK	/MOUTH	-01N10W08 JERRY CREEK	7.9	4	4	4
A4T	1-11-4000-000	53	LOOKOUT CREEK	SOURCE	/MOUTH	-33N20W30 BIG CR.	4.8	3	4	3
AAV	1-07-2560-000	47	LOST CREEK	N&S FORK LOST CREEK	/MOUTH	-34N30W21 SO.FK. BIG CR.	6.4	4	4	4
A14	1-07-2580-000	29	LOST CREEK	SOURCE	/WHERE FLOW GOES UNDE	-24N18W01 SWAN RIVER	2.4	3	4	3
715	2-06-3705-001	23	LOST CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-29N22W05 STILLWATER RIVER	24.1	4	4	4
716	2-06-3705-002	23	LOST CREEK	HEADWATERS	/FOREST SERVICE BNDRY-05N11W15	-06N09W32 CLARK FORK	24.1	4	4	4
							11.3	4	4	4

304	4-16-2140-001	45	LOST FK MID FK JUDITH R	BURRIS CREEK	/MOUTH	-12N11E06	MIDDLE FK JUDITH R	10.2	3	3	4
A0T	4-16-2140-002	45	LOST FORK MID FK JUDITH R	MOUTH OF WEST FORK	/BURRIS CREEK	-12N10E27	MIDDLE FORK JUDITH R	3.8	3	3	3
AF4	2-03-3500-000	81	LOST HORSE CREEK	SOURCE	/MOUTH	-04N21W11	BITTERROOT RIVER	36.0	3	3	3
925	1-08-4360-002	29	LOST JOHNNY CR	SOURCE	/FALLS	-29N19W12	S.FK.FLATHEAD R.	9.3	3	3	3
924	1-08-4360-001	29	LOST JOHNNY CREEK	FALLS	/HUNGRY HORSE RES	-29N19W01	S.FORK FLATHEAD R.	1.2	3	3	3
A64	1-08-4370-000	29	LOST MARE CREEK	SOURCE	/MOUTH	-30N18W23	HUNGRY HORSE CR	4.8	3	3	3
AVC	2-03-3525-200	63	LOST PARK CREEK	LOST PARK MEADOW	/MOUTH	-11N23W28	EAST FK. LOLO CR.	5.6	3	3	3
223	5-22-4956-195	9	LOST PICKET CREEK	HEADWATERS	/MOUTH	-09S18E25	ROCK CREEK	2.7	4	4	4
AFB	4-14-3200-000	73	LOST SHIRT CREEK	HEADWATERS	/MOUTH	-29N12W07	SO.FK.TWO MEDICINE R	3.2	3	3	3
A9K	4-17-4390-000	49	LOST STOVE CREEK	HEADWATERS	/MOUTH	-14N06E28	TENDERFOOT CREEK	2.1	4	4	4
A04	1-07-2600-000	29	LOUIS CREEK	SOURCE	/MOUTH	-33N24W18	SUNDAY CR.	4.8	4	4	4
818	5-22-3864-001	97	LOWER DEER CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-01S16E06	YELLOWSTONE RIVER	23.7	3	3	3
819	5-22-3864-002	97	LOWER DEER CREEK	HEADWATERS	/FOREST SERVICE BNDRY	-02S15E20	YELLOWSTONE RIVER	24.8	4	4	4
A61	1-08-4380-000	29	LOWER TWIN CREEK	SOURCE	/MOUTH	-26N16W25	SO.FK.FLATHEAD RIVER	16.1	3	3	3
AC2	2-06-3724-002	39	LOWER WILLOW CR	SOURCE	/WILLOW CR RES	-10N13W29	FLINT CR	8.0	3	3	3
AC3	2-06-3724-001	39	LOWER WILLOW CREEK	WILLOW CR RES	/MOUTH	-10N12W19	FLINT CREEK	11.5	3	3	3
AM1	3-10-4440-000	43	LOWLAND CREEK	HEADWATERS	/MOUTH	-06N06W30	BOULDER RIVER	16.6	4	4	4
A1C	3-17-4416-001	43	LUMP GULCH	BUFFALO CREEK	/MOUTH	-08N03W04	PRICKLY PEAR CREEK	7.9	4	4	4
A17	1-05-4272-000	89	LYNCH CREEK	SOURCE	/MOUTH	-20N26W16	CLARK FORK	17.7	4	4	4
369	4-17-4432-001	49	LYONS CREEK	NEAR HEADWATERS	/MOUTH	-14N04W28	LIT. PRICKLY PEAR CR	7.2	4	4	4
A20	1-05-4304-000	89	LYONS GULCH	SOURCE	/MOUTH	-24N30W05	VERMILION RIVER	4.8	4	4	4
AXN	3-13-3520-001	31	MADISON RIVER	YELLOWSTONE PARK	/SHEEP CREEK	-11S03E22	MISSOURI RIVER	4.0	1	1	3
520	3-13-3400-001	31	MADISON RIVER SEC. 1	GREYCLIFF ACCESS	/MOUTH	-02N02E17	MISSOURI RIVER	37.0	1	1	3
521	3-13-3400-002	31	MADISON RIVER SEC. 1	ENNIS LAKE	/GREYCLIFF ACCESS	-02S02E06	MISSOURI RIVER	20.9	1	1	3
587	3-13-3440-001	57	MADISON RIVER SEC. 2	VARNEY BRIDGE	/FENNIS LAKE	-05S01W11	MISSOURI RIVER	25.7	1	1	1
523	3-13-3440-002	57	MADISON RIVER SEC. 2	SHEEP CREEK	/VARNEY BRIDGE	-07S01W08	MISSOURI RIVER	56.3	1	1	3
203	5-22-6118-197	95	MAGNITUDE CREEK	HEADWATERS	/MOUTH	-05S15E32	STILLWATER RIVER	1.4	4	4	4
AIL	3-17-4448-001	49	MAGPIE CREEK	FOREST SERVICE BNDRY/MOUTH	/FOREST SERVICE BNDRY	-10N01W12	CANYON FERRY RESERV.	2.4	4	4	4
AIK	3-17-4448-002	49	MAGPIE CREEK	COLLINS GULCH	/MOUTH	-10N01W01	CANYON FERRY RESERV.	4.7	4	4	4
AOG	4-17-4456-000	13	MAIN CREEK	NEAR HEADWATERS	/MOUTH	-19N08E13	LITTLE BELT CREEK	3.0	3	3	3
A66	1-08-4500-000	29	MARGARET CREEK	SOURCE	/MOUTH	-30N18W22	HUNGRY HORSE CR.	6.4	3	3	3
AE5	4-14-3240-001	15	MARIAS RIVER	TIBER DAM	/MOUTH	-25N10E07	MISSOURI R	128.0	3	3	3
AE1	4-14-3280-002	101	MARIAS RIVER	CUT BANK CREEK	/TIBER RESERVOIR	-30N01E06	MISSOURI RIVER	64.4	3	3	3
ASL	1-08-4520-000	29	MARION CREEK	SOURCE	/MOUTH	-29N16W15	ESSEX CR.	3.2	3	3	3
AWX	2-05-4416-200	63	MARION CREEK	HEADWATERS	/MOUTH	-16N23W07	NINEMILE CREEK	7.6	4	4	4
ADT	2-04-3420-002	63	MARSHALL CR	HEADWATERS	/MARSHALL LK	-18N16W29	W.FK.CLEARWATER R	6.4	4	4	4
ADU	2-04-3420-001	63	MARSHALL CREEK	MARSHALL LAKE	/MOUTH	-18N16W35	W.FK.CLEARWATER RIV.	3.5	4	4	4
918	1-05-4432-000	89	MARTIN CREEK	SOURCE	/MOUTH	-25N32W32	CLARK FORK	12.6	3	3	3
AAP	1-07-2660-000	29	MARTIN CREEK	HEADWATERS	/MOUTH	-32N24W12	STILLWATER RIVER	14.2	3	3	3
AEG	2-03-3625-001	81	MARTIN CREEK	BUSH CREEK	/MOUTH	-02N17W16	MOOSE CREEK	1.6	3	3	3

A7F	1-07-2665-000	47	MARY RONAN CREEK	SOURCE	/MOUTH	-25N22W11	LAKE MARY RONAN	3-2	5	5
ACT	1-08-4580-001	29	MATHIAS CREEK	TRAIL CROSSING	/MOUTH	-34N22W34	S.FORK COAL CREEK	3-9	4	4
218	5-22-3920-000	9	MAURICE CREEK	HEADWATERS	/MOUTH	-08S20E19	ROCK CREEK	1-7	4	4
A4U	1-11-4200-000	53	MAXINE CREEK	SOURCE	/MOUTH	-34N30W09	SO.FK. BIG CR.	1-6	4	4
ACX	2-04-3495-000	77	MCDERMOTT CREEK	HEADWATERS	/MOUTH	-15N11W01	COOPERS LAKE	3-5	3	3
305	4-14-3360-000	99	MCDONALD CREEK	HEADWATERS	/MOUTH	-25N06W33	TETON RIVER	16-1	4	4
525	3-22-3930-000	67	MCDONALD SPRING CREEK	HIGHWAY 540	/MOUTH	-04S09E11	YELLOWSTONE RIVER	3-4	1	1
AVY	2-05-4500-200	61	MCFARLAND CREEK	HEADWATERS	/MOUTH	-15N25W32	QUARTZ CREEK	5-7	4	4
A2N	1-05-4576-000	89	MCGINNIS CREEK	SOURCE	/MOUTH	-22N25W08	LITTLE THOMPSON R	8-0	4	4
A7M	1-08-4640-000	29	MCGINNIS CREEK	SOURCE	/MOUTH	-32N20W27	CANYON CR.	8-0	3	3
906	1-11-4220-000	53	MCGINNIS CREEK	HEADWATERS	/MOUTH	-26N28W05	ELK CREEK	15-1	4	4
963	1-05-4608-001	29	MCGREGOR CREEK	MCGREGOR LAKE	/MOUTH	-26N26W18	THOMPSON RIVER	9-8	4	5
A4P	1-11-4240-000	53	MCGUIRE CREEK	SOURCE	/MOUTH	-34N29W23	LAKE KOOCANUSA	9-7	4	4
A6Y	1-08-4660-000	29	MCINERNIE CREEK	SOURCE	/MOUTH	-29N17W20	HUNGRY HORSE RES	4-8	3	4
936	1-05-4624-000	89	MCKAY CREEK	SOURCE	/MOUTH	-26N32W34	CLARK FORK	6-8	4	4
A15	1-07-3320-000	29	MCNAMMAMY DRAW (ONEIL CR)	SOURCE	/GOES UNDERGROUND	-29N22W29	FLATHEAD DRAINAGE	9-7	4	4
A2X	1-05-4688-000	89	MEADOW CREEK	SOURCE	/MOUTH	-24N27W13	THOMPSON RIVER	9-7	4	4
A1H	1-07-2720-000	29	MEADOW CREEK	SOURCE	/MOUTH	-29N24W10	LOGAN CR.	4-8	4	4
AAI	1-11-4300-000	53	MEADOW CREEK	NORTH&SOUTH FORKS	/MOUTH	-35N33W19	YAAK RIVER	1-6	3	4
AEW	2-04-3570-000	49	MEADOW CREEK	HEADWATERS	/MOUTH	-16N10W12	E.FK.N.FK.BLACKFT R-	6-8	4	4
AP0	3-09-3572-200	31	MEADOW CREEK	ALBINO LAKE	/MOUTH	-09S04E08	TAYLOR FORK GALL R	3-2	4	4
588	3-22-3934-000	67	MEADOW CREEK	HEADWATERS	/MOUTH	-05N09E24	SMITH CREEK(SHIELDS)	5-6	3	3
AH9	3-01-4860-002	1	MEDICINE LODGE CREEK	AYERS CANYON	/IRRIGATION DIVERSION	-10S11W08	HORSE PRAIRIE CREEK	28-2	4	4
A6S	1-11-4340-000	53	MESLER CREEK	SOURCE	/MOUTH	-35N31W24	NO. FK. BIG CR.	1-6	4	4
178	5-22-4018-000	95	MEYERS CREEK	HEADWATERS	/MOUTH	-04S15E17	LOGGEPOLE CREEK	7-2	4	4
AKA	3-01-4940-001	1	MID FORK BLACKTAIL DEER CR	NATL FOREST BOUNDARY	/MOUTH	-11S06W09	BLACKTAIL DEER CREEK	3-9	4	4
A6C	1-11-4360-000	53	MIDAS CREEK	SOURCE	/MOUTH	-28N31W31	LIBBY CR.	4-8	4	4
257	4-17-4630-000	13	MIDDLE CREEK	HEADWATERS	/MOUTH	-14N01E09	HOUND CREEK	8-0	4	4
306	4-16-2360-000	45	MIDDLE FK JUDITH RIVER	FORKS	/MOUTH	-13N11E36	JUDITH RIVER	20-6	3	4
308	4-14-3520-001	99	MIDDLE FK TETON RIVER	NEAR UPPER END	/MOUTH	-25N09W26	N FK TETON RIVER	4-2	4	4
AJJ	3-09-3762-001	31	MIDDLE FK W.FK.GALLATIN R	BIG SKY RESORT	/MOUTH	-06S03E34	W.FK. GALLATIN RIVER	4-8	4	5
871	1-05-4736-000	89	MIDDLE FK.BULL R.	SOURCE	/MOUTH	-28N33W14	BULL RIVER	8-5	3	3
307	4-14-3440-001	99	MIDDLE FORK BIRCH CREEK	MOUTH JUDY CREEK	/MOUTH	-27N10W04	SO FK BIRCH CREEK	4-3	3	4
A02	3-13-3720-201	31	MIDDLE FORK CABIN CREEK	1-3 KM UP FROM MOUTH	/MOUTH	-11S04E10	CABIN CREEK	1-3	4	4
A06	3-13-3720-202	31	MIDDLE FORK CABIN CREEK	5-2 KM UP FROM MOUTH	/MOUTH	-17N05W21	DEARBORN RIVER	16-9	4	4
370	4-17-4656-001	49	MIDDLE FORK DEARBORN RIVER	NEAR HEADWATERS	/MOUTH	-02N14W26	FISHTRAP CREEK	4-8	4	4
A65	3-02-3875-000	23	MIDDLE FORK FISHTRAP CREEK	HEADWATERS	/MOUTH	-31N19W07	FLATHEAD RIVER	22-5	1	2
628	1-08-4740-001	29	MIDDLE FORK FLATHEAD RIVER	HARRISON CR	/MOUTH	-32N18W36	FLATHEAD RIVER	40-2	1	2
629	1-08-4740-002	29	MIDDLE FORK FLATHEAD RIVER	WALTON RANGER STA	/HARRISON CREEK	-29N16W14	FLATHEAD RIVER	85-3	1	2
630	1-08-4740-003	29	MIDDLE FORK FLATHEAD RIVER	BOWL CREEK	/WALTON RANGER STA	-29N16W14	FLATHEAD RIVER	85-3	1	2

528	3-22-4074-000	67	MIDDLE FORK HORSE CREEK	HEADWATERS	/MOUTH	-03N10E19	HORSE CR. (SHIELDS)	8.8	3	4	3
ADA	2-06-4085-001	39	MIDDLE FORK ROCK CREEK	COPPER CREEK	/MOUTH	-05N15W08	ROCK CREEK	23.7	3	4	3
A12	3-17-4688-001	31	MIDDLE FORK SIXTEENMILE CR	HEADWATERS	/MOUTH	-04N05E04	SIXTEENMILE CR	4.8	3	3	4
821	5-22-4102-000	67	MIDDLE FORK SWEETGRASS CR.	HEADWATERS	/MOUTH	-04N11E16	SWEETGRASS CREEK	4.5	4	4	4
128	5-22-2002-184	97	MIDGET CREEK	HEADWATERS	/MOUTH	-04S13E23	EAST BOULDER RIVER	2.4	4	4	5
822	5-22-4144-000	95	MIDNIGHT CREEK	HEADWATERS	/MOUTH	-04S17E18	STILLWATER RIVER	9.7	4	5	4
526	3-22-4158-000	67	MILES CREEK	HEADWATERS	/MOUTH	-02N08E31	BRACKETT CREEK	11.3	3	4	3
753	6-15-2680-001	105	MILK RIVER	PORCUPINE CREEK	/MOUTH	-27N42E32	MISSOURI RIVER	13.0	1	3	1
B8A	6-15-2680-002	105	MILK RIVER	HINSDALE	/PORCUPINE CREEK	-27N42E08	MISSOURI RIVER	152.0	1	4	1
752	6-15-2720-000	105	MILK RIVER	MALTA	/HINSDALE	-31N36E32	MISSOURI RIVER	165.6	3	4	3
754	6-15-2760-001	71	MILK RIVER	HIGHWAY 2 BRIDGE	/MALTA	-30N30E18	MISSOURI RIVER	82.8	3	4	3
B01	6-15-2760-002	71	MILK RIVER	FORT BELKNAP - INDIA/HWY 2 BRIDGE	/INDIA/HWY 2 BRIDGE	-31N26E36	MISSOURI RIVER	107.8	3	4	3
755	6-15-2760-003	71	MILK RIVER	HAVRE	/FORT BELKNAP - INDIA	-32N22E19	MISSOURI RIVER	107.9	3	4	3
756	6-15-2800-000	41	MILK RIVER	FRESNO DAM	/HAVRE	-32N16E05	MISSOURI RIVER	19.3	4	4	4
751	6-15-2840-000	41	MILK RIVER	CANADIAN BORDER	/FRESNO RESERVOIR	-36N12E29	MISSOURI RIVER	43.3	4	5	4
416	4-20-3775-000	13	MILL COULEE	NEAR UPPER END	/MOUTH	-21N01W35	SUN RIVER	9.7	4	4	4
A7C	1-07-2820-000	29	MILL CREEK	SOURCE	/MOUTH	-28N20W27	FLATHEAD RIVER	4.8	3	4	3
AVD	2-03-3950-202	63	MILL CREEK	HEADWATERS	/FOREST BOUNDARY	-11N21W03	LOLO CREEK	4.8	4	4	4
AWZ	2-05-4800-200	63	MILL CREEK	HEADWATERS	/MOUTH	-14N21W04	CLARK FORK	15.2	3	3	4
717	2-06-4142-000	23	MILL CREEK	HEADWATERS	/MOUTH	-04N10W11	SILVER BOW CREEK	29.0	3	4	3
AM3	3-01-5020-001	57	MILL CREEK	FOREST SERVICE BNDRY/BN RAILROAD BRIDGE	/MOUTH	-04S05W27	RUBY RIVER	10.1	4	4	4
AM2	3-01-5020-002	57	MILL CREEK	LEGAT CREEK	/FOREST SERVICE BNDRY	-04S04W21	RUBY RIVER	6.0	4	4	4
527	3-22-4186-000	67	MILL CREEK	HEADWATERS	/MOUTH	-08S07E32	CINNABAR CREEK	6.4	4	4	4
529	3-22-4200-000	67	MILL CREEK	HEADWATERS	/MOUTH	-05N10E27	SHIELDS RIVER	9.7	4	4	4
530	3-22-4172-001	67	MILL CREEK 01	DAVIS CREEK	/MOUTH	-05S09E07	YELLOWSTONE RIVER	6.4	2	4	2
531	3-22-4172-002	67	MILL CREEK 02	LAMBERT CREEK	/DAVIS CREEK	-05S09E33	YELLOWSTONE RIVER	21.6	4	4	4
A21	1-05-4848-000	89	MILLER CREEK	SOURCE	/MOUTH	-24N29W22	VERMILION RIVER	3.2	4	4	4
A2A	1-05-4850-000	89	MILLER CREEK	SOURCE	/MOUTH	-19N26W10	COMBEST CREEK	8.0	4	4	4
A16	1-07-2860-000	29	MILLER CREEK	SOURCE	/MOUTH	-32N24W27	GOOD CR.	6.4	4	4	4
965	1-11-4420-000	53	MILLER CREEK	HEADWATERS	/MOUTH	-27N29W30	FISHER RIVER	8.0	4	5	4
AEF	2-03-3975-001	63	MILLER CREEK	DAGRET CREEK	/MOUTH	-12N20W15	BITTERROOT RIVER	8.7	4	4	4
AEM	2-03-3975-002	63	MILLER CREEK	HEADWATERS	/DAGRET CREEK	-12N19W22	BITTERROOT RIVER	12.2	3	4	3
AHN	3-02-3950-001	1	MINER CREEK	FOREST SERVICE BNDRY/MOUTH	/DAGRET CREEK	-05S15W03	BIG HOLE RIVER	9.8	3	4	3
AHM	3-02-3950-002	1	MINER CREEK	RIDGE LAKES FKS	/FOREST SERVICE BNDRY	-05S16W36	BIG HOLE RIVER	15.3	1	4	1
532	3-22-4242-001	67	MISSION CREEK 01	FOREST SERVICE BNDRY/MOUTH	/FOREST SERVICE BNDRY	-01S11E29	YELLOWSTONE RIVER	17.2	3	3	4
533	3-22-4242-002	67	MISSION CREEK 02	HEADWATERS	/FOREST SERVICE BNDRY	-03S11E05	YELLOWSTONE RIVER	6.3	4	4	4
B02	6-16-2420-001	83	MISSOURI RIVER 01	BLAIR - INDIAN RES	B/NORTH DAKOTA BORDER	-26N59E24	MISSISSIPPI RIVER	88.0	1	2	1
759	6-16-2420-002	83	MISSOURI RIVER 01	MILK RIVER	/BLAIR - INDIAN RES	-28N55E33	MISSISSIPPI RIVER	176.2	1	2	1
757	6-16-2500-000	105	MISSOURI RIVER 05	FT. PECK DAM	/MILK RIVER	-27N42E32	MISSISSIPPI RIVER	13.7	1	3	1
A0B	4-16-2520-002	5	MISSOURI RIVER 06	MARIAS RIVER	/BLAINE-CHOUTEAU CO.	-23N17E27	MISSISSIPPI RIVER	134.7	1	1	1

758	6-16-2520-001	71	MISSOURI RIVER 06	BLAINE-CHOTEAU CO. BY/FORT PECK RESERVOIR	-21N26E15	MISSISSIPPI RIVER	125.7	1	1
378	4-17-4864-000	13	MISSOURI RIVER 07	MARON DAM	-25N10E07	MISSISSIPPI RIVER	77.2	1	1
A9N	4-17-4880-001	13	MISSOURI RIVER 08	BLACK EAGLE DAM	-21N05E14	MISSISSIPPI RIVER	3.6	3	4
371	4-17-4880-002	13	MISSOURI RIVER 08	MOUTH SAND COULEE CR/SAND EAGLE DAM	-20N04E06	MISSISSIPPI RIVER	14.2	3	4
372	4-17-4880-003	13	MISSOURI RIVER 08	MOUTH OF SMITH RIVER/BLACK COULEE CREEK	-20N03E36	MISSISSIPPI RIVER	39.9	3	3
373	4-17-4880-004	13	MISSOURI RIVER 08	CASCADE BRIDGE	-19N02E09	MISSISSIPPI RIVER	42.8	2	3
374	4-17-4896-004	13	MISSOURI RIVER 09	SHEEP CREEK	-18N01W35	MISSISSIPPI RIVER	19.8	2	3
375	4-17-4896-005	13	MISSOURI RIVER 09	HOLTER DAM	-17N02W36	MISSISSIPPI RIVER	40.1	1	3
376	4-17-4912-006	49	MISSOURI RIVER 10	HAUSER DAM	-12N02W19	MISSISSIPPI RIVER	4.2	1	3
377	4-17-4912-007	49	MISSOURI RIVER 10	CANYON FERRY DAM	-10N01W04	MISSISSIPPI RIVER	1.8	1	3
AIW	3-17-4928-000	7	MISSOURI RIVER 11	TOSTON DAM	-07N02E30	MISSISSIPPI RIVER	25.6	1	3
AIW	3-17-4944-000	7	MISSOURI RIVER 12	THREE FORKS	-04N03E07	MISSISSIPPI RIVER	41.4	2	3
768	7-21-0675-000	17	MIZPAH CREEK	SAND CREEK	-06N51E24	POWDER RIVER	83.2	3	5
AVF	2-06-4210-200	63	MOCCASIN CREEK	HEADWATERS	-12N18W25	GREENOUGH CREEK	3.5	4	4
535	3-22-4270-001	67	MOL HERON CREEK 01	DEAF JIM CREEK	-08S07E24	YELLOWSTONE RIVER	8.4	1	4
534	3-22-4270-002	67	MOL HERON CREEK 02	YELLOWSTONE PARK	-09S07E03	YELLOWSTONE RIVER	4.2	4	4
077	5-22-6804-185	95	MOLLY CREEK	HEADWATERS	-06S17E31	WEST ROSEBUD CREEK	5.1	4	4
AWO	2-05-4965-200	61	MONTANA CREEK	HEADWATERS	-12N24W18	CACHE CREEK	8.0	4	4
718	2-04-3690-000	77	MONTURE CREEK	HEADWATERS	-15N13W27	BLACKFOOT RIVER	36.2	3	4
ASR	1-07-2940-000	47	MOORE CREEK	SOURCE	-22N18W25	PIPER CR.	3.4	3	4
631	1-08-4880-000	29	MOOSE CREEK	HEADWATERS	-36N21W31	N FORK FLATHEAD R	16.9	3	4
AEM	2-03-4075-000	81	MOOSE CREEK	HEADWATERS	-02N17W17	E.FK.BITTERROOT RIV.	13.8	2	3
AHV	3-02-4025-001	1	MOOSE CREEK	HOLLAND CREEK	-03S16W08	SWAMP CREEK	9.6	4	4
AGN	3-02-4050-001	93	MOOSE CREEK	F S BNDRY	-01S09W32	BIG HOLE RIVER	16.4	2	4
258	4-17-5056-000	59	MOOSE CREEK	HEADWATERS	-12N06E13	SHEEP CREEK	14.5	4	4
415	4-20-3900-001	49	MOOSE CREEK	NEAR UPPER END	-23N10W28	NO FK SUN RIVER	15.3	4	4
ACM	1-08-4920-000	29	MORAN CREEK	HEADWATERS	-34N21W02	N.FK.FLATHEAD RIVER	10.3	3	4
AVG	2-03-4125-202	63	MORMON CREEK	HEADWATERS	-11N20W08	LOLO CREEK	3.2	4	4
719	2-04-3750-001	63	MORRELL CREEK	MORRELL LAKE	-16N15W14	CLEARWATER RIVER	19.3	3	4
860	5-22-4275-001	9	MORRIS CREEK	FOREST BOUNDARY	-06S18E03	EAST ROSEBUD CREEK	9.7	3	4
057	5-22-4275-002	9	MORRIS CREEK	6600 LEVEL TOPO MAP	-06S17E26	E ROSEBUD CREEK	2.3	3	4
AB9	1-08-4940-001	29	MORRISON CREEK	PUZZLE CREEK	-27N13W08	M.FORK FLATHEAD R.	21.6	3	3
A41	1-05-4992-000	89	MOSQUITO CREEK	SOURCE	-22N30W11	NOXON RAPIDS RES.	9.7	4	4
198	5-22-4280-000	95	MOUNTAIN VIEW CREEK	HEADWATERS	-05S15E21	STILLWATER RIVER	3.0	5	5
909	1-11-4502-000	53	MUD CREEK	GLEN L IRRIGATION DI/MOUTH	-35N26W04	TERRIAULT CREEK	5.9	4	5
A2M	1-05-5024-000	89	MUDD CREEK	SOURCE	-22N27W01	LITTLE THOMPSON R	11.3	4	4
AG9	3-02-4125-000	23	MUDD CREEK	E&W FORKS MUDD CREEK/MOUTH	-01N14W27	BIG HOLE RIVER	10.5	4	4
536	3-22-4284-000	67	MUDDY CREEK	HEADWATERS	-03N08E13	FLATHEAD CREEK	11.3	4	5
A41	1-11-4540-000	53	MURPHY CREEK	SOURCE	-35N26W36	FORTINE CR.	3.2	4	4
961	1-05-5072-001	29	MURR CREEK	MURR CANYON	-25N26W08	THOMPSON RIVER	7.4	4	4

A6Z	1-08-4980-000	29	MURRAY CREEK	SOURCE	/MOUTH	-29N17W19	HUNGRY HORSE RES	4-8	3	4	3
ALJ	4-18-4320-001	69	MUSSELSHELL RIVER 01	MUSSEL.-PETRLM CO.	/MOUTH	-19N29E36	FT. PECK RESERVOIR	119-5	3	4	3
ALD	5-18-4320-002	65	MUSSELSHELL RIVER 01	CARELESS CREEK	/MUSSEL.	-12N31E33	FT. PECK RESERVOIR	221-6	4	4	4
ALE	5-18-4350-000	37	MUSSELSHELL RIVER 02	N&S FKS MUSSELSHELL	/CARELESS CREEK	-07N20E35	FT. PECK RESERVOIR	123-1	3	3	4
AHC	3-02-4150-001	1	MUSSIGBROD CREEK	HEADWATERS	/MOUTH	-01S16W34	N FORK BIG HOLE R	12-4	1	4	1
AOF	4-17-4380-000	13	N FK LITTLE BELT (BALDY) CR	HEADWATERS	/MOUTH	-19N08E22	LITTLE BELT CR	2-4	2	4	2
AKX	3-01-5210-000	1	NARROWS CREEK	HEADWATERS	/MOUTH	-13S01E29	ELK LAKE-RED ROCK R	3-5	1	4	1
A99	4-17-5160-000	13	NEEL CREEK	HEADWATERS	/MOUTH	-19N08E26	N.FK. LITTLE BELT CR.	32-0	4	5	4
A98	6-16-2650-000	55	NELSON CREEK	MIDDLE FORK CONFLUEN/MOUTH	/MOUTH	-21N43E26	MISSOURI RIVER	9-7	4	5	4
538	3-22-4305-000	67	NELSON SPRING CREEK	ORIGIN	/MOUTH	-03S09E23	YELLOWSTONE RIVER	4-0	1	3	1
A03	2-05-5120-001	61	NEMOTE CREEK	SOUTH FORK NEMOTE CR/MOUTH	/MOUTH	-15N25W16	CLARK FORK	5-8	4	4	4
A02	2-05-5120-002	61	NEMOTE CREEK	HEADWATERS	/MOUTH	-15N25W24	CLARK FORK	5-6	4	4	4
720	2-04-3900-001	77	NEVADA CREEK	NEVADA CREEK RESER-	/MOUTH	-13N17W07	BLACKFOOT RIVER	35-4	3	3	4
721	2-04-3900-002	77	NEVADA CREEK	HEADWATERS	/NEVADA CREEK RESER-	-12N09W19	BLACKFOOT RIVER	24-6	3	3	3
259	4-17-5200-001	59	NEULAN CREEK	FOREST BOUNDARY	/MOUTH	-10N05E36	SMITH RIVER	29-6	4	4	4
260	4-17-5200-002	59	NEULAN CREEK	HEADWATERS	/FOREST BOUNDARY	-11N07E16	SMITH RIVER	9-7	4	4	4
AEO	2-03-4275-000	81	NEZPERCE FK. BITTERROOT R.	HEADWATERS	/MOUTH	-01N22W25	WEST FK BITTERROOT R	20-1	4	4	4
AK1	3-01-5220-000	1	NICHOLIA CREEK	SOURCE	/MOUTH	-15S10W04	BIG SHEEP CREEK	23-8	4	4	4
A7K	1-08-5020-000	29	NICOLA CREEK	SOURCE	/MOUTH	-32N21W08	BIG CR.	6-4	4	4	4
722	2-05-5168-001	63	NINEMILE CREEK	HEADWATERS	/MOUTH	-15N22W28	CLARK FORK	39-8	3	3	4
539	3-22-4319-000	67	NIXON CREEK	HEADWATERS	/MOUTH	-02N08E31	BRACKETT CREEK	4-8	4	4	4
A33	1-11-4580-000	53	NO CREEK	SOURCE	/MOUTH	-29N31W02	CHERRY CR.	8-0	3	4	3
A3X	1-11-4600-000	53	NOGGLE CREEK	SOURCE	/MOUTH	-28N33W03	BULL LAKE	3-2	4	5	4
A7D	1-07-3060-000	29	NOISY CREEK	SOURCE	/MOUTH	-28N19W27	ECHO CR.	3-2	3	4	3
982	1-11-4645-000	53	NORTH CALLAHAN CR.	STATE LINE	/MOUTH	-31N35W24	CALLAHAN CR.	3-2	2	4	2
262	4-14-2960-002	35	NORTH FK LITTLE BADGER CR	NEAR UPPER END	/BLACKFT RES BOUNDARY	-30N12W25	TWO MEDICINE R	2-1	2	4	2
540	3-22-4354-000	67	NORTH FORK BEAR CREEK	HEADWATERS	/MOUTH	-09S09E04	BEAR CREEK	9-7	4	4	4
309	4-14-3760-001	73	NORTH FORK BIG BADGER CR	NEAR UPPER END	/MOUTH	-29N11W30	BIG BADGER CREEK	10-8	2	3	2
676	1-11-4660-000	53	NORTH FORK BIG CREEK	HEADWATERS	/MOUTH	-35N30W28	BIG CREEK	10-9	3	3	4
AH3	3-02-4275-000	1	NORTH FORK BIG HOLE RIVER	RUBY CREEK	/MOUTH	-01S15W24	BIG HOLE RIVER	17-1	1	2	1
310	4-14-3800-001	73	NORTH FORK BIRCH CREEK	CREEK LEAVES INDIAN	/SWIFT RESERVOIR	-28N10W28	BIRCH CREEK	1-0	2	4	2
802	4-14-3800-002	73	NORTH FORK BIRCH CREEK	SOURCE	/CREEK LEAVES INDIAN	-28N10W29	BIRCH CREEK	7-2	2	4	2
725	2-04-3960-001	77	NORTH FORK BLACKFOOT RIVER	FOREST SERVICE BNDRY/MOUTH	/FOREST SERVICE BNDRY	-14N12W09	BLACKFOOT RIVER	19-3	3	4	3
726	2-04-3960-002	77	NORTH FORK BLACKFOOT RIVER	HEADWATERS	/FOREST SERVICE BNDRY	-16N11W34	BLACKFOOT RIVER	42-3	3	4	3
541	3-22-4361-000	31	NORTH FORK BRACKETT CREEK	HEADWATERS	/MOUTH	-01N07E06	BRACKETT CREEK	3-6	3	3	3
870	1-05-5200-000	89	NORTH FORK BULL RIVER	HEADWATERS	/MOUTH	-28N33W14	BULL RIVER	8-0	3	3	3
632	1-07-3160-000	63	NORTH FORK COLD CREEK	HEADWATERS	/MOUTH	-21N17W20	COLD CREEK	5-3	3	3	3
760	6-16-2680-000	5	NORTH FORK COW CREEK	HEADWATERS	/MOUTH	-27N18E13	COW CREEK	8-0	4	4	4
542	3-22-4382-000	67	NORTH FORK DEEP CREEK	HEADWATERS	/MOUTH	-03S10E30	DEEP CREEK	11-3	4	4	4
417	4-14-3830-001	99	NORTH FORK DEEP CREEK	FOREST BOUNDARY	/MOUTH	-23N08W27	DEEP CREEK	8-8	3	5	3

418	4-14-3830-002	99	NORTH	FORK	DEEP CREEK	NEAR UPPER END	/FOREST BOUNDARY	-23N08W07	DEEP CREEK	3.2	3	5	3
261	4-17-5280-000	13	NORTH	FORK	DEEP CREEK	HEADWATERS	/MOUTH	-15N04E24	SMITH RIVER	7.2	2	3	2
311	4-14-3840-001	99	NORTH	FORK	DUPUYER CREEK	FOREST BOUNDARY	/MOUTH	-27N08W18	DUPUYER CREEK	5.0	4	4	4
312	4-14-3840-002	99	NORTH	FORK	DUPUYER CREEK	HEADWATERS	/FOREST BOUNDARY	-27N09W23	DUPUYER CREEK	4.8	3	4	3
537	3-22-4390-000	67	NORTH	FORK	EIGHTMILE CREEK	HEADWATERS	/MOUTHS	-04S07E34	EIGHTMILE CREEK	5.0	4	5	4
AS5	1-07-3140-000	63	NORTH	FORK	ELK CREEK	SOURCE	/MOUTH	-20N18W23	ELK CR.	6.0	3	4	3
543	3-22-4396-000	67	NORTH	FORK	ELK CREEK	HEADWATERS	/MOUTH	-04N09E33	ELK CREEK	12.9	4	4	4
A11	1-07-3150-000	29	NORTH	FORK	EVERS CREEK	SOURCE	/MOUTH	-31N24W14	EVERS CR.	4.8	4	4	4
A07	2-05-5232-001	61	NORTH	FORK	FISH CREEK	CRATER CREEK	/MOUTH	-13N25W06	FISH CREEK	16.7	3	3	3
544	3-22-4410-000	31	NORTH	FORK	FLATHEAD CREEK	HEADWATERS	/MOUTH	-03N07E29	FLATHEAD CREEK	4.0	3	4	3
633	1-08-5100-001	29	NORTH	FORK	FLATHEAD RIVER	CAMAS CREEK	/MOUTH	-31N19W07	FLATHEAD RIVER	29.0	1	2	1
634	1-08-5100-002	29	NORTH	FORK	FLATHEAD RIVER	CANADIAN BORDER	/CAMAS CREEK	-33N20W14	FLATHEAD RIVER	37.0	1	1	1
341	4-18-4560-001	27	NORTH	FORK	FLATWILLOW CR	NEAR HEADWATERS	/CONFLUENCE OF FORKS	-13N22E35	FLATWILLOW CREEK	11.2	3	4	3
ACM	2-06-4503-001	23	NORTH	FORK	FLINT CREEK	COUNTY LINE	/MOUTH	-05N13W07	GEORGETOWN LAKE	4.7	4	4	4
ACV	2-06-4503-002	23	NORTH	FORK	FLINT CREEK	SOURCE	/COUNTY LINE	-06N13W32	GEORGETOWN LAKE	6.9	4	4	4
AGG	7-21-0685-000	83	NORTH	FORK	FOX CREEK	HEADWATERS	/MOUTH	-22N58E27	FOX CREEK	22.9	3	4	3
AVH	2-03-4325-000	63	NORTH	FORK	GRANITE CREEK	HEADWATERS	/MOUTH	-11N24W11	GRANITE CREEK	5.1	3	4	3
A88	4-17-5360-000	15	NORTH	FORK	HIGHWOOD CREEK	HEADWATERS	/MOUTH	-20N09E20	HIGHWOOD CREEK	7.2	4	4	4
A4W	1-11-4670-000	53	NORTH	FORK	JACKSON CREEK	SOURCE	/MOUTH	-31N29W06	JACKSON CR.	8.0	4	4	4
988	1-11-4680-001	53	NORTH	FORK	KEELER CREEK	BRIDGE CROSSING	/MOUTH	-30N34W24	KEELER CREEK	6.7	3	4	3
723	2-05-5248-001	61	NORTH	FORK	LITTLE JOE CR.	BRIDGE OF 282	/MOUTH	-17N28W03	LITTLE JOE CREEK	9.7	4	4	4
A4Z	1-07-3200-001	47	NORTH	FORK	LOST CREEK	SECTION LINE 26-27	/MOUTH	-24N17W06	LOST CREEK	8.0	3	4	3
AAJ	1-11-4700-000	53	NORTH	FORK	MEADOW CREEK	HEADWATERS	/MOUTH	-35N33W19	MEADOW CREEK	7.4	3	4	3
962	1-05-5296-001	29	NORTH	FORK	MURR CREEK	BORDER SEC. 35336	/MOUTH	-25N26W04	MURR CREEK	4.8	4	4	4
339	4-18-4620-001	107	NORTH	FORK	MUSSELSHELL R	BAIR RES.	/MOUTH	-08N12E06	MUSSELSHELL RIVER	20.9	3	3	3
340	4-18-4620-002	59	NORTH	FORK	MUSSELSHELL R	HEADWATERS	/BAIR RES	-10N09E35	MUSSELSHELL RIVER	6.0	3	3	4
926	1-11-4720-000	53	NORTH	FORK	O'BRIAN CREEK	SOURCE	/MOUTH	-32N33W07	O'BRIAN CREEK	9.7	3	4	3
263	4-17-5440-000	53	NORTH	FORK	ROCK CREEK	NEAR HEADWATERS	/MOUTH	-13N02E30	ROCK CREEK	6.6	4	4	4
AAG	1-11-4780-000	53	NORTH	FORK	SEVENTEENMILE C	HEADWATERS	/MOUTH	-33N32W05	SEVENTEENMILE CREEK	6.4	4	4	4
380	4-17-5450-001	13	NORTH	FORK	SHEEP CREEK	NEAR FORKS	/MOUTH	-16N02W12	SHEEP CREEK	5.1	4	5	4
264	4-17-5472-001	59	NORTH	FORK	SMITH RIVER	HIGHWAY 89	/MOUTH	-09N06E21	SMITH RIVER	14.5	3	3	3
265	4-17-5472-002	59	NORTH	FORK	SMITH RIVER	NORTH FORK DAM	/MOUTH	-09N07E04	SMITH RIVER	14.3	3	4	3
266	4-17-5472-003	59	NORTH	FORK	SMITH RIVER	HEADWATERS	/NORTH FORK DAM	-10N08E09	SMITH RIVER	19.3	3	3	4
A18	3-09-4256-001	31	NORTH	FORK	SPANISH CREEK	TRAIL 446 CROSSING	/MOUTH	-04S03E11	SPANISH CREEK	8.0	4	5	4
419	4-20-4400-001	49	NORTH	FORK	SUN RIVER	NEAR UPPER END	/MOUTH	-22N10W26	SUN RIVER	42.5	2	2	4
BBC	4-14-4000-001	99	NORTH	FORK	TETON RIVER	CAVE MOUNTAIN CAMPGR	/MOUTH	-25N08W33	TETON RIVER	8.5	4	4	4
313	4-14-4000-002	99	NORTH	FORK	TETON RIVER	NEAR UPPER END	/CAVE MTN CAMPGROUND	-25N09W26	TETON RIVER	29.8	3	4	3
421	4-14-4040-001	99	NORTH	FORK	WILLOW CREEK	NEAR UPPER END	/MOUTH	-24N07W22	WILLOW CREEK	10.9	4	4	4
420	4-20-4450-001	49	NORTH	FORK	WILLOW CREEK	NEAR UPPER END	/MOUTH	-21N07W27	WILLOW CREEK	13.4	4	4	4
ANZ	3-13-4360-001	57	NORTH	MEADOW	CREEK	FOREST SERVICE BNDRY	/MOUTH	-04S01W34	ENNIS LAKE	16.3	4	4	4

AN1 3-13-4360-002	57 NORTH MEADOW CREEK	SURESHOT LAKES FORK	/FOREST SERVICE BNDRY-03S02W34	ENNIS LAKE	3-4 4 4 4
AJ2 3-10-5160-001	57 NORTH WILLOW CREEK	CATARACT CREEK	/MOUTH	WILLOW CREEK	17-4 3 4 3
ALR 3-10-5200-000	57 NORWEGIAN CREEK	FS BNDY	/MOUTH	WILLOW CREEK RESERV.	14-5 3 3 4
667 1-11-4820-001	53 O'BRIAN CREEK	N FORK O'BRIAN CREEK	/MOUTH	KOOTENAI RIVER	14-6 3 3 3
A8S 4-17-5584-000	13 O'BRIEN CREEK	HEADWATERS	/MOUTH	BELT CREEK	4-8 4 4 4
AEI 2-03-4500-000	63 O'BRIEN CREEK	HEADWATERS	/MOUTH	BITTERROOT RIVER	14-4 4 4 4
AKL 3-01-5600-001	1 O'DELL CREEK	REFUGE BOUNDARY	/FLOWER RED ROCK LAKE	RED ROCK CREEK	6-1 1 4 1
AKJ 3-01-5600-002	1 O'DELL CREEK	COUNTY ROAD	/REFUGE BOUNDARY	RED ROCK CREEK	2-9 1 4 1
AKK 3-01-5600-403	1 O'DELL CREEK	HEADWATERS	/COUNTY ROAD	RED ROCK CREEK	10-5 4 5 4
ATL 3-02-4375-201	1 O'DELL CREEK	0-6 KM UP FROM MOUTH	/MOUTH	WYMAN CREEK	6-6 1 4 1
ATM 3-02-4375-202	1 O'DELL CREEK	3-8 KM UP FROM MOUTH	/0-6 KM UP FROM MOUTH	WYMAN CREEK	3-2 1 4 1
ATN 3-02-4375-203	1 O'DELL CREEK	7-2 KM UP FROM MOUTH	/3-8 KM UP FROM MOUTH	WYMAN CREEK	3-4 1 4 1
ATO 3-02-4375-204	1 O'DELL CREEK	ODELL LAKE	/7-2 KM UP FROM MOUTH	WYMAN CREEK	1-4 3 4 3
AN2 3-13-4400-001	57 O'DELL CREEK	HIGHWAY 287 BRIDGE	/MOUTH	MADISON RIVER	2-9 3 3 3
AN3 3-13-4400-002	57 O'DELL CREEK	HEADWATERS	/HIGHWAY 287 BRIDGE	MADISON RIVER	12-9 3 3 3
A1L 1-07-3260-000	29 OETIKER CREEK	SOURCE	/MOUTH	LOGAN CR.	4-8 4 4 4
771 7-21-0700-001	79 OFALLON CREEK	HIGHWAY 12	/MOUTH	YELLOWSTONE RIVER	93-8 3 4 3
AUX 3-02-4423-000	1 OSBORNE CREEK	HEADWATERS	/MOUTH	ALDER CR (BIG HOLE)	5-3 4 4 4
381 4-17-5696-001	13 OTTER CREEK	MOUTH LIT. OTTER CR	/MOUTH	BELT CREEK	21-3 4 4 4
382 4-17-5696-002	45 OTTER CREEK	NEAR UPPER END	/MOUTH LIT. OTTER CR	BELT CREEK	17-7 3 3 4
772 7-21-0725-001	87 OTTER CREEK	BEAR CREEK	/MOUTH	TONGUE RIVER	115-1 3 5 3
AEP 2-03-4575-001	81 OVERWHICH CREEK	KYKE CREEK	/MOUTH	W.FK.BITTERROOT RIV.	9-5 4 4 4
727 2-04-4110-000	63 OWL CREEK	PLACID LAKE	/MOUTH	CLEARWATER RIVER	5-5 3 3 4
ALF 5-18-4830-002	37 PAINTED ROBE CREEK	SOURCE	/COUNTY LINE	MUSSELSHELL RIVER	21-4 4 5 4
ADD 5-22-4568-000	9 PALISADE FORK WILLOW CREEK	HEADWATERS	/MOUTH	BEAR CREEK (YELLOW)	4-8 4 4 4
545 3-22-4571-000	67 PALMER CREEK	STEEP GRADIENT	/MOUTH	M.FK.FLATHEAD R.	3-7 3 3 3
AB2 1-08-5340-002	29 PAOLA CR	RAILROAD	/RAILROAD	M.FK.FLATHEAD R.	8-8 3 3 3
ABY 1-08-5340-001	29 PAOLA CREEK	HEADWATERS	/MOUTH	KOOTENAI RIVER	15-3 4 4 4
913 1-11-4920-000	53 PARMENTER CR	HEADWATERS	/MOUTH	CASTLE CREEK	1-6 4 4 4
180 5-22-4580-000	97 PASS CREEK	HEADWATERS	/MOUTH	WISE RIVER	23-0 4 4 4
AGP 3-02-4500-000	1 PATTENGAIL CREEK	SOURCE	/MOUTH	SUNDAY CR.	3-2 4 4 4
A02 1-11-4950-000	29 PAUL CREEK	SOURCE	/MOUTH	BIG SALMON RIVER	3-2 3 4 3
A55 1-08-5440-000	63 PENDANT CREEK	HEADWATERS	/COUNTY ROAD	MILK RIVER	28-3 4 4 4
763 6-15-3240-002	5 PEOPLES CREEK	PETE CREEK CABIN	/MOUTH	YAAK RIVER	14-7 3 4 3
AAM 1-11-5040-000	53 PETE CREEK	GULLY ON APPLGATE R	/MOUTH	CLARK FORK	9-7 4 5 4
AB1 2-06-4845-001	77 PETERSON CREEK	HEADWATERS	/GULLY ON APPLGATE R	CLARK FORK	9-6 4 5 4
ABH 2-06-4845-002	77 PETERSON CREEK	SOURCE	/MOUTH	CLARK FORK	18-2 3 4 3
AC4 2-05-5552-000	63 PETTY CREEK	HEADWATERS	/FS BOUNDARY	CASTLE CREEK	11-2 4 4 4
182 5-22-4648-001	97 PICKET PIN CREEK	SOURCE	/MOUTH	CLARK FORK	13-4 4 4 4
950 1-05-5584-000	89 PILGRIM CREEK				

383	4-17-5888-000	13	PILGRIM CREEK	/MOUTH	-16N06E26	BELT CREEK	12.7	2	4	2
A8R	4-17-8384-000	13	PINE COULEE	/MOUTH	-15N02E31	HOUND CR	4.8	4	5	4
AW7	2-05-5600-200	63	PINE CREEK	/MOUTH	-16N23W06	NINEMILE CREEK	6.6	4	4	4
AWG	3-02-4525-001	1	PINE CREEK	/MOUTH	-07S14W08	ANDRUS CREEK	6.3	4	4	4
548	3-22-4663-001	67	PINE CREEK (WEST)	/MOUTH	-04S08E11	TRAIL CREEK	5.8	3	5	3
546	3-22-4662-001	67	PINE CREEK 01	/MOUTH	-04S09E11	YELLOWSTONE RIVER	4.8	4	4	4
547	3-22-4662-002	67	PINE CREEK 02	/MOUTH	FOREST SERVICE BNDRY/MOUTH	YELLOWSTONE RIVER	6.1	4	4	4
677	1-11-5140-001	53	PINKHAM CREEK	/MOUTH	SOUTH FORK PINE CR. /FOREST SERVICE BNDRY	04S10E07 KOOTENAI RIVER	9.7	3	3	3
678	1-11-5140-002	53	PINKHAM CREEK	/FALLS (6 MI)	HEADWATERS	-36N28W32 KOOTENAI RIVER	24.1	4	4	4
AHA	3-02-4550-001	23	PINTLAR CREEK	/MOUTH	-01S14W08	BIG HOLE RIVER	8.5	4	4	4
AJU	3-02-4550-002	1	PINTLAR CREEK	/FOREST SERVICE BNDRY	-01N15W26	BIG HOLE RIVER	17.2	4	4	4
AJR	3-02-4575-000	1	PIONEER CREEK	/MOUTH	-03S18W25	RUBY CREEK(BIGHOLE)	17.8	4	4	4
635	1-11-5160-001	53	PIPE CREEK	/MOUTH	-31N31W30	KOOTENAI RIVER	25.3	3	3	3
636	1-11-5160-002	53	PIPE CREEK	/MOUTH	-32N31W14	KOOTENAI RIVER	18.7	3	4	3
637	1-07-3440-001	47	PIPER CREEK	/MOUTH	-22N17W08	SWAN RIVER	14.6	3	3	3
728	2-04-4230-001	63	PLACID CREEK	/MOUTH	-16N15W28	OWL CREEK	13.8	3	4	4
AVJ	2-03-4750-200	63	PLANT CREEK	/MOUTH	-11N18W07	MILLER CREEK	3.3	4	4	4
966	1-11-5200-001	53	PLEASANT VALLEY FISHER R.	/MOUTH	-27N28W23	FISHER RIVER	19.3	4	4	4
A09	1-07-3480-000	29	PLUME CREEK	/MOUTH	-31N25W17	GOOD CR.	6.4	4	4	4
A86	4-17-5904-000	15	POHLOD CREEK	/MOUTH	-19N09E04	HIGHWOOD CR	3.0	4	4	4
AJ5	3-01-9320-000	1	POINDEXTER SLOUGH	/MOUTH	-07S09W26	BEAVERHEAD RIVER	8.0	2	2	3
AAX	1-07-3500-001	47	PONY CREEK	/MOUTH	-22N17W33	SWAN RIVER	6.3	3	4	3
A38	1-11-5240-000	53	POORMAN CREEK	/MOUTH	-28N31W25	LIBBY CR.	8.0	4	4	4
AFP	2-04-4260-001	49	POORMAN CREEK	/MOUTH	-14N09W25	BLACKFOOT RIVER	9.3	3	3	3
AFT	2-04-4260-002	49	POORMAN CREEK	/FIELDS GULCH	-13N08W08	BLACKFOOT R	10.8	3	4	3
A76	6-16-2820-002	85	POPLAR RIVER 01	EAST FORK CONFLUENCE/INDIAN RESERVATION	B-33N48E12	MISSOURI RIVER	30.0	3	4	3
A78	6-16-2375-000	19	POPLAR RIVER 02	AT INTERNATIONAL BOU/AT EAST FORK CONFLUENCE	-36N48E33	MISSOURI RIVER	48.0	3	4	3
A63	1-07-3520-000	47	PORCUPINE CREEK	HEADWATERS	-25N18W34	SWAN RIVER	8.4	4	4	4
AJL	3-09-4598-001	31	PORCUPINE CREEK	N FK PORCUPINE CR	-07S04E16	GALLATIN RIVER	8.0	4	4	4
549	3-22-4746-001	67	PORCUPINE CREEK	3MI BELOW FS BNDRY	-04N09E21	SHIELDS RIVER	9.3	4	4	4
A78	6-15-3255-000	105	PORCUPINE CREEK	CONFLUENCE WEST & MI/MOUTH	-27N42E05	MILK RIVER	64.0	4	5	4
550	3-22-4760-000	67	POTTER CREEK	HEADWATERS	-03N08E01	COTTONWOOD CREEK	20.9	4	5	4
773	7-21-0750-000	79	POWDER RIVER	MT-MYO BORDER	-11N50E04	YELLOWSTONE RIVER	350.0	2	4	2
823	5-22-4774-000	9	POWERS CREEK	HEADWATERS	-06S20E31	EAST RED LODGE CREEK	8.9	4	4	4
BAD	6-16-2880-000	55	PRARIE ELK CREEK	EAST FK CONFLUENCE	-26N45E13	MISSOURI RIVER	52.8	4	5	4
AIE	3-17-6032-003	49	PRICKLY PEAR CR.	HEADWTRS	-08N03W09	LAKE HELENA	29.3	3	3	4
BQL	3-17-6032-001	49	PRICKLY PEAR CREEK	COUNTY RD CROSSING	-11N03W26	LAKE HELENA	11.7	4	4	4
AIF	3-17-6032-002	49	PRICKLY PEAR CREEK	CLANCY CR.	-10N03W25	LAKE HELENA	21.8	3	4	4

948	1-05-5648-000	89	PROSPECT CREEK	SOURCE	-21N29W07	CLARK FORK	27.5	4	4	4
824	5-22-4802-001	111	PRYOR CREEK	CROW INDIAN RESERVAT/MOUTH	-02N27E25	YELLOWSTONE RIVER	12.0	4	5	4
774	7-21-0800-001	17	PUMPKIN CREEK	TONGUE R. ROAD BRIDGE/MOUTH	-06N48E29	TONGUE RIVER	.7	3	4	3
869	7-21-0800-002	17	PUMPKIN CREEK	FIRST CREEK	-06N48E29	TONGUE RIVER	26.6	3	4	3
A50	1-08-5620-000	29	PUZZLE CREEK	SOURCE	-28N13W03	MORRISON CR.	6.4	3	4	3
225	5-22-4956-193	9	QUAD CREEK	HEADWATERS	-09S19E18	ROCK CREEK	4.3	4	4	5
977	1-11-5320-001	53	QUARTZ CREEK	HENNESSY CR.	-31N32W24	KOOTENAI RIVER	14.7	3	4	3
A97	1-08-5660-000	29	QUINTONKON CREEK	SOURCE	-26N17W11	SULLIVAN CREEK	15.0	2	3	2
730	2-06-5073-001	77	RACETRACK CREEK	RAILROAD BRIDGE	-06N09W08	CLARK FORK	1.5	2	2	4
A21	1-05-5760-000	89	RADIO CREEK	SOURCE	-24N28W15	FISHTRAP CR	4.8	4	4	4
314	4-14-4520-001	35	RAILROAD CREEK	GLACIER PARK BDRY	-31N13W36	TWO MEDICINE RIVER	3.1	4	4	4
A39	1-11-5400-000	53	RAMSEY CREEK	SOURCE	-28N31W36	LIBBY CR.	8.0	4	4	4
AD6	2-06-5111-001	39	RANCH CREEK	SOURCE	-10N17W36	ROCK CREEK	15.4	3	4	3
A68	1-08-3600-000	29	RAND CREEK	SOURCE	-28N24W02	ASHLEY LAKE	6.4	4	5	4
ADR	2-05-5792-001	61	RANDOLF CREEK	INTERSECT. TRAIL 7709/MOUTH	-19N31W07	ST. REGIS RIVER	3.5	4	4	4
226	5-22-4956-192	9	RATINE CREEK	HEADWATERS	-08S19E36	ROCK CREEK	2.6	4	4	4
731	2-06-5149-000	63	RATTLESNAKE CREEK	HEADWATERS	-13N19W22	CLARK FORK	32.5	3	3	3
AKF	3-01-6120-002	1	RATTLESNAKE CREEK	MCMAHANS CREEK	-07S09W32	BEAVERHEAD RIVER	29.9	3	3	4
ARL	3-13-4720-000	31	RED CANYON CREEK	3.7 KM ABOVE USFS BO/USFS BOUNDARY	-12S04E02	HEBGEN LAKE	3.7	4	4	4
826	5-22-4886-001	9	RED LODGE CREEK	COONEY RESERVOIR	-04S21E24	ROCK CREEK	15.8	4	4	4
825	5-22-4886-002	9	RED LODGE CREEK	EBW RED LODGE CREEK	-04S20E34	ROCK CREEK	16.6	4	4	4
ACE	1-08-5760-001	29	RED MEADOW CREEK	LINK LAKE FORK	-35N21W08	N. FORK FLATHEAD R.	19.8	2	4	2
BBM	3-01-6180-001	1	RED ROCK CREEK	UPPER RED ROCK LAKE	-14S02W05	RED ROCK RIVER	11.5	4	4	4
AH6	3-01-6180-002	1	RED ROCK CREEK	HELLROARING CR. ORIG/UPPER RED ROCK LAKE	-14S01W14	BEAVERHEAD RIVER	11.2	1	3	1
BBP	3-01-6180-003	1	RED ROCK CREEK	SOURCE	-14S01E14	RED ROCK RIVER	3.8	4	4	4
AN5	3-10-6040-000	43	RED ROCK CREEK	SOURCE	-06N06W23	BOULDER RIVER	14.5	4	4	4
AJ0	3-01-6140-001	1	RED ROCK RIVER 01	BIG SHEEP CREEK	-10S10W29	CLARK CANYON RESERV.	30.4	2	2	3
AJ1	3-01-6140-002	1	RED ROCK RIVER 01	LIMA RESERVOIR	-13S09W10	BEAVERHEAD RIVER	34.0	3	3	4
ALV	3-01-6160-000	1	RED ROCK RIVER 02	LOWER RED ROCK LAKE	-14S05W01	BEAVERHEAD RIVER	41.0	4	4	4
AFH	4-20-4950-000	49	RED SHALE CREEK	HEADWATERS	-23N10W06	ROCK CREEK	3.2	4	4	4
764	6-16-2940-001	55	REDWATER RIVER	WOLF CREEK	-27N50E25	MISSOURI RIVER	51.0	4	5	4
765	6-16-2940-002	55	REDWATER RIVER	LISK CREEK	-24N50E01	MISSOURI RIVER	77.2	3	5	3
A1V	1-07-3680-000	29	REID CREEK	SOURCE	-30N24W03	LOGAN CR.	4.8	4	4	4
AN4	3-09-4788-000	31	REY CREEK (RAE)	HEADWATERS	-02N02E21	GALLATIN RIVER	27.5	4	4	4
940	1-08-5860-000	29	RIVERSIDE CREEK	SOURCE	-29N17W07	S. FORK FLATHEAD R.	4.8	2	2	3
ASC	1-08-5880-000	29	ROARING CREEK	SOURCE	-27N13W35	SCHAFFER CR.	6.4	3	4	3
A4R	1-11-5540-000	53	ROBERTS CREEK	SOURCE	-35N30W28	NO. FK. BIG CR.	4.8	4	4	4
A08	1-07-3725-000	29	ROBERTSON CREEK	SOURCE	-31N25W18	GOOD CR.	4.8	4	4	4
937	1-05-5920-000	89	ROCK CREEK	ROCK L	-26N32W29	CLARK FORK	13.0	3	3	4
ADK	2-04-4500-000	77	ROCK CREEK	HEADWATERS	-14N11W06	N. FK. BLACKFOOT RIVER	15.6	4	4	4

AXB	2-05-5936-200	63	ROCK CREEK
733	2-06-5263-000	63	ROCK CREEK
732	2-06-5282-000	39	ROCK CREEK
AIB	3-02-4900-001	1	ROCK CREEK
554	3-02-4925-001	1	ROCK CREEK
554	3-02-4984-001	67	ROCK CREEK
315	4-16-3040-002	27	ROCK CREEK
267	4-17-6224-000	59	ROCK CREEK
422	4-20-5100-000	49	ROCK CREEK
827	5-22-4928-000	9	ROCK CREEK
829	5-22-4942-002	9	ROCK CREEK
83H	5-22-4942-003	9	ROCK CREEK
A9S	6-15-3340-000	105	ROCK CREEK
BA1	6-16-3042-001	71	ROCK CREEK
551	3-22-4998-001	67	ROCK CREEK 01
552	3-22-4998-002	67	ROCK CREEK 02
828	5-22-4942-001	9	ROCK CREEK 02
553	3-22-4998-003	67	ROCK CREEK 03
830	5-22-4956-000	9	ROCK CREEK SEC 3
AMV	3-09-4938-000	31	ROCKY CREEK
423	4-20-5150-000	49	ROSE CREEK
893	5-22-5026-000	95	ROSEBUD CREEK
783	7-22-5028-001	87	ROSEBUD CREEK
BOY	7-22-5028-003	87	ROSEBUD CREEK
A3W	1-11-6280-001	53	ROSS CREEK
B3F	1-11-6280-002	53	ROSS CREEK
AC8	2-06-5320-001	39	ROSS FORK ROCK CREEK
975	1-11-5660-002	53	RUBY CR.
974	1-11-5660-001	53	RUBY CREEK
AJQ	3-02-5000-002	1	RUBY CREEK
AN6	3-13-4840-001	57	RUBY CREEK
AM4	3-01-6360-001	57	RUBY RIVER
AN7	3-01-6380-002	57	RUBY RIVER
AN8	3-01-6380-003	57	RUBY RIVER
AM5	3-01-6380-004	57	RUBY RIVER
AN9	3-01-6380-005	57	RUBY RIVER
A9F	4-17-6372-000	59	RUGBY CREEK
AB8	1-07-3760-001	63	RUMBLE CREEK
316	4-16-3160-001	45	RUNNING WOLF CREEK
AOS	4-16-3160-002	45	RUNNING WOLF CREEK

HEADWATERS	/MOUTH	-14N21W14	CLARK FORK	16.0	4	4	4
HOGBACK CREEK	/MOUTH	-11N17W12	CLARK FORK	47.0	1	1	3
FORKS OF ROCK CREEK	/HOGBACK CREEK	-08N17W35	CLARK FORK	33.3	1	1	3
BROWNS LAKE	/MOUTH	-03S09W34	BIG HOLE RIVER	10.5	4	5	4
FOREST SERVICE BNDRY/MOUTH	/MOUTH	-03S15W08	BIG HOLE RIVER	20.9	1	4	1
*3 MI. ABOVE GALLATI/MOUTH	/MOUTH	-07S07E19	YELLOWSTONE RIVER	12.5	4	4	2
1 MI BELOW FS BDRY	/ROAD CROSSING	-13N17E16	JUDITH RIVER	6.0	4	4	4
NEAR HEADWATERS	/MOUTH	-13N04E19	SMITH RIVER	31.4	3	3	4
2 MILES ABOVE MOUTH	/MOUTH	-23N10W08	NO FK SUN RIVER	3.2	4	4	4
BOYD	/MOUTH	-03S23E36	CLARKS FORK YELL. R.	27.8	4	4	4
RED LODGE	/ROBERTS	-05S21E32	CLARKS FORK YELL. R.	21.1	2	2	4
WEST FORK ROCK CREEK/RED LODGE	/MOUTH	-07S20E27	CLARKS FORK YELL. R.	4.8	2	2	4
CANADIAN BORDER	/MOUTH AT MILK RIVER	-31N36E29	MILK RIVER	120.0	3	4	3
1 MI ABOVE MOUTH	/MOUTH	-22N25E22	MISSOURI RIVER	1.6	4	4	4
ROCK CREEK CEMETERY	/MOUTH	-01N09E11	SHIELDS RIVER	7.2	4	5	4
FOREST SERVICE BNDRY/ROCK CREEK	/BOYD	-02N10E29	SHIELDS RIVER	11.6	3	4	3
ROBERTS	/FOREST SERVICE BNDRY	-04S21E25	CLARKS FORK YELL. R.	13.7	3	3	4
SMELLER CREEK	/FOREST SERVICE BNDRY	-02N11E03	SHIELDS RIVER	3.7	3	4	3
STATE LINE	/WEST FORK ROCK CREEK	-08S20E04	CLARKS FORK YELL. R.	27.4	3	4	3
HEADWATERS-JACKSON+T/MOUTH	/MOUTH	-02S06E10	EAST GALLATIN RIVER	15.5	3	3	4
NEAR UPPER END	/MOUTH	-21N08W26	BARR CREEK	6.4	3	3	4
ESW ROSEBUD CRKS.	/MOUTH	-03S19E31	STILLWATER RIVER	6.0	2	2	4
CREEK ENTERS RESERVA/MOUTH	/MOUTH	-06N42E16	YELLOWSTONE RIVER	153.0	3	4	3
N & S FORKS ROSEBUD	/INDIAN RESERVATION	B-05S39E05	YELLOWSTONE RIVER	76.5	3	5	3
FALLS	/MOUTH	-28N33W04	BULL LAKE	4.0	4	4	4
SOUTH FORK	/FALLS	-28N33W07	BULL LAKE	7.2	3	4	3
ELK CREEK	/MOUTH	-06N15W31	ROCK CREEK	13.2	3	4	3
BORDER SEC 31	/FALLS	-32N34W31	KOOTENAI RIVER	1.6	4	4	4
FALLS	/MOUTH	-32N34W22	KOOTENAI RIVER	4.8	3	4	3
HEADWATERS	/BUTLER CREEK	-02S17W35	SOUTH FORK TRAIL CR.	17.9	3	3	4
1 MI ABOVE BEARTRAP C/MOUTH	/MOUTH	-09S01W12	MADISON RIVER	10.6	2	2	4
RUBY RESERVOIR	/MOUTH	-04S06W04	BEAVERHEAD RIVER	53.9	2	2	4
NATL FOREST BOUNDARY/RUBY RESERVOIR	/MOUTH	-07S04W30	BEAVERHEAD RIVER	55.3	3	3	3
WARM SPRING CREEK	/NAIL FOREST BOUNDARY	-09S03W18	BEAVERHEAD RIVER	9.7	4	4	4
THREE FORKS RUBY R.	/WARM SPRING CREEK	-09S03W21	BEAVERHEAD RIVER	15.1	4	4	4
COAL CREEK	/THREE FORKS RUBY R	-11S03W05	BEAVERHEAD RIVER	11.3	4	4	4
HEADWATERS	/MOUTH	-14N05E24	TENDERFOOT CREEK	4.0	3	4	3
SOUTH FORK RUMBLE CR/MOUTH	/MOUTH	-20N17W12	SWAN RIVER	4.8	3	4	3
FOREST SERVICE BOUND/HIGHWAY 87 BRIDGE	/MOUTH	-16N12E07	WOLF CREEK	18.9	3	3	3
MOUTH OF SOUTH FORK	/FOREST BOUNDARY	-14N11E05	WOLF CREEK	2.3	3	4	3

A0X	1-07-3780-000	53	RUSKY CREEK	SOURCE	/MOUTH	-35N24W21	STILLWATER R.	3.2	4	4	4
A01	4-16-3180-000	45	RUSSIAN CREEK	NEAR HEADWATERS	/MOUTH	-11N10E14	SOUTH FORK JUDITH R	4.8	3	4	3
A61	1-08-6020-000	29	RYLE CREEK	SOURCE	/MOUTH	-29N17W06	TROUT CR.	4.8	3	4	3
192	5-22-5105-001	97	SADERBALM CREEK	1 MI ABOVE MOUTH	/MOUTH	-05S14E22	WEST FK STILLWATER R	1.6	4	4	4
AK2	3-01-6420-001	1	SAGE CREEK	CROOKED CREEK	/MOUTH	-12S09W20	RED ROCK RIVER	38.6	4	4	4
832	5-22-5110-003	9	SAGE CREEK	HEADWATERS	/CROW	-07S26E19	BIGHORN RIVER	6.9	4	4	4
A92	6-15-3360-001	41	SAGE CREEK	HWY US 2 CROSSING	/MOUTH	-30N13E13	BIG SANDY CREEK	72.0	4	5	4
BAQ	4-16-3241-001	27	SAND CREEK	1 MI ABOVE MOUTH	/MOUTH	-21N25E09	MISSOURI RIVER	11.3	4	4	4
BAC	6-16-3230-000	55	SAND CREEK	EAST AND WEST FORK	C/MOUTH	-26N46E01	MISSOURI RIVER	24.0	4	5	4
BAL	3-02-5126-000	57	SANDY HOLLOW CREEK	SOURCE	/MOUTH	-04S08W35	BIG HOLE RIVER	8.0	1	4	1
A1W	1-07-3820-000	29	SANKO CREEK	SOURCE	/MOUTH	-31N24W27	LOGAN CR.	4.8	4	4	4
ALQ	7-21-0895-001	103	SARPY CREEK	RESERVATION BNDRY	/MOUTH	-06N37E04	YELLOWSTONE RIVER	84.2	2	4	2
AOS	2-05-6096-001	61	SAVENAC CREEK	E-COEUR D'ALENE MINE	/MOUTH	-19N30W26	ST-REGIS RIVER	4.7	4	4	4
AVR	2-06-5548-200	39	SAWMILL CREEK	HEADWATERS	/MOUTH	-10N16W19	ROCK CREEK	5.3	3	4	3
A8W	4-17-6445-000	59	SAWMILL CREEK	HEADWATERS	/MOUTH	-11N08E27	N FK SMITH R	5.5	4	4	4
ASA	1-08-6120-000	29	SCALP CREEK	SOURCE	/MOUTH	-26N11W29	BOWL CR.	4.0	3	4	3
ACC	1-08-6160-001	29	SCHAFER CREEK	CAPITOL CREEK	/MOUTH	-27N13W26	M-FORK FLATHEAD R.	7.4	3	3	3
ADJ	2-06-5605-000	63	SCHWARTZ CREEK	HEADWATERS	/MOUTH	-12N17W34	CLARK FORK	5.6	4	4	4
317	4-14-4920-000	73	SCOFFIN CREEK	HEADWATERS	/MOUTH	-28N08W32	DUPUYER CREEK	11.3	3	3	3
589	3-22-5180-000	67	SCOFIELD CREEK	HEADWATERS	/MOUTH	-05N11E16	SHIELDS RIVER	3.9	4	4	4
AD1	2-05-6160-001	61	SECOND CREEK	TRAIL 7897 CROSSING	/MOUTH	-16N25W29	CLARK FORK	5.1	4	4	4
229	5-22-5208-000	9	SEELY CREEK	HEADWATERS	/MOUTH	-08S20E30	ROCK CREEK	2.4	4	4	4
AH8	3-01-6660-001	1	SELWAY CREEK	SHORT CREEK	/MOUTH	-09S15W03	BLOODY DICK CREEK	7.1	4	4	4
A2Q	1-05-6176-000	89	SEMEN CREEK	SOURCE	/MOUTH	-24N27W01	THOMPSON RIVER	9.7	4	4	4
A68	1-08-6260-000	29	SERGEANT CREEK	SOURCE	/MOUTH	-25N14W16	SPOTTED BEAR RIVER	4.8	3	4	3
555	3-22-5222-000	67	SERRETT CREEK	HEADWATERS	/MOUTH	-05N10E22	SHIELDS RIVER	3.2	4	4	4
235	4-17-6512-000	49	SEVEN MILE CREEK	MOUTH PARK CREEK	/MOUTH	-10N04W13	TEN MILE CREEK	8.7	4	4	4
BAT	6-16-3365-001	71	SEVEN MILE CREEK	1 MI ABOVE MOUTH	/MOUTH	-21N26E01	FT. PECK RESERVOIR	1.6	4	4	4
AAF	1-11-5800-000	53	SEVENTEENMILE CREEK	HEADWATERS	/MOUTH	-34N33W27	YAAK RIVER	18.3	3	4	3
AG1	3-02-5300-001	23	SEYMOUR CREEK	ARCOLA BOY SCOUT CAM	/MOUTH	-02N12W31	BIG HOLE RIVER	12.9	4	4	4
A54	1-08-6280-000	77	SHAW CREEK	SOURCE	/MOUTH	-19N14W07	GORDON CR.	5.6	3	4	3
A8T	4-17-6528-000	15	SHAW CREEK	HEADWATERS	/MOUTH	-20N08E16	HIGHWOOD CR	4.8	4	5	4
A5J	1-08-6300-000	29	SHEEP CREEK	SOURCE	/MOUTH	-29N16W24	MID. FK. FLATHEAD R.	9.7	3	4	3
318	4-14-5000-001	73	SHEEP CREEK	FOREST BOUNDARY	/MOUTH	-28N07W11	DUPUYER CREEK	34.3	3	3	4
268	4-17-6544-001	59	SHEEP CREEK	JUMPING CREEK	/MOUTH	-12N04E14	SMITH RIVER	43.6	3	3	4
269	4-17-6544-002	59	SHEEP CREEK	HEADWATERS	/JUMPING	-12N07E36	SMITH RIVER	12.9	3	3	4
385	4-17-6576-000	13	SHEEP CREEK	FORKS	/MOUTH	-17N02W36	MISSOURI RIVER	3.2	3	3	4
AAT	1-07-3900-001	29	SHEPPARD CREEK	SYLVIA L. TRAIL CRSS	/MOUTH	-30N24W08	ROCK CREEK	13.4	3	4	3
231	5-22-5376-000	9	SHERIDAN CREEK	HEADWATERS	/MOUTH	-08S20E30	ROCK CREEK	1.7	4	4	4
556	3-22-5334-001	67	SHIELDS RIVER	CLYDE PARK	/MOUTH	-01S10E26	YELLOWSTONE RIVER	25.4	1	3	1

557	3-22-5348-002	67	SHIELDS RIVER 02	WILSALL	/CLYDE PARK	-02N09E33	YELLOWSTONE RIVER	21.6	2	3	2
558	3-22-5362-003	67	SHIELDS RIVER 03	HEADWATERS	/WILSALL	-03N09E19	YELLOWSTONE RIVER	45.9	3	4	3
AJ4	3-01-6840-000	1	SHINEBERGER CREEK	HEADWATERS	/MOUTH	-15S07W02	BEAVER CREEK	8.9	4	4	4
384	4-17-6456-001	15	SHONKIN CREEK	FOREST BOUNDARY	/TOWN OF SHONKIN	-22N09E33	MISSOURI RIVER	19.3	3	3	3
ACR	1-08-6320-001	29	SHORTY CREEK	S. FORK SHORTY CREEK	/MOUTH	-36N23W29	WHALE CREEK	3.7	3	4	3
097	5-22-5390-000	97	SHORTY CREEK & CRYSTAL SP.	HEADWATERS	/MOUTH	-05S12E01	BOULDER RIVER	3.4	4	4	4
A2R	1-03-6304-000	89	SHRODER CREEK	SOURCE	/MOUTH	-25N26W18	THOMPSON RIVER	9.7	4	4	4
A2E	4-14-5080-000	73	SIDNEY CREEK	HEADWATERS	/MOUTH	-29N12W17	SO. FK. TWO MEDICINE R	3.2	3	4	3
639	1-11-5979-000	53	SILVER BUTTE CREEK	HEADWATERS	/MOUTH	-26N29W30	EAST FISHER CREEK	12.6	4	4	4
ADQ	2-05-6336-000	61	SILVER CREEK	HEADWATERS	/MOUTH	-19N31W14	ST. REGIS RIVER	6.4	4	4	4
386	4-17-6704-000	49	SILVER CREEK	HEADWATERS	/NEAR SILVER CITY	-11N05W01	MISSOURI RIVER	3.4	4	5	4
197	5-22-5411-000	95	SILVER CREEK	BELOW MARYSVILLE	/AT MOUTH	-05S15E15	STILLWATER RIVER	1.6	3	4	3
A6C	1-08-6360-000	29	SILVERTIP CREEK	SOURCE	/MOUTH	-25N13W16	SPOTTED BEAR RIVER	16.1	3	4	3
AA6	1-07-3920-000	63	SIMPSON CREEK	HEADWATERS	/MOUTH	-21N17W11	CONDON CREEK	4.5	4	4	4
A1U	1-07-3940-000	29	SINCLAIR CREEK	SOURCE	/MOUTH	-30N24W07	SHEPPARD CR.	3.2	4	4	4
559	3-22-5502-001	67	SIXMILE CREEK 01	GOLD RUN CREEK	/MOUTH	-06S08E08	YELLOWSTONE RIVER	4.8	4	5	4
560	3-22-5502-002	67	SIXMILE CREEK 02	FOREST SERVICE BNDRY/GOLDRUN CREEK	/MOUTH	-06S08E21	YELLOWSTONE RIVER	3.4	4	4	4
561	3-22-5502-003	67	SIXMILE CREEK 03	BIG PINE CREEK	/FOREST SERVICE BNDRY	-07S08E05	YELLOWSTONE RIVER	4.7	4	4	4
A13	3-17-6736-001	31	SIXTEENMILE CREEK	MAUDLOW	/MOUTH	-04N03E18	MISSOURI RIVER	23.2	3	3	3
A12	3-17-6736-002	31	SIXTEENMILE CREEK	SIXTEEN	/MAUDLOW	-04N04E13	MISSOURI RIVER	22.5	2	3	3
A11	3-17-6736-003	31	SIXTEENMILE CREEK	HIGGINS RESERVOIR	/SIXTEEN	-05N06E05	MISSOURI RIVER	21.8	3	3	4
A10	3-17-6736-004	31	SIXTEENMILE CREEK	HEADWATERS	/HIGGINS RESERVOIR	-06N08E08	MISSOURI RIVER	31.9	4	4	4
734	2-03-5475-001	81	SKALKAKO CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-05N21W01	BITTERROOT RIVER	12.9	4	4	4
735	2-03-5475-002	81	SKALKAKO CREEK	HEADWATERS	/FOREST SERVICE BNDRY	-05N19W29	BITTERROOT RIVER	22.5	3	3	4
ACJ	1-08-6400-001	29	SKOOKOLEEL CR.	BORDER SEC. 10&4	/MOUTH	-32N21W05	BIG CREEK	4.8	3	4	3
562	3-22-5516-000	31	SKUNK CREEK	HEADWATERS	/MOUTH	-01N07E02	BRACKETT CREEK	4.8	4	4	4
AL6	3-23-5550-000	81	SLEEPING CHILD CREEK	HEADWATERS	/MOUTH	-05N21W25	BITTERROOT RIVER	31.4	3	4	3
A2U	1-03-6416-000	53	SLIMMER CREEK	SOURCE	/MOUTH	-26N27W10	MIDDLE THOMPSON LAKE	3.2	4	5	4
BA7	6-16-3470-501	71	SLIPPERY ANN CREEK	7 MI ABOVE MOUTH	/MOUTH	-22N25E32	MISSOURI RIVER	11.3	4	4	4
B33	5-22-5586-001	67	SLOUGH CREEK	WOUNDED MAN CREEK	/PARK BOUNDARY	-09S12E24	LAMAR RIVER	16.4	3	3	3
A34	1-11-6060-000	53	SMEARL CREEK	SOURCE	/MOUTH	-29N31W33	CHERRY CR.	6.4	3	4	3
AA3	1-07-4000-001	63	SMITH CREEK	TRAIL CROSSING	/MOUTH	-21N17W11	CONDON CREEK	5.5	4	4	4
A71	1-07-4005-000	29	SMITH CREEK	SOURCE	/MOUTH	-32N22W32	WHITEFISH LAKE	4.8	4	4	4
ADA	3-09-5358-001	31	SMITH CREEK	COUNTY ROAD	/MOUTH	-01N04E02	E. GALLATIN RIVER	6.6	4	4	4
424	4-20-5500-000	49	SMITH CREEK	NEAR FOREST BOUNDARY/MOUTH	/MOUTH	-20N07W35	ELK CREEK	22.5	4	4	4
885	7-21-0998-000	83	SMITH CREEK	C-S. CREEK	/MOUTH	-20N58E34	YELLOWSTONE RIVER	32.2	3	5	3
563	3-22-5628-001	67	SMITH CREEK 01	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-05N09E24	SHIELDS RIVER	4.0	2	4	2
564	3-22-5628-002	67	SMITH CREEK 02	BITTER CREEK	/FOREST SERVICE BNDRY	-05N10E07	SHIELDS RIVER	3.4	3	4	3
874	4-17-6816-001	13	SMITH RIVER	TRULY BRIDGE	/MOUTH	-19N02E09	MISSOURI RIVER	5.3	4	5	4
270	4-17-6816-002	13	SMITH RIVER	HOUND CREEK	/TRULY BRIDGE	-19N02E35	MISSOURI RIVER	21.2	3	3	4

271	4-17-6832-003	13	SMITH RIVER	CANYON	/HOUND CREEK	-17N03E20	MISSOURI RIVER	29.6	3	4	3
272	4-17-6832-004	13	SMITH RIVER	ROCK CREEK	/CANYON	-16N03E10	MISSOURI RIVER	73.9	3	3	3
273	4-17-6832-005	59	SMITH RIVER	FORT LOGAN BRIDGE	/ROCK CREEK	-13N04E19	MISSOURI RIVER	39.4	2	2	3
274	4-17-6832-006	59	SMITH RIVER	FORKS	/FORT LOGAN BRIDGE	-11N05E31	MISSOURI RIVER	41.0	3	3	3
A1Y	1-07-4010-000	29	SNAKE CREEK	SOURCE	/MOUTH	-31N24W27	LOGAN CR.	3.2	4	4	4
A9P	6-15-3640-001	5	SNAKE CREEK	SOURCE	/MOUTH	-33N22E15	MILK RIVER	56.0	4	5	4
A32	1-11-6140-000	53	SNOW CREEK	SOURCE	/MOUTH	-29N31W05	CHERRY CR.	4.8	4	4	4
232	5-22-5642-000	9	SNOW CREEK	HEADWATERS	/MOUTH	-08S19E34	ROCK CREEK	7.2	4	4	4
834	5-22-5684-001	67	SODA BUTTE CREEK	SOURCE	/MOUTH	-37N24W16	WEASEL CR.	3.2	4	4	4
A42	1-11-6165-000	53	SNOWSLIDE CREEK	HEADWATERS	/STATE LINE	-09S14E33	LAMAR RIVER	8.0	4	4	4
A66	1-08-6560-000	29	SOLDIER CREEK	SOURCE	/MOUTH	-26N16W26	SO. FK. FLATHEAD RIVER	3.2	3	4	3
AXD	2-05-6560-200	63	SOLDIER CREEK	HEADWATERS	/MOUTH	-17N24W26	NINEMILE CREEK	6.0	4	4	4
AA7	1-07-4020-001	47	SOUP CREEK	TRAIL CROSSING	/MOUTH	-24N18W13	SWAN RIVER	8.5	3	4	3
AM6	3-09-5434-001	31	SOURDOUGH CREEK (BOZEMAN C)	FOREST SERVICE BNDRY	/MOUTH	-01S06E31	E GALLATIN RIVER	10.6	4	4	4
AM7	3-09-5434-002	31	SOURDOUGH CREEK (BOZEMAN C)	MYSTIC LAKE	/FOREST SERVICE BNDRY	-03S06E18	E GALLATIN RIVER	13.7	4	4	4
A0B	3-10-6760-001	57	SOUTH BOULDER RIVER	HIGHWAY 359 BRIDGE	/MOUTH	-01N03W13	JEFFERSON RIVER	4.8	4	4	4
A0C	3-10-6760-002	57	SOUTH BOULDER RIVER	FOREST SERVICE BNDRY	/HIGHWAY 359 BRIDGE	-01N03W26	JEFFERSON RIVER	10.8	3	3	4
A0D	3-10-6760-003	57	SOUTH BOULDER RIVER	HEADWATERS	/FOREST SERVICE BNDRY	-01S03W28	JEFFERSON RIVER	11.1	2	2	4
BL8	1-11-6210-000	53	SOUTH CALLAHAN CR.	STATE LINE	/MOUTH	-31N35W24	CALLAHAN CREEK	4.5	2	4	2
450	3-22-5768-000	67	SOUTH FK HORSE CR (BEAR CR)	HEADWATERS	/MOUTH	-03N09E24	HORSE CREEK (SHIELDS)	8.0	3	4	3
319	4-14-5360-001	73	SOUTH FORK BIG BADGER CR	NEAR UPPER END	/MOUTH	-29N11W30	BIG BADGER CREEK	6.4	2	3	2
666	1-11-6220-001	53	SOUTH FORK BIG CREEK	DROP CREEK	/MOUTH	-35N30W28	BIG CREEK	9.6	4	4	4
B8E	1-11-6220-002	53	SOUTH FORK BIG CREEK	EAST + WEST BRANCH	/DROP CREEK	-34N30W29	BIG CREEK	11.2	3	4	3
320	4-14-5400-001	73	SOUTH FORK BIRCH CREEK	NEAR UPPER END	/BIRCH (SWIFT) CR RES	-28N10W34	BIRCH CREEK	11.4	2	3	2
872	1-05-6640-000	89	SOUTH FORK BULL RIVER	SOURCE	/MOUTH	-28N33W14	BULL RIVER	7.4	3	3	3
A35	1-11-6223-000	53	SOUTH FORK CALLAHAN CREEK	SOURCE	/MOUTH	-31N34W24	CALLAHAN CR.	4.8	4	4	4
640	1-08-6620-000	29	SOUTH FORK COAL CREEK	HEADWATERS	/MOUTH	-34N21W30	COAL CREEK	12.9	3	4	3
670	1-07-4080-000	63	SOUTH FORK COLD CREEK	HEADWATERS	/MOUTH	-21N17W27	COLD CREEK	8.0	3	3	3
766	6-16-3510-000	53	SOUTH FORK COW CREEK	HEADWATERS	/MOUTH	-27N18E13	COW CREEK	8.2	4	4	4
A4K	1-11-6225-000	53	SOUTH FORK CRIPPLE HORSE C	SOURCE	/MOUTH	-31N28W05	CRIPPLE HORSE CR.	6.4	4	4	4
387	4-17-6928-000	49	SOUTH FORK DEARBORN RIVER	NEAR FORKS	/MOUTH	-17N05W25	DEARBORN RIVER	16.4	4	4	4
565	3-22-5726-000	67	SOUTH FORK DEEP CREEK	HEADWATERS	/MOUTH	-03S10E30	DEEP CREEK (YELL)	6.4	4	4	4
426	4-14-5460-001	99	SOUTH FORK DEEP CREEK	FOREST BOUNDARY	/MOUTH	-23N08W27	DEEP CREEK	6.0	3	5	3
425	4-14-5460-002	99	SOUTH FORK DEEP CREEK	NEAR UPPER END	/FOREST BOUNDARY	-23N08W19	DEEP CREEK	2.4	3	5	3
275	4-17-6944-000	13	SOUTH FORK DEEP CREEK	HEADWATERS	/MOUTH	-15N04E24	SMITH RIVER	6.8	2	3	2
321	4-14-5480-001	99	SOUTH FORK DUPUYER CREEK	FOREST BOUNDARY	/MOUTH	-27N08W18	DUPUYER CREEK	6.4	3	4	3
322	4-14-5480-002	99	SOUTH FORK DUPUYER CREEK	HEADWATERS	/FOREST BOUNDARY	-27N09W35	DUPUYER CREEK	4.3	3	4	3
276	4-17-6960-000	59	SOUTH FORK EIGHT MILE	NEAR FORKS	/MOUTH	-10N08E15	EIGHT MILE CREEK	7.9	4	5	4
ALP	3-22-5735-000	67	SOUTH FORK EIGHTMILE CREEK	SOURCE	/MOUTH	-04S07E34	EIGHTMILE CREEK	6.8	4	5	4
566	3-22-5740-000	67	SOUTH FORK ELK CREEK	HEADWATERS	/MOUTH	-04N09E33	ELK CREEK	12.9	3	4	3

A08	2-05-6656-001	61	SOUTH	FORK	FISH CREEK	CACHE CREEK	/MOUTH	-14N25W36	FISH CREEK	15.6	3	4	3
641	1-08-6660-001	29	SOUTH	FORK	FLATHEAD RIVER	HUNGRY HORSE DAM	/MOUTH	-30N19W05	FLATHEAD RIVER	8.0	4	4	4
642	1-08-6660-002	29	SOUTH	FORK	FLATHEAD RIVER	BUNKER CREEK	/MOUTH	-26N16W23	FLATHEAD RIVER	27.4	1	2	1
643	1-08-6660-003	29	SOUTH	FORK	FLATHEAD RIVER	YOUNG DANAHOR CRKS	/BUNKER CREEK	-24N14W20	FLATHEAD RIVER	53.1	1	2	1
342	4-18-5610-001	27	SOUTH	FORK	FLATWILLOW CR	NEAR HEADWATERS	/CONFLUENCE OF FORKS	-13N22E35	FLATWILLOW CREEK	6.9	4	4	4
A30	1-11-6230-000	53	SOUTH	FORK	FLOWER CREEK	SOURCE	/MOUTH	-30N31W20	FLOWER CR.	3.2	4	4	4
AGH	7-21-1015-000	83	SOUTH	FORK	FOX CREEK	HEADWATERS	/MOUTH	-22N58E27	FOX CREEK	31.5	3	4	3
AVI	2-06-5966-200	63	SOUTH	FORK	GILBERT CREEK	HEADWATERS	/MOUTH	-11N17W27	GILBERT CREEK	4.8	4	5	4
A4N	1-11-6235-000	53	SOUTH	FORK	JACKSON CREEK	SOURCE	/MOUTH	-31N29W06	JACKSON CR.	4.8	4	4	4
323	4-16-3520-001	45	SOUTH	FORK	JUDITH RIVER	TRASH RANCH	/MOUTH	-13N11E36	JUDITH RIVER	10.8	3	3	4
AOR	4-16-3520-002	45	SOUTH	FORK	JUDITH RIVER	NEAR HEADWATERS	/TRASK RANCH	-12N11E34	JUDITH RIVER	13.3	2	4	2
989	1-11-6240-000	53	SOUTH	FORK	KEELER CREEK	HEADWATERS	/MOUTH	-30N34W26	KEELER CREEK	5.8	3	4	3
736	2-05-6672-001	61	SOUTH	FORK	LITTLE JOE CR.	SUNSET CREEK	/MOUTH	-17N28W03	LITTLE JOE CREEK	8.7	4	4	4
A6U	1-08-4180-000	29	SOUTH	FORK	LOGAN CREEK	SOURCE	/MOUTH	-27N17W02	HUNGRY HORSE RES	5.6	3	4	3
AEL	2-03-5800-000	63	SOUTH	FORK	LOLO CREEK	HEADWATERS	/MOUTH	-12N21W29	LOLO CREEK	18.7	3	4	3
AAO	1-07-4200-001	47	SOUTH	FORK	LOST CREEK	BRIDGE CROSSING	/MOUTH	-24N17W06	LOST CREEK	7.2	3	4	3
ADP	4-16-3530-000	45	SOUTH	FORK	LOST FK JUDITH	HEADWATERS	/MOUTH	-12N10E29	LOST FORK JUDITH R	5.2	3	4	3
AOE	3-13-5400-001	31	SOUTH	FORK	MADISON RIVER	RAILROAD LINE	/MOUTH	-13S04E11	MADISON RIVER	10.0	2	2	3
AOF	3-13-5400-002	31	SOUTH	FORK	MADISON RIVER	HEADWATERS	/RAILROAD LINE	-13S05E32	MADISON RIVER	11.7	3	3	4
AAK	1-11-6260-000	53	SOUTH	FORK	MEADOW CREEK	HEADWATERS	/MOUTH	-35N33W19	MEADOW CREEK	7.4	3	4	3
343	4-18-5670-001	59	SOUTH	FORK	MUSSELSHELL R	COTTONWOOD CREEK	/MOUTH	-08N12E06	MUSSELSHELL RIVER	11.5	3	3	4
344	4-18-5670-002	59	SOUTH	FORK	MUSSELSHELL R	NEAR FORKS	/COTTONWOOD CREEK	-08N10E24	MUSSELSHELL R	9.4	3	4	3
427	4-20-5600-000	49	SOUTH	FORK	NORTH FK SUN R	MOUTH HOADLEY CREEK	/MOUTH	-22N10W26	SUN RIVER	25.1	2	2	4
567	3-22-5775-000	67	SOUTH	FORK	PINE CREEK	HEADWATERS	/MOUTH	-04S10E16	PINE CREEK (YELL)	7.2	4	4	4
A5Q	1-07-4220-000	63	SOUTH	FORK	RUMBLE CREEK	SOURCE	/MOUTH	-20N16W04	RUMBLE CR.	11.3	3	4	3
388	4-17-7030-001	13	SOUTH	FORK	SHEEP CREEK	NEAR FORKS	/MOUTH	-16N02W12	SHEEP CREEK	8.8	4	4	4
568	3-22-5796-000	67	SOUTH	FORK	SHIELDS RIVER	HEADWATERS	/MOUTH	-05N10E28	SHIELDS RIVER	11.3	4	4	4
AIY	3-17-7040-000	31	SOUTH	FORK	SIXTEENMILE CR.	SOURCE	/MOUTH	-04N05E11	MIDDLE FK 16-MILE CR	24.9	3	3	4
277	4-17-7056-000	59	SOUTH	FORK	SMITH RIVER	UNNAMED TRIBUTARY	/MOUTH	-09N06E21	SMITH RIVER	63.7	4	4	4
AJG	3-09-5548-001	31	SOUTH	FORK	SPANISH CREEK	FOREST SERVICE BNDRY	/MOUTH	-04S03E11	SPANISH CREEK	6.6	4	5	4
AJF	3-09-5548-002	31	SOUTH	FORK	SPANISH CREEK	FALLS CREEK	/FOREST SERVICE BNDRY	-04S03E11	SPANISH CREEK	3.2	4	4	4
389	4-17-7060-001	49	SOUTH	FORK	STICKNEY CREEK	COUNTY LINE	/MOUTH	-15N03W01	STICKNEY CREEK	13.5	4	4	4
324	4-14-5640-001	99	SOUTH	FORK	TETON RIVER	FOREST BOUNDARY	/MOUTH	-25N08W33	TETON RIVER	6.0	4	4	4
325	4-14-5640-002	99	SOUTH	FORK	TETON RIVER	HEADWATERS	/FOREST BOUNDARY	-25N09W36	TETON RIVER	6.4	4	4	4
A8K	4-14-5680-001	35	SOUTH	FORK	TWO MEDICINE R	MOUTH OF PIKE CREEK	/BLACKFEET INDIAN RES	-30N12W05	TWO MEDICINE RIVER	15.0	3	3	3
326	4-14-5680-002	35	SOUTH	FORK	TWO MEDICINE R	HEADWATERS	/MOUTH OF PIKE CREEK	-30N13W33	TWO MEDICINE RIVER	15.0	2	3	2
AJK	3-09-5624-001	31	SOUTH	FORK	W-FK-GALLATIN R	BIG SPRING CAMPGRND	/MOUTH	-06S04E31	W-FK-GALLATIN RIVER	11.9	4	4	4
AV8	2-05-6782-200	61	SOUTH	FORK	WHITE CREEK	HEADWATERS	/MOUTH	-12N24W19	WHITE CREEK	4.8	4	4	4
428	4-14-5690-001	99	SOUTH	FORK	WILLOW CREEK	NEAR UPPER END	/MOUTH	-24N07W22	WILLOW CREEK	10.3	4	4	4
AAA	1-11-6300-001	53	SOUTH	FORK	YAAK RIVER	ZULU CREEK	/MOUTH	-36N32W35	YAAK RIVER	11.9	3	4	3

679	1-11-6310-000	53	SOUTH FORK YOUNG CREEK	HEADWATERS	/MOUTH	-37N29W14	YOUNG CREEK	4.0	3	4	3
A06	3-13-5560-001	57	SOUTH MEADOW CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-04S01W34	ENNIS LAKE	10.8	4	4	4
A0H	3-13-5560-002	57	SOUTH MEADOW CREEK	S. MEADOW CREEK LAKE /FOREST	/MOUTH	-04S02W27	ENNIS LAKE	6.4	4	4	4
AJY	3-10-6880-001	57	SOUTH WILLOW CREEK	POTOSI RANGER STATION /MOUTH	/MOUTH	-02S02W11	WILLOW CREEK	22.4	3	4	3
A19	3-09-5662-000	31	SPANISH CREEK	N&S FORKS SPANISH CR /MOUTH	/MOUTH	-04S04E18	GALLATIN RIVER	4.2	4	4	4
AV7	2-05-6795-200	63	SPARKS CREEK	HEADWATERS	/MOUTH	-17N25W13	NINEMILE CREEK	2.3	3	3	4
ALS	4-17-7120-001	49	SPOKANE CREEK	1.6 KM ABOVE MOUTH	/MOUTH	-10N02W01	HAUSER RESERVOIR	1.6	4	4	4
942	1-08-6740-001	29	SPOTTED BEAR RIVER	DEAN FALLS	/MOUTH	-25N15W17	S. FORK FLATHEAD R.	31.5	2	2	2
941	1-08-6740-002	29	SPOTTED BEAR RIVER	SOURCE	/MOUTH	-25N13W36	S. FK FLATHEAD R.	22.5	3	4	3
AAL	1-11-6340-001	53	SPREAD CREEK	HIDDEN CR.	/MOUTH	-35N33W10	YAAK RIVER	16.0	3	4	3
429	4-20-5790-000	99	SPRING COULEE	NEAR UPPER END	/MOUTH	-22N01W24	MUDDY CREEK	10.9	4	5	4
A05	1-07-4240-000	29	SPRING CREEK	SOURCE	/MOUTH	-33N24W23	STILLWATER RIVER	4.8	4	4	4
A16	1-07-4260-000	29	SPRING CREEK	SOURCE	/MOUTH	-28N22W12	ASHLEY CR.	3.2	4	4	4
AAU	1-07-4280-001	29	SPRING CREEK	HEADWATERS	/MOUTH	-28N21W09	FLATHEAD RIVER	8.5	4	4	4
AVW	2-06-6099-201	63	SPRING CREEK	PRIVATE PROPERTY BOU /MOUTH	/MOUTH	-11N17W36	ROCK CREEK	2.6	4	4	4
AVX	2-06-6099-202	39	SPRING CREEK	HEADWATERS	/MOUTH	-05S07W22	BEAVERHEAD RIVER	12.9	3	3	4
ALK	3-01-7320-000	57	SPRING CREEK	HEADWATERS	/MOUTH	-24N04W33	TETON RIVER	15.4	3	4	3
430	4-14-5760-000	99	SPRING CREEK	NEAR UPPER END	/MOUTH	-10N05E15	SMITH RIVER	16.7	4	4	4
278	4-17-7200-000	59	SPRING CREEK	HEADWATERS	/MOUTH	-09N10E15	MUSSELSHELL R. 059LO	9.4	4	4	4
345	4-18-5820-001	0	SPRING CREEK	FAWN CREEK	/MOUTH	-03S17E36	STILLWATER RIVER	14.5	4	5	4
836	5-22-5943-000	95	SPRING CREEK	HEADWATERS	/MOUTH	-08S19E35	ROCK CREEK	2.6	4	4	4
233	5-22-6034-000	9	SPRING CREEK	HEADWATERS	/MOUTH	-06S20E28	WILLOW CREEK	9.7	4	4	4
857	5-22-6062-000	9	SPRING CREEK	HEADWATERS	/MOUTH	-01N09E03	SHIELDS RIVER	8.0	2	4	2
569	3-22-5940-000	67	SPRING CREEK & TRIBS	HEADWATERS	/MOUTH	-28N21W07	FLATHEAD RIVER	7.1	4	4	4
AAV	1-07-0360-000	29	SPRING CREEK (BIG LOST CR.)	SPRINGS	/MOUTH	-22N29W19	CLARK FORK	1.6	4	4	4
954	1-05-6880-000	89	SQUAW CREEK	3.2 KM ABOVE MOUTH	/1.6 KM ABOVE MOUTH	-04S04E33	GALLATIN RIVER	11.3	4	4	4
AJH	3-09-5966-001	31	SQUAW CREEK	BUTTE CR	/MOUTH	-10S01E33	MADISON RIVER	16.1	4	5	4
10J	3-13-5680-000	57	SQUAW CREEK	HEADWATERS	/MOUTH	-20N31E29	FT. PECK RESERVOIR	1.6	4	4	4
BA2	7-16-3662-601	33	SQUAW CREEK	1 MI ABOVE MOUTH	/MOUTH	-29N25W15	GRIFFIN CR.	6.4	4	4	4
ATM	1-07-4330-000	29	SQUAW MEADOWS CREEK	SOURCE	/MOUTH	-23N17W17	GOAT CREEK	7.9	3	3	3
ABF	1-07-4340-001	47	SQUEEZER CREEK	TRAIL CROSSING	/MOUTH	-36N27W24	TOBACCO RIVER	1.8	4	4	4
680	1-11-5720-001	53	ST CLAIR CREEK	EUREKA WATER SUPPLY	/MOUTH	-36N27W24	TOBACCO RIVER	11.6	4	4	4
681	1-11-5720-002	53	ST CLAIR CREEK	HEADWATERS	/MOUTH	-18N27W30	CLARK FORK	24.5	2	2	3
737	2-05-6064-001	61	ST. REGIS RIVER	DE BORGIA	/MOUTH	-19N30W25	CLARK FORK	29.1	2	2	2
738	2-05-6064-002	61	ST. REGIS RIVER	HEADWATERS	/DE BORGIA	-23N15W11	GORGE CR.	4.8	3	4	3
A58	1-08-6940-000	29	STADIUM CREEK	SOURCE	/MOUTH	-10S01E33	MADISON RIVER	19.3	4	4	4
AOK	3-13-5720-000	57	STANDARD CREEK	HEADWATERS	/MOUTH	-29N33W18	LAKE CREEK	8.0	3	4	3
985	1-11-6480-000	53	STANLEY CREEK	HEADWATERS	/BULL LAKE	-31N17W36	MID. FK. FLATHEAD R.	9.7	3	4	3
A5N	1-08-6980-000	29	STANTON CREEK	SOURCE	/MOUTH	-30N24W07	SHEPPARD CR.	3.2	4	4	4
AT1	1-07-4350-000	29	STAR CREEK	SOURCE	/MOUTH						

976	1-11-6500-000	53	STAR CREEK	STATE BOUNDARY	/MOUTH	-32N34W08	KOOTENAI RIVER	5.5	4	4	4
AHS	3-02-5950-001	1	STEEL CREEK	MOOSE MEADOWS	/MOUTH	-02S15W27	BIG HOLE RIVER	12.2	1	4	1
A46	1-11-6560-000	53	STEWART CREEK	SOURCE	/MOUTH	-33N26W14	FORTINE CR.	4.8	4	4	4
ALT	4-17-7344-000	49	STICKNEY CREEK	N&S FORKS	/MOUTH	-16N03W26	MISSOURI RIVER	6.1	4	4	4
816	5-22-6118-003	95	STILLWATER RIVER	SIoux CHARLEY LAKE	/8.8KM ABOVE FS BOUND	-05S15E32	YELLOWSTONE RIVER	3.2	2	4	3
644	1-07-4420-001	29	STILLWATER RIVER	SPENCER LAKE OUTLET	/MOUTH	-28N21W16	FLATHEAD RIVER	32.5	4	4	4
645	1-07-4420-002	29	STILLWATER RIVER	LOWER STILLWATER LK	/SPENCER LAKE OUTLET	-30N22W05	FLATHEAD RIVER	21.9	3	3	3
646	1-07-4420-003	29	STILLWATER RIVER	HIGHWAY 93 BRIDGE	/LOWER STILLWATER LK	-32N23W18	FLATHEAD RIVER	15.1	3	4	3
647	1-07-4420-004	53	STILLWATER RIVER	HEADWATERS	/HIGHWAY 93 BRIDGE	-34N25W36	FLATHEAD RIVER	17.4	3	4	3
876	5-22-6104-001	95	STILLWATER RIVER	ROSEBUD CREEK	/MOUTH	-02S20E29	YELLOWSTONE RIVER	16.1	3	3	3
867	5-22-6104-002	95	STILLWATER RIVER	NYE	/ROSEBUD CREEK	-03S19E31	YELLOWSTONE RIVER	33.8	3	3	4
875	5-22-6118-001	95	STILLWATER RIVER	FOREST BOUNDARY	/NYE	-05S16E06	YELLOWSTONE RIVER	6.4	3	3	4
179	5-22-6118-002	95	STILLWATER RIVER	8.8 KM. ABOVE -FS B.	/FS BOUNDARY	-05S15E15	YELLOWSTONE RIVER	8.8	2	2	4
868	5-22-6118-002	95	STILLWATER RIVER	HEADWATERS	/SIoux CHARLEY LAKE	-06S14E12	YELLOWSTONE RIVER	32.2	3	4	3
200	5-22-6118-199	95	STONEBERG CREEK	HEADWATERS	/MOUTH	-05S15E28	STILLWATER RIVER	2.0	4	4	4
A7E	1-07-4440-000	29	STONER CREEK	SOURCE	/MOUTH	-26N20W18	FLATHEAD LAKE	9.7	4	5	4
AXG	2-05-6992-200	63	STONY CREEK	HEADWATERS	/MOUTH	-15N22W07	NINEMILE CREEK	8.0	4	4	4
ADD	2-06-6308-000	39	STONY CREEK	SOURCE(LAKE)	/MOUTH	-07N16W21	ROCK CREEK	14.5	3	4	3
AXH	2-05-7024-200	61	STRAIGHT CREEK	HEADWATERS	/MOUTH	-13N25W06	FISH CREEK	9.6	3	4	3
431	4-20-5950-000	49	STRAIGHT CREEK	MOUTH PARK CREEK	/MOUTH	-20N10W16	SO FK SUN RIVER	8.5	4	4	4
A87	1-08-7020-000	29	STRAWBERRY CREEK	HEADWATERS	/MOUTH	-26N12W13	MID-FK-FLATHEAD RIV.	12.9	4	4	4
A90	4-17-7382-000	59	STRINGER CREEK	HEADWATERS	/MOUTH	-14N06E36	TENDERFOOT CR	2.1	4	4	4
A8Y	4-17-7392-000	59	STUDHORSE CREEK	HEADWATERS	/MOUTH	-10N08E04	N FK SMITH RIVER	5.6	4	4	4
571	3-22-6160-001	67	SUCE CREEK 01	HIGHWAY 540	/MOUTH	-03S09E14	YELLOWSTONE RIVER	2.4	4	4	4
572	3-22-6160-002	67	SUCE CREEK 02	FOREST SERVICE BNDRY/HIGHWAY 540	/MOUTH	-03S09E24	YELLOWSTONE RIVER	4.3	4	4	4
573	3-22-6160-003	67	SUCE CREEK 03	HEADWATERS	/FOREST SERVICE BNDRY	-03S10E17	YELLOWSTONE RIVER	1.0	4	4	4
ABS	1-08-7080-000	29	SULLIVAN CREEK	SOURCE	/HUNGRY HORSE RES	-26N17W01	S. FORK FLATHEAD R.	25.4	1	3	1
930	1-11-6620-000	53	SULLIVAN CREEK	HEADWATERS	/MOUTH	-36N28W20	LAKE KOOCANUSA	10.1	3	4	3
432	4-14-5960-001	35	SUMMIT CREEK	NEAR UPPER END	/MOUTH	-30N13W15	SO FK TWO MEDICINE R	6.4	3	4	3
A64	4-20-6050-001	13	SUN RIVER	MUDDY CREEK	/MOUTH	-20N03E11	MISSOURI RIVER	29.5	4	4	4
441	4-20-6100-001	13	SUN RIVER	ELK CREEK	/MUDDY CREEK	-21N01E25	MISSOURI RIVER	74.3	3	3	4
433	4-20-6100-002	99	SUN RIVER	FOREST BOUNDARY	/ELK CREEK	-20N05W06	MISSOURI RIVER	47.9	3	3	3
434	4-20-6100-003	99	SUN RIVER	GIBSON DAM	/FOREST BOUNDARY	-22N09W36	MISSOURI RIVER	4.8	3	3	3
AAD	1-07-4540-000	29	SUNDAY CREEK	HEADWATERS	/MOUTH	-33N24W09	STILLWATER RIVER	14.5	3	4	3
775	7-21-1025-000	17	SUNDAY CREEK	N&S SUNDAY CREEK	/MOUTH	-09N47E36	YELLOWSTONE RIVER	23.3	4	5	4
A9L	4-16-3760-001	45	SURPRISE CREEK	HEADWATERS	/HIGHWAY 87	-16N11E04	WOLF CR	12.8	4	4	4
996	1-11-6700-001	53	SUTTON CREEK	1.6KM ABOVE MOUTH	/MOUTH	-35N28W30	LAKE KOOCANUSA	1.6	4	4	4
648	1-05-7088-001	89	SWAMP CREEK	END OF ROAD	/MOUTH	-25N32W14	CLARK FORK	7.6	3	3	3
682	1-05-7088-002	89	SWAMP CREEK	WANLESS LAKES	/END OF ROAD	-25N31W20	CLARK FORK	12.4	4	4	4
A23	1-05-7104-000	89	SWAMP CREEK	SOURCE	/MOUTH	-20N27W03	CLARK FORK	17.7	4	4	4

971	1-11-6720-000	53	SWAMP CREEK	HEADWATERS	/MOUTH	-33N26W21	FORTINE CREEK	14.6	4	5	4
AHU	3-02-6175-001	1	SWAMP CREEK	YANK SWAMP	/MOUTH	-02S15W09	MOOSE CREEK	29.0	1	4	1
837	5-22-6216-000	97	SWAMP CREEK	HEADWATERS	/MOUTH	-02N14E27	BIG TIMBER CREEK	23.3	4	5	4
183	5-22-6218-000	97	SWAMP CREEK	HEADWATERS	/MOUTH	-04S14E25	PICKET PIN CREEK	.6	4	4	4
649	1-07-4560-000	29	SWAN RIVER	SWAN LAKE	/FLATHEAD LAKE	-27N20W36	FLATHEAD RIVER	22.9	3	3	3
650	1-07-4580-001	29	SWAN RIVER	LINDBERGH LAKE	/SWAN LAKE	-25N18W16	FLATHEAD RIVER	80.1	2	2	3
A1R	1-07-4600-000	29	SWANEY CREEK	SOURCE	/MOUTH	-30N25W11	SHEPPARD CR.	3.2	4	4	4
A1S	1-07-4620-000	29	SWANSON CREEK	SOURCE	/MOUTH	-30N25W12	SHEPPARD CR.	4.8	4	4	4
A70	1-07-4640-000	29	SWEDS CREEK	SOURCE	/MOUTH	-33N23W03	SWIFT CR.	3.2	4	4	4
848	5-22-6230-002	97	SWEETGRASS CREEK	MIDDLESOUTH FORKS	/CAYUSE CREEK	-04N15E33	YELLOWSTONE RIVER	53.1	4	4	4
A0L	3-01-7560-001	57	SWEETWATER CREEK	IRRIGATION DIVERSION	/MOUTH	-08S04W18	RUBY RIVER	5.5	4	4	5
651	1-07-4960-001	29	SWIFT CREEK (WHITEFISH CR.)	UPPER WHITEFISH LAKE	/WHITEFISH LAKE	-31N22W05	WHITEFISH RIVER	34.0	2	2	4
A3N	1-07-4680-000	29	TAMARAC CREEK	SOURCE	/MOUTH	-26N24W31	LITTLE BITTERROOT R.	6.4	4	4	4
A4F	1-11-6780-000	53	TAMARACK CREEK	SOURCE	/MOUTH	-29N28W25	CALF CREEK	4.0	4	5	4
A56	1-08-7140-000	63	TANGO CREEK	SOURCE	/MOUTH	-21N15W28	BIG SALMON RIVER	3.2	3	4	3
A1K	1-07-4700-000	29	TAYLOR CREEK	SOURCE	/MOUTH	-30N24W33	LOGAN CR.	4.8	4	4	4
A6L	1-08-7130-000	29	TAYLOR CREEK	SOURCE	/MOUTH	-26N16W05	CLARK CR.	1.6	4	4	4
AJN	3-09-6232-001	31	TAYLOR FORK GALLATIN R.	LIGHTENING CR	/MOUTH	-09S04E02	GALLATIN RIVER	18.2	4	4	4
AJ0	3-09-6232-002	31	TAYLOR FORK GALLATIN R.	SOURCE	/LIGHTENING CR	-09S03E20	GALLATIN RIVER	8.4	4	4	4
074	5-22-6804-188	95	TECHY CREEK	HEADWATERS	/MOUTH	-07S16E02	WEST ROSEBUD CREEK	2.3	4	4	4
AC0	1-08-7200-002	29	TEEPEE CR.	HEADWATERS	/MOUTH	-36N22W03	N.FK.FLATHEAD R.	12.8	4	4	4
ACN	1-08-7200-001	29	TEEPEE CREEK	TEEPEE LAKE	/MOUTH	-36N22W13	N.FK.FLATHEAD RIVER	4.8	4	4	4
993	1-11-6800-000	53	TEN MILE CREEK	HEADWATERS	/MOUTH	-33N28W27	LAKE KOOCANUSA	8.4	4	4	4
283	4-17-7536-001	59	TENDERFOOT CREEK	FOREST BOUNDARY	/MOUTH	-14N03E25	SMITH RIVER	13.8	3	3	4
284	4-17-7536-002	59	TENDERFOOT CREEK	HEADWATERS	/FOREST BOUNDARY	-14N05E30	SMITH RIVER	27.7	2	2	4
AK0	3-01-7660-000	1	TENDRY CREEK	HEADWATERS	/MOUTH	-16S11W11	NICHOLIA CREEK	4.0	4	4	4
279	4-17-7552-001	49	TENMILE CREEK	FOREST BOUNDARY	/FAS 356	-10N04W22	PRICKLEY PEAR CREEK	13.7	4	5	4
280	4-17-7552-002	49	TENMILE CREEK	BELOW RIMINI	/FOREST BOUNDARY	-09N05W04	PRICKLEY PEAR CREEK	5.6	4	4	4
A04	3-13-5850-201	31	TEPEE CREEK	7.2 MI UP FROM MOUTH/6 MI UP FROM MOUTH	/MOUTH	-11S05E16	GRAYLING CREEK	1.9	4	4	4
A03	3-13-5850-202	31	TEPEE CREEK	8.7 MI UP FROM MOUTH/7.2 MI UP FROM MOUTH	/MOUTH	-11S05E17	GRAYLING CREEK	2.5	4	4	4
163	5-22-6262-000	95	TEPEE CREEK	HEADWATERS	/MOUTH	-04S15E02	BAD CANYON CREEK	2.4	3	4	3
104	5-22-6265-000	97	TEPEE CREEK	HEADWATERS	/MOUTH	-03S12E35	BOULDER RIVER	3.0	4	4	4
AE3	4-14-6000-001	13	TETON RIVER	HIGHWAY 221	/MOUTH	-25N09E12	MARIAS RIVER	265.5	3	4	3
327	4-14-6000-002	99	TETON RIVER	CHOTEAU	/HIGHWAY 221	-24N04W23	MARIAS RIVER	16.1	3	3	3
328	4-14-6040-002	99	TETON RIVER	MOUTH OF SOUTH FORK	/CHOTEAU	-24N05W25	MARIAS RIVER	48.3	3	4	3
931	1-11-6860-001	53	THERRIAULT CREEK	SHERMAN CREEK	/MOUTH	-36N26W33	TOBACCO RIVER	5.0	3	4	3
835	5-22-6272-001	9	THIEL CREEK	FOREST SERVICE BNDRY	/MOUTH	-06S20E18	E-RED LODGE CREEK	11.3	4	4	4
281	4-17-7590-000	59	THOMAS CREEK	HEADWATERS	/MOUTH	-11N04E22	SMITH RIVER	4.0	4	4	4
A0M	3-09-6346-001	31	THOMPSON CREEK	EAST-WEST COUNTY RD.	/MOUTH	-01N04E13	EAST GALLATIN RIVER	6.9	4	4	4
A0N	3-09-6346-002	31	THOMPSON CREEK	HEADWATERS	/EAST-WEST COUNTY RD.	-01N05E30	E.GALLATIN RIVER	1.9	4	4	4

282	4-17-7616-001	59	THOMPSON GULCH	FOREST BOUNDARY	/MOUTH	-10N05E22	SMITH RIVER	16-3	4	5	4
654	1-05-7248-001	89	THOMPSON RIVER	MEADOW CREEK	/MOUTH	-21N28W18	CLARK FORK	43-1	2	2	4
655	1-05-7248-002	89	THOMPSON RIVER	INDIAN CREEK	/MEADOW CREEK	-24N27W13	CLARK FORK	8-9	2	2	4
656	1-05-7264-002	89	THOMPSON RIVER	LOWER THOMPSON LAKE	/INDIAN CREEK	-25N27W23	CLARK FORK	16-1	3	3	3
A22	1-05-7280-000	89	THORNE CREEK	SOURCE	/MOUTH	-22N30W02	GRAVES CREEK	8-0	4	4	4
A40	1-71-6910-000	53	THREE MILE CREEK	SOURCE	/MOUTH	-30N27W04	DRY FK. WOLF CR.	3-2	4	5	4
A31	3-02-6350-001	1	TIE CREEK	BEAVER CREEK	/MOUTH	-02S16W05	N FORK BIG HOLE R	14-0	4	4	4
A65	1-08-7260-000	29	TIGER CREEK	SOURCE	/MOUTH	-30N18W23	HUNGRY HORSE CR	6-4	3	4	3
390	4-17-7680-700	13	TILLINGHAST CREEK	NEAR UPPER END	/MOUTH	-16N07E33	BELT CREEK	13-5	3	5	3
043	5-22-2254-198	9	TILT CREEK	BASE OF MOUNTAIN	/MOUTH	-07S17E11	EAST ROSEBUD CREEK	1-1	4	4	4
A99	6-16-3790-001	55	TIMBER CREEK	SKULL CREEK CONFLUENT/MOUTH	/MOUTH	-20N43E08	MISSOURI RIVER	32-0	4	5	4
A79	6-16-3795-001	105	TIMBER CREEK	CASTLE COULEE CONFLUENT/MOUTH	/MOUTH	-23N34E23	MISSOURI RIVER	16-0	4	5	4
015	5-22-6300-001	9	TIMBERLINE CREEK	AT START OF GRADIENT/MOUTH OF STREAM	/MOUTH	-07S18E36	WEST FORK ROCK CREEK	4-8	4	4	4
016	5-22-6300-002	9	TIMBERLINE CREEK	LAKE GERTRUDE	/MOUTH	-08S18E11	WEST FORK ROCK CREEK	1-6	4	4	4
A64	2-03-6425-001	81	TIN CUP CREEK	SOURCE	/MOUTH	-26N16W36	SO.FK.FLATHEAD RIVER	6-4	3	4	3
683	1-11-6920-000	53	TOBACCO RIVER	HEADWATERS	/FOREST BOUNDARY	-03N21W21	BITTERROOT RIVER	21-4	3	3	4
A12	1-07-4760-000	29	TOBIE CREEK	FORTINE & GRAVE CRS	/LIBBY DAM	-36N27W08	KOOTENAI RIVER	24-0	3	3	3
A00	1-07-4770-000	29	TOM CREEK	SOURCE	/MOUTH	-30N22W17	STILLWATER RIVER	4-8	4	4	4
AXM	3-01-7750-000	1	TOM CREEK	HEADWATERS	/MOUTH	-33N25W34	SUNDAY CR.	3-2	4	4	4
574	3-22-6328-001	67	TOM MINER CREEK 01	PINE CREEK	/MOUTH	-14S01W23	UPPER RED ROCK LAKE	8-0	2	4	2
575	3-22-6328-002	67	TOM MINER CREEK 02	TRAIL CREEK	/MOUTH	-07S07E29	YELLOWSTONE RIVER	10-9	1	4	1
80V	7-21-1200-002	87	TONGUE RIVER	RIVER ENTERS INDIAN /PINE CREEK	/PINE CREEK	-08S06E04	YELLOWSTONE RIVER	6-4	4	4	4
80V	7-21-1200-003	87	TONGUE RIVER 01	TONGUE RIVER RESERVOIR/RIVER ENTERS INDIAN	/RIVER ENTERS INDIAN	-02S44E10	YELLOWSTONE RIVER	56-8	3	4	3
776	7-21-1150-001	17	TONGUE RIVER 01	T & Y DAM	/MOUTH	-05S42E25	YELLOWSTONE RIVER	89-4	3	4	3
AL3	7-21-1150-002	17	TONGUE RIVER 01	BEAVER CREEK	/T&Y DAM	-08N47E32	YELLOWSTONE RIVER	21-0	2	2	2
778	7-21-1200-001	87	TONGUE RIVER 02	RIVER LEAVES INDIAN /BEAVER CREEK	/BEAVER CREEK	-06N48E29	YELLOWSTONE RIVER	119-0	3	3	3
778	7-21-1250-000	3	TONGUE RIVER 03	MT-WYO BORDER	/TONGUE RIVER DAM	-01N44E27	YELLOWSTONE RIVER	17-6	2	4	2
AFF	4-14-6160-000	73	TOWNSEND CREEK	HEADWATERS	/MOUTH	-08S40E13	YELLOWSTONE RIVER	22-2	3	3	3
A49	1-08-6700-000	29	TRAIL CREEK	SOURCE	/MOUTH	-29N13W02	SO.FK.TWO MEDICINE R	3-2	3	4	3
652	1-08-7330-001	29	TRAIL CREEK	THOMA CREEK	/MOUTH	-26N11W20	BOWL CREEK	16-1	3	4	3
653	1-08-7330-002	29	TRAIL CREEK	YAKINIKAK CREEK	/THOMA CREEK	-37N22W36	N FORK FLATHEAD R	12-6	2	4	2
903	1-11-6940-000	53	TRAIL CREEK	HEADWATERS	/MOUTH	-37N23W36	N FORK FLATHEAD R	4-8	3	4	3
AFL	2-04-5520-001	63	TRAIL CREEK	BLIND CANYON CREEK	/MOUTH	-26N30W03	WEST FISHER RIVER	4-8	4	4	4
AHW	3-02-6450-001	1	TRAIL CREEK	HOGAN CREEK	/MOUTH	-16N15W14	CLEARWATER RIVER	8-2	3	4	3
576	3-22-6342-001	67	TRAIL CREEK 01	DRY CREEK	/MOUTH	-02S17W24	N FORK BIG HOLE R	27-4	4	4	4
577	3-22-6342-002	67	TRAIL CREEK 02	NORTH FORK TRAIL CR./DRY CREEK	/MOUTH	-03S09E23	YELLOWSTONE RIVER	17-7	4	5	4
A6P	1-08-7360-000	29	TRAPPER CREEK	SOURCE	/MOUTH	-04S08E23	YELLOWSTONE RIVER	34-6	4	4	4
AHY	3-02-6475-001	1	TRAPPER CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-27N17W32	WHEELER CR.	4-8	3	4	3
AHZ	3-02-6475-002	1	TRAPPER CREEK	SAPPINGTON CREEK	/FOREST SERVICE BNDRY	-03S09W02	BIG HOLE RIVER	10-1	4	4	4
						-02S10W22	BIG HOLE RIVER	10-5	4	4	4

073	5-22-5804-189	95	TRIB CREEK	HEADWATERS	/MOUTH	-07S16E02	WEST ROSEBUD CREEK	1.1	4	4	4
A1F	1-07-4790-000	29	TRIXIE CREEK	SOURCE	/MOUTH	-31N24W05	GOOD CR.	4.8	4	4	4
935	1-05-7424-000	0	TROUT CREEK	WEST FORK TROUT CR.	/MOUTH	-24N31W18	CLARK FORK	13.0	4	4	4
A60	1-08-7390-000	29	TROUT CREEK	SOURCE	/MOUTH	-29N17W07	HUNGRY HORSE RES	4.8	3	4	3
A02	2-05-7408-000	61	TROUT CREEK	HEADWATERS	/MOUTH	-16N26W13	CLARK FORK	22.5	4	4	4
286	4-17-7880-000	13	TROUT CREEK	HEADWATERS	/MOUTH	-15N04E18	SMITH RIVER	19.8	4	4	4
391	4-17-7888-001	49	TROUT CREEK	FORKS	/MOUTH	-11N02W13	HAUSER LAKE	11.3	4	4	4
153	5-22-6384-001	97	TROUT CREEK	HEADWATERS	/FS BOUNDARY	-03S15E24	STILLWATER RIVER	8.8	4	4	4
A78	1-07-4800-000	29	TRUMAN CREEK	SOURCE	/MOUTH	-27N22W18	ASHLEY CR.	14.5	4	4	4
ADW	1-07-4820-000	29	TRUMBULL CREEK	SOURCE	/MOUTH	-28N21W09	WHITEFISH RIVER	30.6	4	4	4
AC1	1-08-7400-000	29	TUCHUCK CREEK	HEADWATERS	/MOUTH	-37N23W33	TRAIL CR.	6.0	3	4	3
191	5-22-6398-001	97	TUMBLE CREEK	HEADWATERS	/MOUTH	-05S14E29	WEST FK STILLWATER R	7.8	4	4	4
ABX	1-08-7440-002	29	TUNNEL CR	HALF MI. ABOVE MOUTH/MOUTH	/HIGHWAY 2	-30N16W17	MID. FK. FLATHEAD R.	1.3	4	4	4
ABM	1-08-7440-001	29	TUNNEL CREEK	HIGHWAY 2	/MOUTH	-30N16W07	MID. FK. FLATHEAD RIV.	1.3	4	4	4
578	3-22-6412-000	67	TURKEY CREEK	HEADWATERS	/MOUTH	-05N11E16	SHIELDS RIVER	3.2	4	4	4
739	2-05-7488-000	61	TWELVEMILE CREEK	HEADWATERS	/MOUTH	-18N29W04	ST. REGIS RIVER	17.4	3	4	4
A3C	1-05-7520-000	89	TWENTY-THREE MILE CREEK	SOURCE	/MOUTH	-21N32W13	PROSPECT CR.	3.2	4	4	4
AB4	1-08-7480-001	29	TWENTYFIVE MILE CREEK	MOOSE CREEK	/MOUTH	-28N15W36	M. FORK FLATHEAD R.	4.8	2	3	2
BBB	4-14-6320-001	73	TWO MEDICINE RIVER	BIRCH CREEK	/MOUTH	-32N05W35	MARIAS RIVER	7.2	3	4	3
AVY	2-06-6745-200	39	TYLER CREEK	HEADWATERS	/FOREST BDY. 1.6 KM A	-11N15W26	CLARK FORK	9.4	3	4	3
285	4-17-7958-000	13	TYRELL CREEK	HEADWATERS	/MOUTH	-15N01W35	ROUND CREEK	7.6	4	4	4
111	5-22-2002-198	97	UN TRIB EAST BOULDER RIVER	HEADWATERS	/MOUTH	-03S13E33	EAST BOULDER RIVER	4.5	4	4	5
849	5-22-6450-000	95	UNDER CREEK	HEADWATERS	/MOUTH	-05S18E18	WEST ROSEBUD CREEK	11.5	4	5	4
838	5-22-6454-001	97	UPPER DEER CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-01N15E35	YELLOWSTONE RIVER	22.5	4	4	4
839	5-22-6454-002	97	UPPER DEER CREEK	ASP GULCH	/FOREST SERVICE BNDRY/MOUTH	-02S14E12	YELLOWSTONE RIVER	5.8	3	4	3
A6H	1-08-7500-000	29	UPPER TWIN CREEK	SOURCE	/MOUTH	-26N16W25	SO. FK. FLATHEAD RIVER	24.1	3	4	3
AC0	2-06-6783-001	39	UPPER WILLOW CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-07N16W25	ROCK CREEK	16.9	4	4	4
AC1	2-06-6783-002	39	UPPER WILLOW CREEK	SOURCE	/FOREST SERVICE BNDRY/MOUTH	-08N15W09	ROCK CREEK	8.0	3	4	3
A9G	4-17-7995-000	49	URVI CREEK	HEADWATERS	/MOUTH	-14N06E30	TENDERFOOT CREEK	2.1	3	4	3
078	5-22-6804-184	95	VACANT CREEK	HEADWATERS	/MOUTH	-06S17E32	WEST ROSEBUD CREEK	8.3	4	4	4
949	1-05-7712-000	89	VERMILLION RIVER	SOURCE	/MOUTH	-24N31W14	CLARK FORK	30.3	4	4	4
AAB	1-11-7180-001	53	VINAL CREEK	TURNER CREEK	/MOUTH	-36N31W30	YAAK RIVER	8.2	4	4	4
392	4-17-8032-001	49	VIRGINIA CREEK	FOREST BOUNDARY	/MOUTH	-13N06W15	CANYON CREEK	6.6	4	4	4
AVZ	2-06-6802-200	39	WAHLQUIST CREEK	MOUTH OF FEATHER GUL/MOUTH	/MOUTH	-09N17W30	ROCK CREEK	5.8	3	4	3
435	4-14-6360-001	99	WALDRON CREEK	1.5 MI. ABOVE MOUTH	/MOUTH	-25N09W16	NO FK TETON RIVER	2.4	3	4	3
ADV	1-07-4870-000	29	WALKER CREEK	SOURCE	/MOUTH	-30N21W09	WHITEFISH RIVER	11.3	4	5	4
A6D	1-08-7620-000	29	WALL CREEK	SOURCE	/MOUTH	-24N12W10	SPOTTED BEAR RIVER	9.7	3	4	3
AP2	3-09-6688-201	31	WAPITI CREEK	1.8 MI UP FROM MOUTH/MOUTH	/MOUTH	-09S04E07	TAYLOR FORK GALL R	2.9	4	4	4
AP1	3-09-6688-202	31	WAPITI CREEK	3.3 MI UP FROM MOUTH/1.8 MI UP FROM MOUTH/7.7 MI UP FROM MOUTH-09S04E19	/MOUTH	-09S04E19	TAYLOR FORK GALL R	2.4	4	4	4
A01	3-09-6688-203	31	WAPITI CREEK	8.3 MI UP FROM MOUTH/7.7 MI UP FROM MOUTH-09S03E35	/MOUTH	-09S03E35	TAYLOR FORK GALL R	1.6	4	4	4

ADL 2-05-7760-000	61	WARD CREEK	SOURCE	/MOUTH	-18N29W24	ST-REGIS RIVER	11-9 4 4 4
AHL 3-02-6750-001	1	WARM SPRING CREEK	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-05S15W26	BIG HOLE RIVER	9-2 3 3 4
AHK 3-02-6750-002	1	WARM SPRING CREEK	LITTLE MILK CREEK	/FOREST SERVICE BNDRY	-05S14W20	BIG HOLE RIVER	6-6 2 2 4
740 2-06-6859-000	23	WARM SPRINGS CREEK	HEADWATERS	/MOUTH	-05N09W18	CLARK FORK	45-7 3 3 3
AMS 3-01-8020-001	57	WARM SPRINGS CREEK	STILL CREEK	/MOUTH	-09S03W21	RUBY RIVER	6-0 3 4 3
ASH 3-01-8020-204	1	WARM SPRINGS CREEK	BUCKSKIN CREEK	/S.O KM UP FROM MOUTH	-09S03W14	RUBY RIVER	4-8 4 5 4
ASI 3-01-8020-205	1	WARM SPRINGS CREEK	ROAD	/BUCKSKIN CREEK	-08S03W35	RUBY RIVER	2-9 4 4 4
ASJ 3-01-8020-206	1	WARM SPRINGS CREEK	HEADWATERS	/ROAD	-08S03W27	RUBY RIVER	2-4 4 4 4
329 4-16-3920-000	27	WARM SPRINGS CREEK	WARM SPRING	/MOUTH	-18N16E08	JUDITH RIVER	28-2 2 4 2
908 1-11-7295-000	53	WEASEL CREEK	SOURCE	/CANADA	-37N24W06	WIGWAM RIVER	6-4 3 4 3
ADM 4-16-3940-000	45	WEATHERWAX CREEK	HEADWATERS	/MOUTH	-12N09E03	HARRISON CK	5-2 3 4 3
665 1-05-7808-000	89	WEEKSVILLE CREEK	HEADWATERS	/MOUTH	-20N27W02	CLARK FORK	9-7 4 5 4
ADF 2-06-6916-001	39	WELCOME CREEK	CARRON CREEK	/MOUTH	-09N17W02	ROCK CREEK	5-5 3 4 3
840 5-22-6552-001	97	WEST BOULDER RIVER	FOREST SERVICE BNDRY/MOUTH	/MOUTH	-02S13E15	BOULDER RIVER	22-9 2 2 4
841 5-22-6552-002	67	WEST BOULDER RIVER	HEADWATERS	/FOREST SERVICE BNDRY	-03S11E25	BOULDER RIVER	19-5 3 3 3
900 1-11-7400-001	53	WEST FISHER RIVER	STANDARD CREEK	/MOUTH	-27N29W30	FISHER RIVER	19-3 3 4 3
901 1-11-7400-002	53	WEST FISHER RIVER	SOURCE	/STANDARD CREEK	-27N30W31	FISHER RIVER	7-4 3 4 3
086 5-22-6580-001	95	WEST FISHTAIL CREEK	UN PERENNIAL TRIB	/-FS BOUNDARY	-05S16E25	FISHTAIL CREEK	10-4 4 4 4
AJ9 3-01-8120-001	1	WEST FK BLACKTAIL DEER CR	NATL FOREST BOUNDARY/MOUTH	/MOUTH	-11S06W09	BLACKTAIL DEER CREEK	15-6 4 4 4
AD0 2-05-7840-001	61	WEST FORK BIG CREEK	1 MI.ABOVE MOUTH	/MOUTH	-19N30W32	BIG CREEK	1-6 3 4 3
741 2-03-6800-001	81	WEST FORK BITTERROOT RIVER	PAINTED ROCKS LAKE	/MOUTH	-02N20W07	BITTERROOT RIVER	31-5 2 3 2
742 2-03-6800-002	81	WEST FORK BITTERROOT RIVER	HEADWATERS	/PAINTED ROCKS LAKE	-01S22W26	BITTERROOT RIVER	34-8 2 3 2
B01 5-22-6594-000	9	WEST FORK BUTCHER CREEK	HEADWATERS	/MOUTH	-06S18E23	BUTCHER CREEK	5-0 4 4 4
AV1 2-03-6825-200	63	WEST FORK BUTTE CREEK	HEADWATERS	/FOREST BDY. 1.1 KM	A-11N22W01 S.FK.	LOLO CREEK	9-4 3 4 3
AC6 2-04-5730-000	63	WEST FORK CLEARWATER RIVER	SOURCE	/MOUTH	-17N15W06	CLEARWATER RIVER	20-1 3 4 3
A28 1-05-7872-000	89	WEST FORK COMBEST CREEK	SOURCE	/MOUTH	-20N26W33	COMBEST CR	4-8 4 5 4
A26 1-05-7920-000	89	WEST FORK ELK CREEK	IDAHO BORDER	/MOUTH	-26N34W16	ELK CR.	4-8 4 4 4
393 4-17-8272-001	49	WEST FORK FALLS CREEK	NEAR HEADWATERS	/MOUTH	-17N07W15	DEARBORN RIVER	7-9 4 4 4
AD9 2-05-7936-001	61	WEST FORK FISH CREEK	HEADWATERS	/MOUTH	-13N25W06	FISH CREEK	20-9 2 3 2
956 1-05-7952-000	89	WEST FORK FISHTRAP CREEK	HEADWATERS	/MOUTH	-24N28W26	FISHTRAP CREEK	8-0 3 4 3
A68 3-02-6810-000	23	WEST FORK FISHTRAP CREEK	HEADWATERS	/MOUTH	-02N14W26	FISHTRAP CREEK	8-9 4 4 4
AJ1 3-09-6764-001	31	WEST FORK GALLATIN RIVER	MIDDLE FK. W.FK GALL	/MOUTH	-06S04E32	GALLATIN RIVER	6-9 4 4 4
AV2 2-04-5760-200	63	WEST FORK GOLD CREEK	HEADWATERS	/MOUTH	-14N17W01	GOLD CREEK	9-8 4 4 4
287 4-17-8288-000	13	WEST FORK HOUND CREEK	HEADWATERS	/MOUTH	-15N02E09	HOUND CREEK	15-6 4 4 4
990 1-11-7440-000	53	WEST FORK KEELER CREEK	IDAHO BORDER	/MOUTH	-30N34W30	KEELER CREEK	3-7 4 4 4
AG3 3-02-6825-001	23	WEST FORK LA MARCHE CREEK	HICKS LAKE CREEK	/MOUTH	-02N13W05	BIG HOLE RIVER	8-9 4 4 4
AV3 2-03-6875-200	63	WEST FORK LOLO CREEK	HEADWATERS	/JUNCTION OF EAST & W	-11N23W18	LOLO CREEK	8-8 4 4 4
A00 4-16-4040-000	45	WEST FORK LOST FORK JUDITH	HEADWATERS	/MOUTH	-12N10E29	LOST FORK JUDITH R	6-4 3 4 3
A00 3-13-6640-001	57	WEST FORK MADISON RIVER	SOAP CREEK	/MOUTH	-11S01E10	MADISON RIVER	4-0 2 2 4
A0P 3-13-6640-002	57	WEST FORK MADISON RIVER	MERIDIAN CREEK	/SOAP CREEK	-11S01E22	MADISON RIVER	12-4 4 4 4

579	3-22-6636-000	67	WEST FORK	MILL CREEK	ARRASTRA CREEK	/MOUTH	-06S09E24	MILL CREEK	5.0	4	4	4
767	6-16-4060-002	19	WEST FORK	POPLAR RIVER	CANADIAN BORDER	/FT. PECK	INDIAN RESER-33N46E11	POPLAR RIVER	95.6	3	4	3
808	6-15-4300-001	105	WEST FORK	PORCUPINE CREEK	CREEK LEAVES INDIAN	/MOUTH	-32N40E23	PORCUPINE CREEK	17.0	4	4	4
808	6-15-4300-002	105	WEST FORK	PORCUPINE CREEK	HEADWATERS	/CREEK	-33N39E11	PORCUPINE CR	17.0	4	4	4
978	1-11-7460-001	53	WEST FORK	QUARTZ CREEK	BORDER SEC. 19&20	/MOUTH	-31N32W02	QUARTZ CREEK	8.0	3	4	3
A0C	2-06-7030-000	39	WEST FORK	ROCK CREEK	SOURCE	/MOUTH	-06N15W31	ROCK CREEK	29.4	3	4	3
842	5-22-6650-001	9	WEST FORK	ROCK CREEK	FOREST SERVICE BNDRY	/MOUTH	-08S20E04	ROCK CREEK	3.2	4	4	4
863	5-22-6650-002	9	WEST FORK	ROCK CREEK	HEADWATERS	/CALAMITY FALLS	-08S18E04	ROCK CREEK	11.7	4	4	4
001	5-22-6650-003	9	WEST FORK	ROCK CREEK	CALAMITY FALLS	/FOREST BOUNDARY	-08S20E06	ROCK CREEK	19.0	4	4	4
A0Q	3-01-8160-001	57	WEST FORK	RUBY RIVER	NO NAME CREEK	/MOUTH	-11S03W05	RUBY RIVER	4.2	4	4	4
894	5-22-6664-001	95	WEST FORK	STILLWATER RIVER	CASTLE CREEK	/MOUTH	-05S16E06	STILLWATER RIVER	4.5	3	3	4
895	5-22-6664-002	95	WEST FORK	STILLWATER RIVER	FS BNDRY	/CASTLE CREEK	-04S15E26	STILLWATER R.	7.4	3	3	4
185	5-22-6678-001	97	WEST FORK	STILLWATER RIVER	SECTION 25A	/-FS BOUNDARY	-05S14E01	STILLWATER RIVER	12.7	2	2	4
436	4-20-6400-001	49	WEST FORK	SUN RIVER	MOUTH AHORN CREEK	/MOUTH	-21N10W20	SO FK SUN RIVER	12.4	4	4	4
A2D	1-03-8064-000	89	WEST FORK	SWAMP CREEK	SOURCE	/MOUTH	-20N27W23	SWAMP CR	12.9	4	4	4
A7P	1-07-4900-000	29	WEST FORK	SWIFT CREEK	SOURCE	/MOUTH	-33N23W03	SWIFT CR	11.3	4	4	4
330	4-14-6480-000	99	WEST FORK	TETON RIVER	NEAR UPPER END	/MOUTH	-25N09W06	NO FK TETON RIVER	4.7	3	4	3
660	1-05-8080-000	89	WEST FORK	THOMPSON RIVER	HEADWATERS	/MOUTH	-22N28W22	THOMPSON RIVER	12.9	3	3	4
843	5-22-6706-000	97	WEST FORK	UPPER DEER CREEK	HEADWATERS	/MOUTH	-01S14E36	UPPER DEER CREEK	19.3	4	4	4
AAC	1-11-7480-001	53	WEST FORK	YAAK RIVER	CANADIAN BORDER	/MOUTH	-37N31W32	YAAK RIVER	13.5	3	4	3
AAD	1-11-7430-002	53	WEST FORK	YAAK RIVER	WINKUM CREEK	/CANADIAN BORDER	-37N32W06	YAAK RIVER	8.8	4	4	4
844	5-22-6790-001	9	WEST RED LODGE CREEK		FOREST SERVICE BOUND	/MOUTH	-06S20E07	EAST RED LODGE CREEK	29.3	4	4	4
038	5-22-6790-002	9	WEST RED LODGE CREEK		1ST BRIDGE	/-FS BOUNDARY	-07S18E01	RED LODGE CREEK	2.4	4	4	4
845	5-22-6804-001	95	WEST ROSEBUD CREEK		FOREST SERVICE BNDRY	/MOUTH	-04S18E13	ROSEBUD CREEK	29.3	3	3	4
058	5-22-6804-002	95	WEST ROSEBUD CREEK		OUTLET OF ISLAND LK.	/FOREST BOUNDARY	-06S17E27	ROSEBUD CREEK	17.3	3	3	4
862	5-22-6804-003	95	WEST ROSEBUD CREEK		HEADWATERS	/OUTLET OF ISLAND L.	-07S15E13	ROSEBUD CREEK	12.7	4	4	4
160	5-22-0168-199	95	WEST TRAIL DRAW		HEADWATERS	/MOUTH	-04S15E01	BAD CANYON CREEK	2.4	4	4	4
659	1-08-7700-001	29	WHALE CREEK		WHALE CREEK FALLS	/MOUTH	-36N21W30	N FORK FLATHEAD R	14.5	2	4	2
664	1-08-7700-002	29	WHALE CREEK		HEADWATERS	/WHALE CREEK FALLS	-36N23W29	N FORK FLATHEAD R	17.7	3	4	3
944	1-08-7720-002	29	WHEELER CR		SOURCE	/BIGELOW CR	-27N17W29	S.FK FLATHEAD R.	8.0	4	4	4
943	1-08-7720-001	29	WHEELER CREEK		BIGELOW CREEK	/HUNGRY HORSE DAM	-27N17W15	S.FORK FLATHEAD R.	6.6	2	2	2
ACB	1-08-7760-000	29	WHISTLER CREEK		HEADWATERS	/MOUTH	-27N13W02	LOGGEPOLE CREEK	3.2	3	4	3
AXJ	2-05-8128-200	61	WHITE CREEK		HEADWATERS	/MOUTH	-12N24W18	CACHE CREEK	6.4	3	4	3
947	1-05-8176-000	89	WHITE PINE CREEK		SOURCE	/MOUTH	-23N31W13	BEAVER CREEK	19.3	4	4	4
A80	1-08-7820-001	77	WHITE RIVER		NEEDLE FALLS	/MOUTH	-21N13W08	S.FORK FLATHEAD R.	12.1	2	2	3
A3R	1-08-7820-002	77	WHITE RIVER		SOURCE	/NEEDLE FALLS	-21N12W06	S.FK FLATHEAD RIVER	20.9	3	4	3
A5E	1-08-7780-000	29	WHITECOMB CREEK		SOURCE	/MOUTH	-25N13W07	SPOTTED BEAR RIVER	6.4	3	4	3
657	1-07-4980-001	29	WHITEFISH RIVER		ROSE CROSSING BRIDGE	/MOUTH	-28N21W05	STILLWATER RIVER	8.4	4	4	4
658	1-07-4980-002	29	WHITEFISH RIVER		HODGSON ROAD BRIDGE	/ROSE CROSSING BRIDGE	-28N21W20	STILLWATER RIVER	15.3	4	4	4
661	1-07-4980-003	29	WHITEFISH RIVER		OUTLET WHITEFISH L	/HODGSON ROAD BRIDGE	-30N21W22	STILLWATER RIVER	15.4	4	4	4

AFD 4-14-6600-000	73	WHITEROCK CREEK	HEADWATERS	/MOUTH	-29N12W16 SO. FK. TWO MEDICINE R	3-2 3 4 3
331 4-14-6560-002	73	WHITETAIL CREEK	NEAR UPPER END	/BLACKFT RESERV BDRY	-29N10W29 BADGER CREEK	5-3 4 4 4
BAA 6-16-4120-001	91	WHITETAIL CREEK	WHITETAIL DAM	/MOUTH	-36N52E05 BIG MUDDY CREEK	24-0 4 5 4
288 4-17-8432-000	59	WHITETAIL DEER CREEK	HEADWATERS	/MOUTH	-12N04E36 SMITH RIVER	15-3 4 4 4
A88 6-15-4330-000	71	WHITETAIL DEER CREEK	CANADIAN BORDER	/MOUTH	-23N33E10 MILK RIVER	104-0 4 5 4
917 1-11-7540-000	53	WIGWAM RIVER	BLUEBIRD CREEK	/CANADIAN BORDER	-37N25W01 KOOTENAI RIVER	8-4 3 4 3
A63 1-08-7860-000	29	WILDCAT CREEK	SOURCE	/MOUTH	-29N18W30 WOUNDED BUCK CR.	6-4 3 4 3
932 1-11-7580-000	53	WILLIAMS CREEK	HEADWATERS	/MOUTH	-36N25W27 GRAVE CREEK	3-9 4 4 4
AV4 2-06-7125-200	39	WILLIAMS GULCH	HEADWATERS	/MOUTH	-07N17W01 ROCK CREEK	5-6 3 4 3
A22 1-05-8240-000	89	WILLOW CREEK	SOURCE	/MOUTH	-24N29W04 VERMILION RIVER	8-4 4 4 4
AFW 2-04-5910-001	49	WILLOW CREEK	NATL FOREST BOUNDARY	/MOUTH	-14N09W29 BLACKFOOT RIVER	8-0 5 5 5
AFQ 2-04-5940-001	49	WILLOW CREEK	SANDBAR CREEK	/MOUTH	-15N07W35 BLACKFOOT RIVER	5-0 4 5 4
AFQ 2-04-5940-002	49	WILLOW CREEK	SOURCE	/SANDBAR CREEK	-14N06W06 BLACKFOOT RIVER	5-6 4 4 4
AL2 2-06-7144-000	23	WILLOW CREEK	MOUTH OF WEST FORK	/MOUTH	-04N10W11 SILVER BOW CREEK	12-9 4 4 4
AIA 3-02-6950-001	1	WILLOW CREEK	DUBOIS CREEK	/MOUTH	-04S09W25 BIG HOLE RIVER	17-9 4 4 4
ALO 3-10-8000-001	31	WILLOW CREEK	WILLOW CREEK DAM	/MOUTH	-01N01W24 JEFFERSON RIVER	17-7 3 3 4
ALN 3-10-8000-002	31	WILLOW CREEK	N&S. WILLOW CREEK	/WILLOW CREEK RESERV.	-01S01W28 JEFFERSON RIVER	1-1 3 3 4
437 4-14-6720-000	99	WILLOW CREEK	FORKS	/MOUTH	-23N05W20 DEEP CREEK	20-9 4 4 4
394 4-17-8448-001	49	WILLOW CREEK	FOREST BOUNDARY	/MOUTH	-13N03W12 HOLTER RESERVOIR	4-0 4 4 4
ABV 4-17-8464-000	59	WILLOW CREEK	NEAR HEADWATERS	/MOUTH	-09N07E04 N FK SMITH R	5-6 4 5 4
438 4-20-6550-001	49	WILLOW CREEK	NEAR FOREST BOUNDARY	/WILLOW CREEK RES.	-21N07W26 SUN RIVER	21-2 4 4 4
847 5-22-6916-001	9	WILLOW CREEK	HIGHWAY 307 BRIDGE	/COONEY RESERVOIR	-05S20E02 RED LODGE CREEK	23-7 4 4 4
B8L 5-22-6916-002	9	WILLOW CREEK	NATIONAL FOREST BOUN/HIGHWAY 307 BRIDGE	/CULVERT AT SKI HILL /FOREST BOUNDARY	-07S20E16 RED LODGE CREEK	6-9 4 4 4
002 5-22-6916-003	9	WILLOW CREEK	CULVERT AT SKI HILL	/FOREST BOUNDARY	-07S20E31 ROCK CREEK	4-0 4 4 4
A75 6-15-4401-001	105	WILLOW CREEK	LONETREE CREEK CONFL	/MOUTH	-28N40E29 MILK RIVER	64-0 4 5 4
BAL 6-15-4403-001	105	WILLOW CREEK	HINSDALE LIVESTOCK C	/MOUTH	-32N36E01 ROCK CREEK	24-0 3 4 3
580 3-22-6902-001	67	WILLOW CREEK 01	NORTH FORK WILLOW CR	/MOUTH	-01N10E32 SHIELDS RIVER	12-2 4 4 4
581 3-22-6902-002	67	WILLOW CREEK 02	S&M FORK WILLOW CR.	/MOUTH	-20N17W22 GLACIER CR.	4-2 4 4 5
ASV 1-07-5060-000	63	WINDFALL CREEK	SOURCE	/MOUTH	-04S05W15 RUBY RIVER	5-8 4 4 4
AN9 3-01-8380-002	57	WISCONSIN CREEK	FOREST SERVICE BNDRY	/MARSH DITCH	-01N11W34 BIG HOLE RIVER	29-0 4 4 4
AGR 3-02-7025-000	1	WISE RIVER	LACY CR	/MOUTH	-27N19W22 SWAN RIVER	8-0 4 4 4
AA1 1-07-5080-001	29	WOLF CREEK	TRAIL 544 CROSSING	/MOUTH	-29N29W34 FISHER RIVER	25-3 4 4 4
662 1-11-7680-001	53	WOLF CREEK	LITTLE WOLF CREEK	/MOUTH	-29N27W03 FISHER RIVER	33-8 3 3 4
663 1-11-7680-002	53	WOLF CREEK	HEADWATERS	/LITTLE WOLF CREEK	-21N16E02 JUDITH RIVER	48-3 4 4 4
A8F 4-16-4200-001	27	WOLF CREEK	5 MI. BELOW DENTON	/MOUTH	-18N14E13 JUDITH RIVER	8-0 4 4 4
332 4-16-4200-002	27	WOLF CREEK	TOWN OF DENTON	/5 MI. BELOW DENTON	-15N04W35 LIT. PRICKLY PEAR CR	14-8 4 4 4
395 4-17-8576-000	49	WOLF CREEK	NEAR FORKS	/MOUTH	-12N07E27 SHEEP CR	7-2 4 4 4
A80 4-17-8585-000	59	WOLSEY CREEK	HEADWATERS	/MOUTH	-20N10W16 STRAIGHT CREEK	11-9 4 4 4
439 4-20-6650-001	49	WOOD CREEK	WOOD LAKE	/MOUTH	-05S15E32 STILLWATER RIVER	2-0 4 4 4
202 5-22-6944-001	95	WOODBINE CREEK	2KM ABOVE MOUTH	/MOUTH		

858	5-23-6944-002	95	WOODBINE CREEK	HEADWATERS	1/2 KM ABOVE MOUTH	-06S15E04	STILLWATER RIVER	12.2	4	4	4
AFC	4-14-6760-000	73	WOODS CREEK	HEADWATERS	/MOUTH	-29N12W07	SO.FK.TWO MEDICINE R	2.4	3	4	3
289	4-17-8656-000	59	WOODS GULCH	HEADWATERS	/MOUTH	-09N06E07	SMITH RIVER	10.0	4	4	4
AFK	3-17-8660-001	59	WOODSON CREEK	HAMEN RESERVOIR FK	/MOUTH	-06N08E16	SIXTEENMILE CREEK	3.2	4	4	4
684	1-07-5100-001	47	WOODWARD CREEK	SOUTH WOODWARD CREEK/MOUTH	/MOUTH	-23N18W01	SWAN RIVER	7.6	3	4	3
A95	6-15-4490-001	71	WOODY ISLAND COULEE	HWY. 241 N. OF TURNER	/MOUTH	-35N28E04	COTTONWOOD CREEK	48.0	4	5	4
ABU	1-08-7920-000	29	WOUNDED BUCK CREEK	SOURCE	/HUNGRY HORSE RESER.	-29N18W17	S.FORK FLATHEAD R.	8.0	3	3	3
AV5	2-06-7220-200	63	WRANGLE CREEK	HEADWATERS	/MOUTH	-15N18W21	RATTLESNAKE CREEK	5.8	4	4	4
440	4-20-6750-001	99	WRONG CREEK	2.5 MI. ABOVE MOUTH	/MOUTH	-08N17W35	ROCK CREEK	4.0	4	4	4
AV6	2-06-7239-200	39	WYMAN CREEK	HEADWATERS	/MOUTH	-03S12W17	ELKHORN CREEK	11.1	3	4	3
AGT	3-02-7075-000	1	WYMAN CREEK	HEADWATERS	/MOUTH	-32N34W05	KOOTENAI RIVER	14.4	2	2	3
998	1-11-7740-000	53	YAAK RIVER	YAAK FALLS	/MOUTH	-33N33W04	KOOTENAI RIVER	72.0	3	4	3
999	1-11-7760-000	53	YAAK RIVER	CANADIAN BORDER	/YAAK FALLS	-37N23W33	TRAIL CREEK	8.3	3	4	3
ACU	1-08-7940-000	29	YAKINAK CREEK	SOURCE	/MOUTH	-24N60E25	MISSOURI RIVER	88.0	1	1	1
780	7-21-1350-001	83	YELLOWSTONE RIVER 01-01	INTAKE DIVERSION	/NORTH DAKOTA LINE	-18N56E36	MISSOURI RIVER	126.2	1	1	1
779	7-21-1350-002	21	YELLOWSTONE RIVER 01-02	POWDER RIVER	/INTAKE DIVERSION	-05N34E28	MISSOURI RIVER	89.8	3	3	3
852	5-22-7000-001	111	YELLOWSTONE RIVER 03	HUNTLEY	/BIGHORN RIVER	-02N27E25	MISSOURI RIVER	17.5	3	3	4
851	5-22-7000-002	111	YELLOWSTONE RIVER 03	BILLINGS	/HUNTLEY	-01N26E34	MISSOURI RIVER	35.1	4	4	4
850	5-22-7000-003	111	YELLOWSTONE RIVER 03	LAUREL	/BILLINGS	-02S24E22	MISSOURI RIVER	17.1	2	2	3
853	5-22-7014-000	111	YELLOWSTONE RIVER 04	PARK CITY	/LAUREL	-03S23E05	MISSOURI RIVER	32.3	3	3	3
854	5-22-7028-000	95	YELLOWSTONE RIVER 05	COLUMBUS	/PARK CITY	-02S20E28	MISSOURI RIVER	30.9	1	1	3
855	5-22-7042-000	95	YELLOWSTONE RIVER 06	REEDPOINT	/COLUMBUS	-01S12E15	MISSOURI RIVER	23.5	1	1	1
582	3-22-7056-002	67	YELLOWSTONE RIVER 07	SHIELDS RIVER	/REGION 3 BOUNDARY	-01S18E30	MISSOURI RIVER	72.3	1	1	3
856	5-22-7056-001	97	YELLOWSTONE RIVER 07	REGIONAL BOUNDARY	/REEDPOINT	-01S10E26	MISSOURI RIVER	31.5	1	1	1
585	3-22-7070-001	67	YELLOWSTONE RIVER 08	PINE CREEK	/SHIELDS RIVER	-04S09E11	MISSOURI RIVER	52.0	1	1	1
584	3-22-7070-002	67	YELLOWSTONE RIVER 08	TOM MINER CREEK	/PINE CREEK	-07S07E29	MISSOURI RIVER	27.7	1	1	1
586	3-22-7084-000	67	YELLOWSTONE RIVER 09	YELLOWSTONE PARK	/TOM MINER CREEK	-11N50E04	MISSOURI RIVER	141.5	1	2	1
781	7-21-1400-001	75	YELLOWSTONE RIVER 02-01	CARTERSVILLE DIVERS.	/POWDER RIVER	-06N40E14	MISSOURI RIVER	93.7	2	2	2
782	7-21-1400-002	87	YELLOWSTONE RIVER 02-02	BIGHORN RIVER	/CARTERSVILLE DIVERS.	-13M11E34	MIDDLE FK JUDITH R	12.6	4	4	4
333	4-16-4260-001	45	YOGO CREEK	LEAD GULCH	/MOUTH	-37N28W24	KOOTENAI RIVER	10.0	2	3	2
686	1-11-7780-001	53	YOUNG CREEK	SOUTH FORK YOUNG CR	/LIBBY RESERVOIR	-37N29W14	KOOTENAI RIVER	4.8	3	4	3
685	1-11-7780-002	53	YOUNG CREEK	HEADWATERS	/S FORK YOUNG CREEK	-20N12W31	S.FORK FLATHEAD R.	18.8	3	3	3
ABN	1-08-7960-001	77	YOUNGS CREEK	FALLS	/MOUTH						

SUPPLEMENT V - ATTACHMENT A

MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS

PROCEDURE FOR CLASSIFYING MONTANA STREAMS

SPRING 1980

MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS

PROCEDURE FOR CLASSIFYING MONTANA STREAMS

SPRING 1980

GENERAL

Six value classes were established:

<u>Value Class</u>	<u>Class Definition</u>
1	Highest-value fishery resource
2	High priority fishery resource
3	Substantial fishery resource
4	Moderate fishery resource
5	Limited fishery resource
6	Not yet classified

Each stream reach was placed in a value class for each of the two criteria below. The final classification, the fishery resource value, was the higher class given for criterion 1 or 2. In accomplishing this, data for each stream reach were entered in a computer file and a computer program used to check the attributes and assign the class for each reach.

Criterion 1 - Habitat and Species Value of Stream Reach

The class of each reach was determined by a point system in which most points were awarded for important habitats of fishes of special concern (native fishes found in limited numbers and/or limited waters). Fewer points were awarded to less important habitats of fishes of special concern and for the occurrence of widespread species found in substantial numbers. Least points were awarded for occurrence of non-indigenous species considered of minimal value. Additional consideration was given streams that are important sources of trout recruitment. Points were also given for spring streams; esthetics (natural beauty); and 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.

Criterion 2 - Sport Fishery Potential of Stream Reach

The class of each reach was based on a point system in which points were awarded for (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).

A listing naming each stream reach, describing its upper and lower boundaries, and giving its classification is available, as is a detailed account of how each reach met the requirements of its class.

DETAILED PROCEDURE FOR ASSIGNING VALUE CLASSES

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

I. Standards and Associated Points

Points ^{1/} Standard

15	I	Highest-valued habitat ^{2/} for a class A fish of special concern ^{3/} .
10	II	High priority habitat for a class A fish of special concern OR Highest-valued habitat for a class B fish of special concern.
5	III	Substantial habitat for a class A fish of special concern. OR High priority habitat for a class B fish of special concern. OR Highest-valued habitat for a class C fish of special concern.
3	IVA	Substantial habitat for a class B fish of special concern. OR High priority habitat for a class C fish of special concern.
1.5	IVB	Substantial habitat for a class C fish of special concern.
.4	V	Limited habitat for any fish of special concern. OR Abundant ^{4/} population of: (1) native not fish of special concern ^{5/} or (2) non-native game or sport species ^{5/} .
.3	VIA	Common abundance of: (1) native not fish of special concern OR (2) non-native game or sport species.
.2	VIB	Same as VIA only abundance rating is uncommon or unknown.
.1	VII	Same as VIA only abundance is rated as rare, M (species absent might be present if habitat problem corrected) or E (species expected but not verified). OR Presence of any non-native non-sport species.
3	VIII	Esthetics rating is C or higher on a scale of A highest to E lowest ^{6/} .
3	IX	Stream is one of few streams or only one in the immediate area and is important to community for scientific study, nature study and/or recreation.
3	X	Stream is a spring stream or spring creek.

^{1/} Points are awarded for each species meeting a standard.

^{2/} Habitat designations: highest-valued, high priority, substantial and limited are based on judgment decisions of fisheries biologists.

^{3/} See list of fishes of special concern in Appendix.

^{4/} See "Fish Abundance Ratings" in Appendix.

^{5/} See list of Montana fish species in Appendix.

^{6/} See explanations of esthetics ratings in Appendix.

II. Assignment of class

<u>Points</u>	<u>Habitat and Species Value Class</u>
15 or more	1
10 to less than 15	2
5 to less than 10	3
.3 to less than 5	4
Greater than zero to less than .3	5
0	6

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

NOTE: Unless fish are known to be present the stream reach is automatically in class 6.

B. Procedure for Criterion 2 - Sport Fishery Potential of Stream Reach

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

a. Points for abundance of all trout species combined ^{1/}

<u>Biomass (Kg) per 300 m</u>	<u>Points</u>
70 and over	9
12 to less than 70	6.5
5 to less than 12	4
3.5 to less than 5	2
Greater than 0 to less than 3.5	1

If trout present but biomass unknown:

Each species with abundance A,B,C or D ^{2/} is assigned 1 point

Each species with abundance U,V or Z is assigned .5 points

b. Points for abundance, class A non-trout game and sport fish for streams. ^{1/}

<u>Abundance Rating ^{2/}</u>	<u>Points</u>
A	2
B	3
C	1
D	2
U, V and Z	.5

NOTE: Maximum for mountain whitefish is 2 points.

c. Assignment of abundance grade

<u>Points (sum of points from a and b above)</u>	<u>Grade</u>
9 and over	4
6 to less than 9	3
3 to less than 6	2
Greater than 1 to less than 3	1
1 or less	0

Component II. Assignment of ingress grade

<u>Ingress rating ^{2/}</u>	<u>Grade</u>
1	4
2	3
3	3
4	2
5	1
6 and 7	0

^{1/} For species designations see list of Montana fishes in Appendix.

^{2/} See explanation or ratings in Appendix.

Component III. Assignment of Esthetics Grade

<u>Esthetics rating</u> ^{1/}	<u>Grade</u>
A	4
B	3
C	2
D	1
E	0

Component IV. Assignment of Use (Fishing Pressure) Grade

<u>Fisherman-days/10 km</u>	<u>Grade</u>
1250 and over	4
310 to less than 1250	3
65 to less than 310	2
Greater than 0 to less than 65	1
0 (none or unknown)	0

Computation of Sport Fishery Potential Score and Assignment of Class.

A. Score = Sum of (grade for each component x multiplier ^{2/}).

B. Assignment of Class

<u>Score</u>	<u>Conditions</u>	<u>Sport Fishery potential class</u>
1. 17 and over	Fish production based on natural reproduction. Trout with abundance B or D (large-sized) ^{3/} or paddlefish must be present. 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. 17 and over	Ingress rating of 1, 2 or 3 and at least one condition in 1 above not met.	2
3. 17 and 18	Ingress rating of 4 to 7	3
4. 15 to less than 17	Ingress rating of 1,2 or 3	2
5. 15 to less than 17	Ingress rating of 4 to 7	3
6. Greater than 11 to less than 15		3
7. Greater than 4 to 11		4
8. Greater than 0 to 4		5
9. 0		6

Note: If no fish are present stream reach is automatically in class 6.

^{1/} See explanation of ratings in Appendix.

^{2/} Multiplier for fish abundance is 2; for other components (ingress, esthetic and use) the multiplier is 1.

^{3/} See explanation of abundance ratings in Appendix.

^{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 criterion 1 or 2 above.

APPENDIX

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

Code

- 1 - 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 - these 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. May include minor portions where public land or road crossing may provide 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.

FISH ABUNDANCE RATINGS. Abundance of fish refers only to adult fish, or in case 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 were 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-sized fish (see appendix)
- C = Common
- D = Common with proportional number of large-sized fish (see appendix)
- U = Uncommon
- V = Uncommon with proportional number of large-sized fish (see appendix)
- R = Rare
- E = Presence not verified but expected
- M = Species absent but could be present if habitat problems corrected
- N = Not present
- P = Species absent, but might be present if introduced
(e.g. potential habitat in a barren stream)
- Z = Abundance unknown

Special codes entered in abundance column to indicate habitat value of reach for species of special concern.

G = Highest-valued

H = High priority

S = Substantial value

L = Limited value

CODES FOR FISHES' USE OF REACH

Codes indicating single use or dominant use:

L = Resident throughout life cycle

A = Spawning elsewhere (includes hatchery fish) -- spends part or most of life in reach

H = Spawning and hatching -- young promptly move downstream

J = Spawning and nursery to subadult

C = Passing through -- species uses reach as a corridor to migrate upstream and return downstream

F = Feeding run

N = No use (in connection with abundance codes M, N and p)

Z = Use undetermined

Codes that are combinations of the above codes to indicate more than one population of a species.

R = L plus A, H or J

P = C plus L, A, H or J

S = H and J combined

Any other combination: Code entered for dominant use.

ESTHETICS RATINGS. Esthetics were 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 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 esthetics.

E - A stream with low esthetics.

MONTANA FISHES IN FAMILY SEQUENCE (Also see fishes of special concern list)

MT FW&P Code	MT FW&P Code
+ 27 - Sturgeon*	140 - Silvery minnow
+ 90 - White sturgeon	141 - Plains minnow
+ 91 - Pallid sturgeon	142 - Finescale dace
+ 92 - Shovelnose sturgeon	143 - Northern redbelly dace
+ 28 - Paddlefish	31 - Sucker*
38 - Shortnose gar	40 - Buffalo
34 - Goldeye	55 - River carpsucker
° 01 # Rainbow trout* (See 122)	56 - Longnose sucker
° 02 - Cutthroat trout*	57 - White sucker
° 03 # Brook trout	58 - largescale sucker
° 04 # Brown trout	59 - Blue sucker
° 05 - Dolly Varden	60 - Bigmouth buffalo
° 06 - Lake trout	61 - Smallmouth buffalo
° 07 # Golden trout	62 - Shorthead redhorse
+ 08 # Kokanee	63 - Mountain sucker
09 # Coho salmon	
+ 10 - Arctic grayling	+24 - Channel catfish
° 11 # Rainbow x cutthroat trout hybrid	25 # Bullhead*
° 12 - Westslope cutthroat trout (pure)	64 - Stonecat
° 13 - Yellowstone cutthroat trout (pure)	65 # Black bullhead
14 - Whitefish*	66 # Yellow bullhead
15 # Lake whitefish (May be native in St. Mary's Lake)	100 - Trout-perch
+ 85 - Mountain whitefish	+26 - Burbot
86 - Pygmy whitefish	103 - Plains killifish
87 # Chinook salmon	(Probably native)
88 # Splake	106 . Mosquitofish
+ 89 # Salmon*	109 . Shortfin molly
°118 Trout*	112 . Variable platyfish
119 Trout/Salmon*	115 . Green swordtail
°120 # Rainbow trout x golden trout hybrid	
°121 - Upper Missouri cutthroat trout (pure)	71 - Brook stickleback
°122 - Native rainbow trout	72 # White bass
99 # Rainbow smelt	17 # Largemouth bass
23 # Northern pike (native only in (Saskatchewan River Drainage)	18 # Bass*
29 - Peamouth	19 # Sunfish*
30 . Goldfish	21 # Crappie*
32 . Carp	+73 # Smallmouth bass
33 - Northern squawfish	74 # Bluegill
35 . Utah chub	75 # Pumpkinseed
37 - Minnow*	76 # Green sunfish
39 - Longnose dace	77 # Black crappie
41 - Northern redbelly/Finescale dace*	78 # White crappie
42 - Brassy minnow	79 # Rock bass
43 - Silvery/Plains minnow*	
44 - Flathead chub	20 # Yellow perch
45 - Lake chub	+22 Sauger/Walleye*
46 - Sturgeon chub	+81 - Sauger
47 - Emerald shiner	+82 # Walleye
48 - Sand shiner	83 - Iowa darter
49 - Redside shiner	
50 - Creek chub	36 - Freshwater drum
51 - Pearl dace	
52 - Fathead minnow	16 - Sculpin*
53 . Golden shiner	130 - Mottled sculpin
(May be native in eastern Montana)	131 - Slimy sculpin
54 - Sicklefin chub	132 - Torrent sculpin
	133 - Shorthead sculpin
	134 - Spoonhead sculpin

Codes:

- | | |
|--|--|
| ° Trout species | - Native fish, i.e. indigenous |
| # Non-native game or sport fish | . Non-native non-sport fish |
| + Class A non-trout game or sport fish for streams | * Undesignated as to species or strain |

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)
 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.

Westslope cutthroat trout (Salmo clarki lewisi)
 --includes upper Missouri cutthroat trout
 Native rainbow trout (Salmo gairdneri)
 Sturgeon chub (Hybopsis gelida)
 Sicklefin chub (Hybopsis meeki)
 Shorthead sculpin (Cottus confusus)

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.

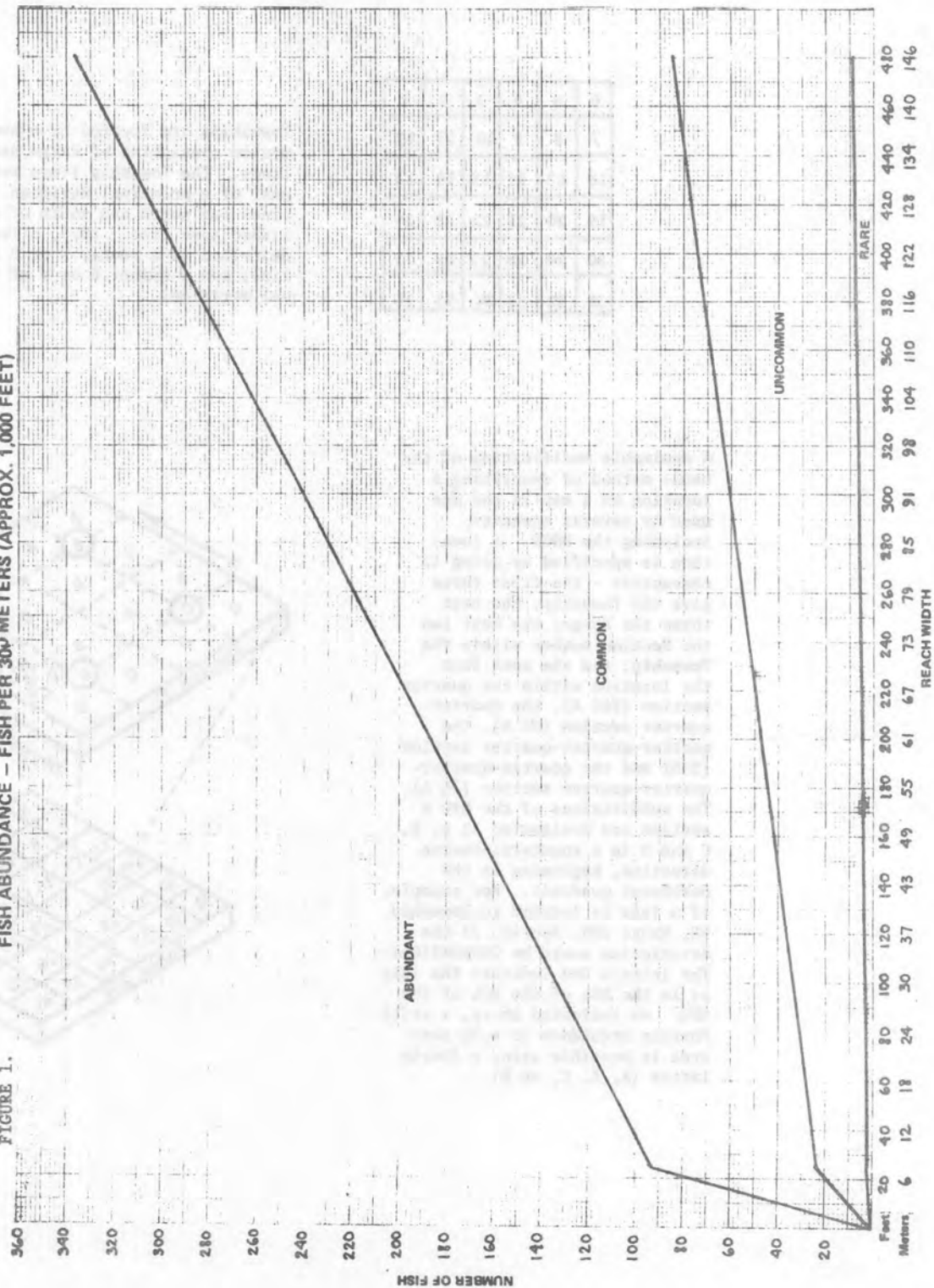
Shortnose gar (Lepisosteus platostomus)
 Finescale dace (Phoxinus neogaeus)
 Trout-perch (Percopsis omiscomaycus)
 Spoonhead sculpin (Cottus ricei)

STANDARDS FOR LARGE-SIZED FISH

<u>Species</u>	<u>Kg</u>	<u>Lbs.</u>	<u>Species</u>	<u>Kg</u>	<u>Lbs.</u>
Shovelnose sturgeon	2.7	6	Northern Pike	6.8	15
Paddlefish	34.0	75	Bullhead--		
Mountain whitefish	.9	2	black & yellow	.3	.7
Kokanee	.9	2	Channel catfish	3.6	8
Cutthroat trout	.7	1.5	Burbot	2.7	6
Rainbow trout	1.4	3	Smallmouth bass	.9	2
Brown trout	1.4	3	Largemouth bass	1.8	4
Brook trout	.5	1	Crappie--		
Dolly Varden	3.6	8	black & white	.5	1
Lake trout	6.8	15	Yellow perch	.5	1
Arctic Grayling	.9	2	Sauger	.9	2
Golden trout	.5	1	Walleye	1.8	4
Kokanee		2.5			

* See January/February 1980 Montana Outdoors for article on fishes of special concern.

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



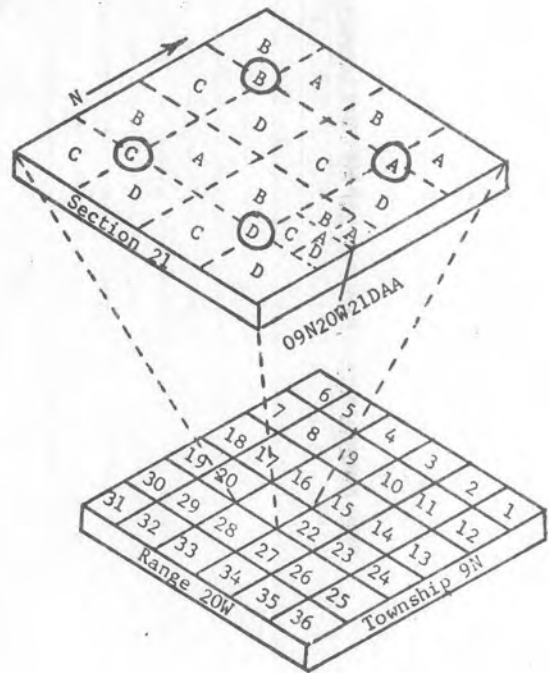
Land Description: Township - Range - Section - Subsection

Explanation of letters (A, B, C and D) designating subsections

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Townships are located by a numbered grid system consisting of Range and Township lines. The Township lines run east and west of a principal meridian. The Range lines run north and south of an established base line. Thus, a Township is described as a number N or S of the base line, and a number E or W of the principal meridian.

A desirable modification of the usual method of describing a location on a map is the one used by several agencies, including the USGS. A location is specified by using 12 characters - the first three give the Township; the next three the Range; the next two the Section number within the Township; and the next four the location within the quarter section (160 A), the quarter-quarter section (40 A), the quarter-quarter-quarter section (10A) and the quarter-quarter-quarter-quarter section ($2\frac{1}{2}$ A). The subdivisions of the 640 A section are designated as A, B, C and D in a counterclockwise direction, beginning in the northeast quadrant. For example, if a lake is located in Township 9N, Range 20W, Section 21 the description would be 09N20W21DAA. The letters DAA indicate the lake is in the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$. As indicated above, a still further breakdown to a $2\frac{1}{2}$ acre area is possible using a fourth letter (A, B, C, or D).



SUPPLEMENT V - ATTACHMENT B

DETAILED INSTRUCTION FOR ENTERING DATA INTO
INTERAGENCY STREAM FISHERY DATA BASE
MONTANA

DETAILED INSTRUCTION FOR ENTERING DATA INTO
INTERAGENCY STREAM FISHERY DATA BASE
MONTANA

GENERAL INSTRUCTIONS

It is not intended that all data for a water be entered at one time, but rather as they become available. New forms can be submitted as needed. However, each time a new form is entered, the water code number and reach number on card 1 must be filled in. They are the tie to information for the reach already "in the computer." THE AGENCY MAKING THE FIRST ENTRY FOR A STREAM REACH SHOULD ENTER ALL WATER IDENTIFICATION AND LOCATION INFORMATION ON CARDS 1, 2, 3, 4 AND ON CARD 5 THROUGH ADMINISTRATIVE LOCATIONS.

Metric measurements are to be used exclusively. For metric equivalents of English units see Appendix.

An * in heading on a form indicates special coding and directs the user's attention to these instructions.

↑ indicates decimal point. Where not provided a decimal point can be added thus:

1	.	6
---	---	---

If there is an insufficient space for counties (card 4), for ownership and access (card 5 & 6), for fish population or creel data (cards 14, 15, 17) enter the data on an additional form and attach a card 1 with the state water code number and reach number entered. Submit it a day or two after original form so it will be a separate entry.

Most fields (a field is a unit of data) are right-justified, i.e., the last digit or letter must be in the right-most box and blanks, if any, are at the left end. Some fields are left-justified. These are signified by an arrow ←. Here, blanks, if any, are on the right. You have flexibility in making entries in open fields (those calling for names and words); leave blanks where desired. Apostrophes, periods, dashes, and slashes are also permissible. Be as brief as possible in open fields, consistent with being clear, as each column containing a number or letter adds to the data base storage cost.

Boxes labeled RATING ask you to judge the quality of your data from "1" which is the poorest to "9" which is best. Rate conservatively. As a guide:

- 1 to 3 means the data rated are based on judgment estimates
- 4 to 6 means the data rated are based on limited measurements
- 7 to 9 means the data rated are based on extensive measurements

Y or N asks you to answer: Y (Yes) or N (No).

Spaces that do not have headings should be left blank.

When forms are ready for keypunching send them to your agency's fishery data base coordinator.

*Recycle all forms and instructions dated earlier than this date.

SPECIFIC INSTRUCTIONS

Card 1

Serial Number. This number will be controlled by regional or state office of agency entering information.

State. The code for Montana is 30.

Overlap. Office use only.

Hydrologic Unit Code. This entry designates drainage area. Regional and state office of each agency have these codes.

State Water Code and Water Type. Obtain state water code and water type from list furnished by Montana Department of Fish, Wildlife and Parks or write or phone: Fisheries Division, Montana Department of Fish, Wildlife and Parks, Helena, Montana 59601 - Phone 449-2448. Stream water type codes are 01 = 19 = stream unable to sustain population.

Reach. Ideally a reach will be a length of stream with distinct physical characteristics (e.g., slow in meadow, rapid in gorge, an area that regularly goes dry); a typical stream will have more than one reach; and these will be surveyed as discrete units, numbered sequentially from the mouth sourceward, with a separate form filled out for each. Typically, however, only part of a stream will be examined; it will be assigned a reach number and data will be entered as surveyed. The length will vary from 0.1 KM (328 feet) to many kilometers depending upon the scope of the investigation. Eventually this reach may be lengthened or shortened as more data are collected. Note: in the state water numbering system some streams are divided into sections, e.g., Madison River has four sections. Each is given a separate water code number. Reaches must be chosen so they are completely within the section; they cannot overlap from one section into another. Likewise they should not overlap National Forest boundaries. Reach numbers 000 to 199 are reserved for Department of Fish, Wildlife and Parks (FWP); 200 to 399 for Forest Service (FS); 400 to 599 for Bureau of Land Management (BLM); and 600 to 699 for Fish and Wildlife Service (FWS). A stream (or stream section) as a whole (or essentially so) is reach 000 if form is filled out by FWP; 200, FS; 400, BLM; and 600, FWS. It is anticipated many streams will have data entered for individual reaches and also will have data such as bank ownership, access, water yields, and flows entered for the stream as a whole (reach 000, 200, 400, or 600). Data entered for the stream as a whole need not be entered for individual reaches and vice versa.

Resource Value, Sport Fishing Value, Habitat and Species Value. These ratings will be entered by computer.

Water Use Class. The water use class is established by the State Board of Health. This entry will be made by Department of Fish, Wildlife and Parks.

Card 2, 3 & 4

Reach Boundaries. Reach boundaries will preferably be at physical features such as bridges and tributaries. Where such features are present, name them in spaces provided. Any description (e.g., $\frac{1}{2}$ Km above bridge) will be better than none. In any event, also enter township, range, section and subsection (to 4th division where pertinent) for upper and lower boundaries. A few townships and ranges are designated by whole numbers plus $\frac{1}{2}$. In these instances the T for township or R for range on the input form will be changed to H. For example, Range $7\frac{1}{2}$ East would be entered as H07E. If reach exceeds 4 Km and the channel would be better defined by three points than two, fill in columns for "Channel Definition Point." Select this point so it best locates the stream channel for computer mapping. The method for subdividing sections is given in the Appendix. If preferred, latitude and longitude may be substituted for township, range and section. Widths at upper and lower boundaries are those during normal low water. If there is only one figure for width and it is typical for the reach, enter it in the field for width at the lower reach boundary. In the rating column enter A for average, E for estimate or S for single measurement.

Counties. Enter all counties bordering a stream reach or through which the reach passes. Enter downstream county first, others can be in random order. County codes are:

001	Beaverhead	029	Flathead	057	Madison	085	Roosevelt
003	Big Horn	031	Gallatin	059	Meagher	087	Rosebud
005	Blaine	033	Garfield	061	Mineral	089	Sanders
007	Broadwater	035	Glacier	063	Missoula	091	Sheridan
009	Carbon	037	Golden Valley	065	Musselshell	093	Silver Bow
011	Carter	039	Granite	067	Park	095	Stillwater
013	Cascade	041	Hill	069	Petroleum	097	Sweet Grass
015	Chouteau	043	Jefferson	071	Phillips	099	Teton
017	Custer	045	Judith Basin	073	Pondera	101	Toole
019	Daniels	047	Lake	075	Powder River	103	Treasure
021	Dawson	049	Lewis & Clark	077	Powell	105	Vally
023	Deer Lodge	051	Liberty	079	Prairie	107	Wheatland
025	Fallon	053	Lincoln	081	Ravalli	109	Wibaux
027	Fergus	055	McCone	083	Richland	111	Yellowstone

Card 5

Mountain Range, Wilderness and Primitive Areas. If not applicable, leave blank. If applicable, codes are given in the Appendix. Two sets of boxes are provided for instances where a stream runs through two wilderness or primitive areas.

Administrative Locations. Administrative location entries enable each agency to draw information from the data base on waters within its administrative boundaries. Codes for Forest Service, Bureau of Land Management and Fish and Wildlife Service are given in the Appendix. For Other Agency (i.e., other than BLM, FWS, and FWP) enter agency code from Appendix and appropriate district or area designation. If a reach is in two Forest Service districts the "Other Agency" field can be used, if desired, for the second district. Thus, an entry for Belt Creek District of Lewis and Clark Forest would be:

OTHER AGENCY	
AGENCY	DISTRICT OR AREA
-1FS	1151/013
FOREST	DISTRICT

Bank Ownership. Use Agency and Ownership codes given in Appendix.

Card 6

Capability Areas or Land Types (Forest Service). Enter the codes for the dominant capability or land types that encompass the stream reach. Enter the capability with the greatest percentage of the reach in the left column, second greatest percentage in the middle column, and the third greatest percent in the right column.

Access. Access (ability to enter as pertains to physical barriers) codes: In the column marked LETTER enter the letter (from below) which designates the "highest" or easiest method of travel (access) that can be used to get to the length of the reach designated by your Km entry (reaching a point within 100 meters of the stream by vehicle is considered to have made 8 Km of stream accessible - 4 upstream and 4 downstream, or less in rugged terrain). The column designated RESTRICTION should be left blank unless there is an administrative or owner restriction preventing entry or prohibiting use of the "highest" method permitted by the terrain or existing trail or road (e.g., a road closure). If there is such a restriction, enter "X" in this square. There are spaces for up to four access categories as many stream reaches will not be accessible throughout by the same means of travel (more can be added if needed -- see General Instructions above).

A = Passenger auto	H = Horse
J = 4-wheel drive (i.e., J for jeep)	W = Foot (Walking)
B = Motor bike	F = Floating

Ingress. Ingress in this data bank means the legal right to enter.

Code (Use narratives as guide -- employ judgment where necessary).

1. 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 - these 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. May include minor portions where public land or road crossing may provide limited ingress. The portion through private land may legally 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.

Card 8, 9 & 10

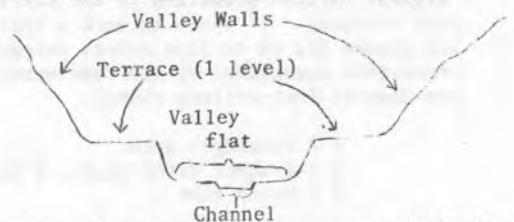
Flow During Survey. Record the instream flow (M^3/sec) during the survey and the date of observation. Water stage during survey is to be coded as:

- 5 - Flooding. The flood plain is completely covered.
- 4 - High. Channel full to the normal high waterline.
- 3 - Moderate. Bottom and one-half of lower banks wetted.
- 2 - Low. Bottom covered but very little of the lower banks wet.
- 1 - Dry. Essentially no flow. Water may stand in bottom depressions.

Normal Low Flow. Enter lowest flow expected during an average year from past records or as can be estimated. Note this is not the historic low flow. If reach regularly goes dry due to natural or man-caused factors enter 000. If only a part of reach goes dry enter 000 and in the "Other Limiting Factors..." field on card 21 make appropriate entry such as "LOWER END GOES DRY." Preferably the portion that goes dry will be a separate reach.

Average Valley Width. This is the same as the valley flat width shown in illustration. A decimal may be used but must occupy one space.

FEATURES IN THE VALLEY CROSS-SECTION



FROM: Glossary of Terminology prepared by Resource Analysis Branch, British Columbia Ministry of Environment, 1978

Average Riparian Width. Record the average width of the riparian zone as defined by vegetative types associated with streams and surface water. A decimal may be used but must occupy one space.

Active Channel Measurements. The active channel is the lower part of the channel entrenchment that is actively involved in transporting water and sediment during the normal regime of flow, i.e., the normal bank-full channel width. The reference point for measuring the active channel section is the point at which the channel banks or the tops of stabilized channel bars abruptly change to a flatter slope. The channel features are relatively permanent and usually vegetated above the active channel. Record the width and depth of the active channel. A decimal is permissible but must be entered as one space.

Average Maximum Pool Depth. Ideally, the maximum depth of each pool in reach is measured during normal low water and the average of these measurements computed.

Gradient (%) = $\frac{\text{Difference in elev. (meters) from upper to lower end of reach}}{\text{Length of reach (meters)}} \times 100.$

It is usually measured with a clinometer or is calculated from a topographic map.

Pool-Run-Riffle Ratio. Estimate the percent of each type for a portion of the stream at low water:

Pool - usually deeper, quiet water (although pools may be at the base of falls).

Run - moderately moving water with the surface not turbulent to the extent of being broken. Intermediate between pool and riffle.

Riffle - shallow, fast moving water where the surface is turbulent and broken.

If only pool-riffle ratio is obtained, leave entry for run blank.

Bottom Types. If possible data for pools, runs and riffles should be entered separately. If information on bottom types is only available for the reach as a whole it should be entered under run with riffle and pool left blank.

Sinuosity. Sinuosity is the ratio of channel length to down-valley distance.

Bank Vegetation (This entry is being replaced by "Habitat Ratings" on card 11).
Predominant (80% or more) type: C = conifer D = deciduous G = grass-forbs
M = mixed S = shrubs.

Rating: This is a visual estimate of vegetation on the stream bank as it relates to shade. A scale of 0 to 2 is used as follows:

2.0 - Bank is medium to heavily covered with trees and/or tall shrubs. (A bank with no more than one continuous 3-meter opening each 30 meters is considered medium dense. In addition to one 3-meter opening, there may be several smaller openings less than 3 meters in length.)

1.5 - Bank has scattered trees and/or tall shrubs. (A scattered density must have 2 or more 3-meter openings each 30 meters. The lower extreme of a scattered density condition would be the occurrence of only one tree or tall shrub within the 30-meter bank section.)

1.0 - Bank is medium to heavily covered with low shrubs, forbs or grasses, or a combination of these plants.

0.5 - Bank is mostly or entirely free of vegetation.

Bank Stability (This entry is being replaced by "Habitat Ratings" on card 11). Stability is to be viewed from the standpoint of whether the banks are eroding at a slow and normal rate, or whether erosion is accelerated and is contributing excessive amounts of sediment. A visual estimation of bank stability is measured on a scale of 0 to 2 as follows:

- 2.0 - Totally stable
- 1.5 - 50% or more of bank is stable but not totally stable
- 1.0 - Less than 50% stable but not totally unstable
- 0.5 - Totally unstable

Average High Water Temperature. Enter highest temperature reached in an average summer.

Spring Creek. A spring creek or spring stream is identified by its fairly constant temperature and flow and clear water. Watercress will often be present.

Affected by Lake. Are water temperature, flow pattern, fish food, etc., significantly affected by lake or impoundment within this reach or upstream? Does downstream lake or reservoir affect reach, e.g., result in fish runs or ice problems in reach? Y(Yes) or N(No).

Inundated by Beaver Ponds. The percent of the reach length presently impounded by beaver ponds is entered. A decimal is permitted but must occupy a space.

Alkalinity, Specific Conductance, Turbidity, pH and Total Dissolved Solids. If you have only one figure for an item, enter it as "normal low: and enter A for average, E for estimate or S for single measurement in the rating column. The entry for alkalinity should be total alkalinity, i.e., combined phenolphthalein alkalinity and methyl orange alkalinity expressed as mg/l of calcium carbonate.

WQ Data In. Enter "X" in appropriate column if water quality data has been entered into Storet (Environment Protection Agency) Montana Waters Quality Record Storage (MWQRS - Dept. of Health & Environmental Sciences).

D 90. The diameter of bed material which is larger than 90 percent of the remaining material. Measured by length of intermediate axis.

Side Channel Occurance. Indicate abundance by: N (nil) - the item is not present or so seldom as to be irrelevant to any interpretation. L (low) - the item is present, but only as a few scattered occurrences or in a single spot. M (moderate) - the item occurs in several scattered locations or in a few small concentrated zones. H (high) - the item is frequently present throughout the reach.

Suitability for. If pertinent, enter code for fish species present that has most exacting requirements (i.e., an indicator species) in column 52-54. Then rate the suitability of the habitat for residence of this species (column 49); spawning (column 50); and rearing (column 51) using a scale of 1 (best) to 5 (poorest).

Non-fishery Use and Floating. Enter "X" where appropriate.

Special Value. Indicate with "X" in appropriate column if reach is (1) a source of eggs for fish hatchery use, or (2) a site where commercial fishing for minnows, etc., is permitted. Columns headed "water volume," "improve water quality" and "fish food organisms" should be "X'd" only if applicable and reach has no obvious other fishery value. Enter "X" for "Local Community Importance" if the stream reach deserves special consideration as it is one of few or the only stream environment in the immediate area and is important for science teaching, nature study and/or recreation. "Important tributary for trout recruitment" should be "X'd" only if reach is outstanding in this respect. Enter "X" for "Special Concern Other Than Fish" if the reach provides habitat or food for endangered, threatened or "special concern" aquatic/terrestrial wildlife other than fish. Also enter species name plus a brief comment as to its use of the reach in the ADDITIONAL INFORMATION field on card 21. E.g., "one or two bald eagles winter here." If there is insufficient space on card 1, overflow onto card 22.

Card 11

Channel Stability. Enter channel stability element scores and total score as described in "Stream Reach Inventory and Channel Stability Evaluation" (USDA, FS R-1-75-002) and field form R-1/2500-5A Rev. 1-75.

Pool Classes. Enter percentage of the pools in the reach in each pool class. Total = 100 percent. Pool classes are determined as follows:

Size (Measurements refer to the longest axis of the intersected pool.)

- 3 - Pool larger or wider than average width of stream.
- 2 - Pool as wide or long as average stream width.
- 1 - Pool much shorter and narrower than average stream width.

Depth Ratings

- 3 - over 3 feet
- 2 - 2-3 feet
- 1 - under 2 feet

Cover Ratings

- 3 - Abundant cover
- 2 - Partial cover
- 1 - Exposed

Total Ratings

- 8-9
- 7
- *5-6
- 4-5
- 3

Pool Class

- 1
- 2
- 3
- 4
- 5

*Sum of 5 must include 2 for depth and 2 for cover.

Class 1, 2, 3 Pools. Enter the percentage of Class 1, 2, and 3 pools that are dominantly formed by the features listed. Total, 100 percent.

Habitat Ratings

Stream Cover - % Shade (June - September 11:00 am - 5:00 pm, MDT)

80%+

60 - 80%

40 - 60%

Less than 40%

Rating

- 4 = Excellent
- 3 = Good
- 2 = Fair
- 1 = Poor

Bank Condition

Negligible use/damage; vegetation well rooted; sod intact; very little, if any, erosion from vegetation areas, less than 5% bare soil showing. 4 = Excellent

Some use/damage; vegetation generally well-rooted; sod mostly intact; soil showing in places (6% to 15% bare soil showing overall); some surface erosion evident. 3 = Good

Use or damage close to sod; vegetation shallow-rooted; moderate surface erosion (16% to 25% bare soil showing overall). 2 = Fair

Heavy to severe use/damage; vegetation generally cropped to sod; considerable soil showing (over 25%) with sod damage serious; active surface erosion a serious problem. 1 = Poor

Bank Stability

Bank Stable and Undamaged - Partial or no evidence of bank damage; 90-100% of bank area free from use/damage. Little or no unnatural bank erosion or sloughing present. 4 = Excellent

Bank Damage 20% or Less - Banks 80 to 90% free from use/damage. Some erosion and sloughing but fully recoverable after a season of rest. 3 = Good

Bank Damage 40% or Less - Banks having received 20 to 40% damage from use/damage. Moderate to heavy bank erosion and sloughing during season(s). Conditions will not allow natural stability recovery of banks to a level greater than 60% stability. 2 = Fair

Bank Damage Excessive - Banks exhibiting greater than 40% damage. Severe bank damage and accelerated erosion and sloughing is present over virtually the entire bank surveyed. No evidence of bank recovery visible, and erosion is consistent. 1 = Poor

Channel Stability

Negligible lateral channel movement and bank erosion (cutting) (5%) scour or changing channels. 4 = Excellent

Some lateral channel movement and bank erosion (5 to 10%), minor channel scour or changing channels within stream bed. 3 = Good

Frequent lateral channel movement (10 to 15%); moderate channel scour or channel change within stream bed. 2 = Fair

More than 20% lateral channel movement and bank cutting, changing channels and severe scour evident and source of extreme sedimentation. 1 = Poor

Streambed Sediment - Percent of fine sediments (particles sand size and smaller) covering stream bottom (wetted parameter) materials.

Less than 10%	3 = Good
10 - 25%	2 = Fair
More than 25%	1 = Poor

Combined Rating

Add ratings from 1 through 5 above. If total is 17 or over, enter E (excellent); 14-16, G (good); 10-13, F (fair) and 5-9, P (poor).

Bank Vegetation Type

Enter predominant (80% or more) type: C = conifer D = deciduous G = grass forbs M = mixed S = shrubs.

Subsurface Cover

Rate the instream cover which provides concealment for fish (logs, rocks, underwater undercut banks, turbulent surface, water color, bottom color) as: G (good); F (fair); P (poor); or N (none).

Card 13 & 14

Fish Population. Species: State fish codes are in Appendix.

Habitat value for fishes of special concern. Habitat codes are:

G = greatest or highest-value habitat
H = high priority habitat
S = substantial value habitat
L = limited value habitat

Abundance of fish will refer only to adult fish, or in 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"). It should reflect the peak abundance during the year. By nature abundance ratings are subjective. Since trout command the most interest of Montana fishes, the abundance ratings for all fishes in this data base have been geared to trout. The abundance graphs in the Appendix will serve as guides.

A = Abundant
B = Abundant with proportional number of large-sized fish (see appendix)

C = Common
 D = Common with proportional number of large-sized fish (see appendix)
 U = Uncommon
 V = Uncommon with proportional number of large-sized fish (see appendix)
 R = Rare
 E = Presence not verified but expected
 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

If no fish present, code as:

SPECIES		
CODE	ABUN.	USE
01010	N	N

Fishes' Uses of Reach are coded as follows:

Codes indicating single use or dominant use:

L = Resident throughout life cycle
 A = Spawning elsewhere -- spends part or most of life in reach
 H = Spawning and hatching -- young promptly move downstream
 J = Spawning and nursery to subadult
 C = Passing through -- species uses reach as a corridor to migrate upstream and return downstream
 F = Feeding run
 N = No use (in connection with abundance codes M, N and P)
 Z = Use undetermined

Codes that are combinations of the above codes to indicate more than one population of a species:

R = L plus A, H or J
 P = C plus L, A, H or J
 S = H and J combined

Any other combination: Code entered for dominant use

Note: Quality rating for Fish Population data on cards 13 and 14 is at the end of card 13.

Card 15

Standing Crop: Number and Weight of Fish in 300 Meters - Fish population data is usually obtained by electrofishing and a mark-recapture technique. Data recorded should be the best estimate available of the standing crop of individual species and may include nongame or nonsport fish species. Standing crops for combinations of species may be entered if appropriate species codes are available. In Minimum Length field enter minimum length of fish included in data. Number of game and sport species should be limited to catchable (keeper) size fish when feasible. The biomass (total Kms) of a species should include all fish regardless of size. Enter a decimal if needed. In month and year fields enter date estimate was made, or if standing crop entries are based on more than one years data, enter date of last collection.

Artificial Fishery - Enter "X" if fishery is mostly based on hatchery fish.

Growth Rate - Enter a judgement appraisal of the growth rate of game or sport species. Codes: G = Good, F = Fair (average), P = Poor. As a guide,

for Age II trout G is greater than 6 inches per year; F is 2-6 inches per year; P is less than 2 inches per year. It is anticipated growth rate in most reaches will be rated as fair.

% Potential Fish Biomass - The present biomass of game and sport fish is what percent of the potential biomass if major problems were taken care of. Enter range.

Card 17

Sport Fishing Pressure. Fishing pressure figures may be automatically entered from Department of Fish, Wildlife and Parks fishing pressure survey. A quality rating of 4 is reserved for this and designates survey data. If you have data, enter point estimate and, if available, standard deviation using a data quality rating other than 4. If 3 or less, it will be replaced with survey data if and when available. In the space provided enter the year the data applies to.

% of Allowable Fishing Pressure - The present angler use is what percent of total pressure this reach can stand and still maintain quality fishing in terms of fisherman density, size of fish and catch per hour. Enter range.

Fish in Creel. Similar provisions apply as set forth above for Sport Fishing Pressure, only here data may be entered from the Department of Fish, Wildlife and Parks fisherman log program. A quality rating of 4 designates fisherman log data.

Card 19

Debris Loading in Active Channel. Enter an (X) in the appropriate box:

Insufficient. Additional debris loading would be beneficial to pool/cover formation and not be significantly adverse to other habitat values.

Balanced. Existing debris loading appears to be balanced with needs for pool/cover but not to the detriment of acceptable stream stability goals.

Stable Excess. Debris loading is excessive but is stable and removal would be detrimental to overall stream values.

Unstable Excess. Debris is excessive and its unstability is or potentially, likely to cause accelerated erosion and other stream damage. Selective removal of some material would be beneficial. If feasible, enter project on card 23 and "X" in column 65, card 20.

Not Sure. Situation is questionable and warrants biologist review before entering value.

Loading Potential (Yes-Y or No-N). Enter whether sufficient large trees or snags are present to contribute future debris loading.

Imbeddedness. Imbeddedness is the filling of the interstices of a gravel or rubble stream bottom with sand or fines. Enter an "X" to indicate the extent of imbeddedness in riffles and in pools.

Aquatic Plants and Aquatic Invertebrates. Enter: C = Common or plentiful; R = Rare or uncommon; X = Present, abundance not specified; N = None observed.

Invertebrate Species Diversity. Enter the name of diversity index used as follows:

- B - Brillouin
- C - Sequential Comparison Index
- F - Fisher
- S - Shannon Wiener (Weaver)

Also, enter the index value of the last analysis period.

Habitat Trend. The habitat trend should be related to all activities in or adjacent to the stream as well as dynamic natural process. Indicate with an (X) the general trend of the aquatic habitat value of the stream reach.

Esthetics. Esthetics should be coded 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 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 esthetic qualities.
- E - A stream with low esthetic qualities.

Fishery Value Would Be Higher Except for the Following Factors. To be determined by fishery biologist considering the type of fishery (i.e., cold-water, cool-water). Be conservative in making entries -- be able to substantiate that each factor "X'd" in spite of possible redundancy. Following are certain definitions:

Limiting Factors - Physical, Climatic and Biological - Temperature - Summer water temperature is so low or high that it adversely affects fish production. For trout this would be less than 10°C (50°F) or over 21°C (70°F). If this item is "X'd" enter average peak water temperature on card 9 (see instructions for that card). If excessive temperature is caused by thermal effluent or return irrigation water, also "X" appropriate box under Man-Caused Pollution (card 19); if due to dewatering, write "dewater causes temp" in the left-hand field of card 21.

Low Nutrients. Stream is infertile.

Ice. Anchor ice, scouring by ice or any other icing condition that reduces fish production.

Excessive Flow Fluct. - Excessive Flow Fluctuations. Low flow inadequate (or high flow excessive) for channel characteristics and fish habitat. May be natural or man-caused.

Bedload Movement. Excessive movement of bottom material resulting in unstable substrate for invertebrates and filling or shifting of pools.

Hi (Highly) Erosive Drainage. Soils of the drainage are highly unstable and erosive.

Lack Bank Undercut. Lack of undercut bank (on streams where undercut bank expected).

Barrier to Fish Pass. - Barrier to Fish Passage.

Low Aquatic Invertebr. - Low Aquatic Invertebrate biomass.

Lack Bank Cover. Lack of bank vegetation serving as cover for fish.

Hard to fish. Stream too brushy for convenient fishing, including too brushy during high water.

Overharvest Sport Fish. Game or sport fish harvest exceeds optimum-sustainable yield; that is, the harvest (including mortality of released fish) is heavy enough to be detrimental to the "quality" of recreational fishing in terms of size of fish and/or catch per hour.

Overharvest Nonsp. Fish. Overharvest of nongame, nonsport fish.

Other. Specify in left-hand field, card 21.

Man-Caused Pollution - Thermal Effluent - Temperature problems caused by power plants, dams and the like.

Commercial Organic. Commercial Organic (meat packinghouse effluent, etc.)

Irrig/Runoff Related. Irrigation returns or over-surface runoff that significantly increase water temperature, silt, nutrients, etc.

Card 20

Channel Alterations. Enter the accumulated length of the alterations, and the cause(s). "Dredge" means dredging for channel clearance or mining. If "other" is "X'd" specify cause in ADDITIONAL INFORMATION FIELD on Card 21. Also enter type(s) of alteration. "Channelization" means the main alignment of the stream was maintained, but within this the stream was channeled, e.g., by riprapping. "Relocation" means the stream was moved from its original bed. "Straightening" means meanders were cut off.

Bank Encroachment. Enter "X(s)" in columns that describe structures or activities that interfere with natural stream or flood plain hydraulics. If "other," specify in left-hand field of card 21.

Domestic Livestock. Enter the length of stream reach with active domestic livestock grazing. Enter compatibility code as follows:

- 1 - Low compatibility. Accelerated bank sloughing is readily apparent. Grass root masses are diminished in length. Riparian shrub form class hedged or mushroom shaped and little shrub regeneration. Tendency for stream to widen. Vegetative cover over stream has diminished from livestock grazing.
- 2 - Most riparian vegetation is in poor condition and downward trend. Regeneration of shrubs noticeably less than adequate to maintain stocking. Bank trampling is present at several locations but no dominant condition. Bank overhangs frequently are collapsed by livestock.
- 3 - Clumps of riparian vegetation are stable but spotty portions of the area show vegetative down trend or accelerated bank sloughing. Bank overhangs show some accelerated collapse.
- 4 - Vegetative condition is stable or improving except at infrequent concentration points or crossings. Reproduction of riparian shrubs is adequate. Livestock is not directly influencing a significant length of channel morphology. Bank-scoured pools have overhanging vegetation with only occasional collapse.
- 5 - High compatibility riparian streambank vegetation is healthy and reproducing adequately. Stream crossings infrequent, restricted and trampling damage slight and nonexistent. Cattle not concentrating along streambank. Grasses show vigor with root systems long. Dense bank-scoured pools have extensive overhangs.

Watershed Abuse. Other - Specify in left-hand field, card 21.

Water Removed or Fluctuated For. Municipal - Municipal or domestic use.

Other. Specify in left-hand field, card 21.

Management Needs and Recommendations. To be completed by fishery biologist. Recommendations must be feasible. Appropriate land management or fish management agency must be consulted before recording a need in that agency's area of responsibility. Enter "X" to indicate management needs. Following are special instructions and definitions:

Red. Man Caused Flow Fluct. - Reduce Man Caused Flow Fluctuation. Alleviate man-caused flow problems -- especially applies to dams, could also apply to dewatering for irrigation, industry, etc., if water removed is in excess of established norms for water right or use.

Irrigation Improvement. "X" this box only if it can be established that poor irrigation practices (excessive water removed, excessive sediment in return flows, excessive channel disruption in removing water, etc.), based on established norms, are employed.

Improve Bank Cover. Vegetate bank to provide cover for fish.

Bank Fencing - Km of Fence. If streambank fencing needed, enter kilometers of fence required. A decimal may be used but must occupy one space.

Channel Improvement. Riprap, stream improvement structures, etc., or removal thereof, or rechanneling to original channel, if feasible.

Enforce Regulations. Enforce fishing or recreational-use regulations.

Card 21 & 22

Data Source and Additional Information. Enter source of information for data entered on form following example given in heading for this field. Additional information on any item including information for which no specific space is provided can also be entered. If still more space is needed use card 22(s). These should be numbered 1, 2, 3, etc., in column 6 so they will be listed in proper order on computer printouts. Use these cards sparingly as information handling by computer is costly.

Card 23

Project Description. Use these cards for detailing special work recommended for the stream reach. e.g., bank stabilization, improve spawning area. Projects should be numbered 1, 2, 3, etc., in column 6 so they will be listed in proper sequence on computer printouts. If these cards are submitted separately from four-page form, fill in identifying number on card 1 at top of form so this information will be tied to other information for this reach in the computer.

Card 25

Water Flow. The flow needed for a "high level of aquatic habitat potential" as defined in Instream Flow Evaluation for Selected Streams in the Upper Missouri River Basin by Montana Department of Fish and Game, March 16, 1979 is: "That flow regime which will consistently produce abundant, healthy and thriving aquatic populations. In the case of game fish species, these flows would produce abundant game fish populations capable of sustaining a good to excellent sport fishery for the size of stream involved. For rare, threatened or endangered species, flows to accomplish the high level of aquatic habitat maintenance would: 1) provide for high population levels to ensure the continued existence of that species or, 2) provide for flow levels above that which would adversely affect the species." The Water Reserved field asks: has any water been reserved under the provisions of Montana law, yes or no? And if water has been reserved is the amount adequate, yes or no?

APPENDIX

Metric Abbreviation Used on Data Bank Input Forms and Factors for Converting English Units to Metric Units

$^{\circ}\text{C}$ or $^{\circ}\text{Celsius} = (^{\circ}\text{Fahrenheit} - 32^{\circ}) \times .556$
 cm or centimeters = inches $\times 2.54$
 = feet $\times 30.48$
 g or grams = pounds $\times 453.5924$
 ha or hectares (square hectometers) = acre $\times .4047$
 hm or hectometer = 100 meters
 hm^3 or cubic hectometer = acre feet $\times .001233$
 = cubic kilometer (km^3) $\times 1000$
 kg or kilograms = pounds $\times .4536$
 kg/ha or kilograms per hectare = pounds per acre $\times 1.1208$
 kilograms per 300 meters = pounds per 1000 feet $\times .4465$
 km or kilometers (1000 meters) = miles $\times 1.609$ or feet $\times .0003048$
 m or meters = feet $\times .3048$
 = yards $\times .9144$
 m/sec or meters per second = feet per second $\times .3048$
 m^3/sec or cubic meters per second = cubic feet per second $\times .02832$
 = hm^3/yr divided by 31.5619
 mg/l or milligrams per liter = parts per million
 fish/300 meters = fish per mile divided by 5.36
 fish/hectare = fish/acre $\times 2.471$

Administrative Locations

Forest And District Codes, Forest Service Region 1

FOREST	CODE	DISTRICT	CODE	FOREST	CODE	DISTRICT	CODE
BEAVERHEAD	02	Dillon	01	GALLATIN	11	Big Timber	01
		Wise River	02			Livingston	02
		Wisdom	03			Gardiner	03
		Sheridan	06			Bozeman	05
		Madison	07			Gallatin	06
						Hebgen Lake	07
BITTERROOT	03	Stevensville	01	HELENA	12	Townsend	01
		Darby	02			Helena	02
		Sula	03			Lincoln	04
		West Fork	04				
IDAHO PANHANDLE	04	Wallace	01	KOOTENAI	14	Rexford	01
		Avery	02			Yaak	02
		Fernan	03			Fortine	03
		St. Maries	04			Troy	04
		Sand Point	06			Libby	05
		Bonniers Ferry	07			Fisher River	06
		Priest Lake	08			Cabinet	07
		Red Ives	09				
CLEARWATER	05	Pierce	01	LEWIS & CLARK	15	Teton	01
		Palouse	02			Sun River	02
		Canyon	03			Belt Creek	03
		Kelly Creek	04			Judith	04
		Lochsa	05			Musselshell	06
		Powell	06			White Sulphur	07
CUSTER	08	Sheyenne	01	LOLO	16	Missoula	03
		Beartooth	02			NineMile	04
		Sioux	03			Plains	05
		Ashland	04			Seeley Lake	06
		Ft. Howes	05			Superior	07
		Grand River	06			Thompson Falls	08
		Medora	07				
		McKenzie	08	NEZPERCE	17	Salmon River	01
DEERLODGE	09	Deerlodge	01			Clearwater	04
		Jefferson	02			Red River	05
		Philipsburg	03			Moose Creek	06
		Butte	04			Selway	07
						Elk City	08
FLATHEAD	10	Swan Lake	01				
		Spotted Bear	04				
		Hungry Horse	06				
		Glacier View	07				
		Tally Lake	08				

Mountain Ranges

CODE	MOUNTAIN RANGE	CODE	MOUNTAIN RANGE
ABS	Absaroka Range	LAR	Larb Hills
APG	Apgar Mountains (Glacier NP)	LEW	Lewis Range (Glacier NP)
ANA	Anaconda Mountains	LBT	Little Belt Mountains
BPW	Bearpaw Mountains	LRK	Little Rocky Mountains
BTH	Beartooth Range (incl. Beartooth Plateau)	LSN	Little Snowy Mountains
BVH	Beaverhead Mountains	LWF	Little Wolf Mountains
BBT	Big Belt Mountains	LIV	Livingston Range (Glacier NP)
BHN	Bighorn Mountains		
BSY	Big Snow Mountains	MAD	Madison Range
BIT	Bitterroot Range	MIS	Mission Range
BRI	Bridger Range		
BTL	Blacktail Range	PIN	Pintlar Peaks
BTU	Butte Highlands		Pioneer Mountains (see E. Pio-
CAB	Cabinet Mountains		neer and W. Pioneer Mountains)
CAS	Castle Mountains	PRY	Pryor Mountains
CEN	Centennial Mountains	PUR	Purcell Mountains
COR	Coer d'Alene Mountains		
CZY	Crazy Mountains	ROS	Rosebud Mountains
		RUB	Ruby Range
EPI	East Pioneer Mountains		
ELK	Elkhorn Mountains	SAL	Salish Mountains
FHD	Flathead Mountains	SAP	Sapphire Mountains
FLN	Flint Creek Range	SNO	Snowcrest Range
		SPA	Spanish Peaks
GAL	Gallatin Range	SPO	Spokane Hills
GLT	Galton Range	SWA	Swan Range
GRR	Garnet Range	SGR	Sweet Grass Hills
GRN	Granite Range		
GRV	Gravelly Range	TEN	Tendoy Mountains
		TOB	Tobacco Root Mountains
HIM	Highwood Mountains	TRI	Trilobite Range
HRS	Horseshoe Hills		
		WPI	West Pioneer Mountains
JON	John Long Mountains	WHI	Whitefish Range
JUD	Judith Mountains	WOL	Wolf Mountains

Wilderness and Primitive Areas

CODE	AREA	CODE	AREA
<u>Wilderness Areas - USFS</u>		<u>National Park System proposals awaiting enactment</u>	
131	Absaroka-Beartooth		
047	Anaconda-Pintler	GLW	Glacier
049	Bob Marshall		
050	Cabinet Mountains		
051	Gates of the Mountains		<u>Wildlife Refuge proposals awaiting enactment</u>
135	Great Bear		FWS
052	Mission Mountains		
090	Scapegoat		
044	Selway-Bitterroot	CMR	Charles M. Russell - BLM-FWS
123	Welcome Creek	MED	Medicine Lake
		RED	Red Rock Lakes
		ULB	UL Bend
<u>Primitive Areas - USFS</u>			
053	Spanish Peaks		
<u>Primitive Areas - BLM</u>			
BTC	Beartrap Canyon		
HUM	Humbug Spires		

Bureau Of Land Management District And Resource Area Codes

<u>DISTRICT</u>	<u>CODE</u>	<u>RESOURCE AREA</u>	<u>CODE</u>
Miles City	020	Powder River Big Dry	PRRA BDRA
Lewistown	060	Billings Havre Valley Judith Phillips	-BRA -HRA -VRA -JRA -PRA
Butte	070	Dillon Garnet Headwaters	-DRA -GRA -HRA

Reservations And National Wildlife Refuges

FHDIR	Flathead Indian Reservation	BNLWR	Benton Lake NWR
BKFIR	Blackfeet Indian Reservation	BOWWR	Bowdoin NWR
RBYIR	Rocky Boy Indian Reservation	CMRWR	C.M. Russell NWR
FBNIR	Fort Belknap Indian Reservation	HLSWR	Hailstone NWR
FPKIR	Fort Peck Indian Reservation	LKMWR	Lake Mason NWR
CRWIR	Crow Indian Reservation	LMSWR	Lamesteer NWR
NCHIR	Northern Cheyenne Indian Reservation	MEDWR	Medicine Lakes NWR
HVRMR	Havre Military Reservation	NBRWR	National Bison Range WR
		NPIWR	Ninepipe NWR
		PABWR	Pablo NWR
		REDWR	Red Rock Lakes NWR
		ULBWR	UL Bend NWR
		WHSWR	Warhorse NWR
		YLWWR	Yellowwater NWR

Agency and Owner Codes

Code

AMC	Anaconda Copper Mining Co.
BLM	U.S. Bureau of Land Management
-BN	Burlington Northern
-CE	Corps of Engineers, U.S. Army
CFU	MT Cooperative Fishery Unit
COR	Other Industrial Corporations
CIC	Champion International Corp
DNR	MT Dept. of Natural Resources
DSL	MT Dept. of State Lands (school, lands, etc.)
EPA	U.S. Environmental Protection Agency (including Storet)
FWP	MT Dept. of Fish, Wildlife & Parks
-FS	U.S. Forest Service
FWS	U.S. Fish & Wildlife Service
-IR	Indian Reservation
LPC	Louisiana Pacific Lumber Co.
MHD	MT Highway Dept.
MHE	MT Dept. of Health & Environmental Sciences
MPC	Montana Power Company
-MR	Military Reservation
MSF	MT State Forest
MSU	MT State University
NPS	National Park Service
PLP	Pacific Light & Power
PRI	Other Private
REC	U.S. Bureau of Reclamation
SCS	Soil Conservation Service
S&L	Other State & Local
SRG	St. Regis
-UM	University of Montana
-WE	Western Energy
WLC	Weyhauser Lumber Co.
WWP	Washington Water Power Co.

Montana Fishes In Family Sequence

MT FWP Code		MT FWP Code	
27	Sturgeon*	31	Sucker*
90 #	White Sturgeon	40	Buffalo*
91 #	Pallid Sturgeon	55	River carpsucker
92	Shovelnose sturgeon	56	Longnose sucker
28 #	Paddlefish	57	White sucker
38 #	Shortnose gar	58	Largescale sucker
34	Goldeye	59	Blue sucker
01	Rainbow trout*	60	Bigmouth buffalo
02	Cutthroat trout*	61	Smallmouth buffalo
03	Brook trout	62	Shorthead redhorse
04	Brown trout	63	Mountain sucker
05	Dolly Varden	24	Channel catfish
06	Lake trout	25	Bullhead*
07	Golden trout	64	Stonecat
08	Kokanee	65	Black bullhead
09	Coho salmon	66	Yellow bullhead
10 #	Arctic grayling	100 #	Trout-perch
11	Rainbow x cutthroat trout hybrid	26	Burbot
12 #	Westslope cutthroat trout (pure)	103	Plains killifish
13 #	Yellowstone cutthroat trout (pure)	106	Mosquitofish
14	Whitefish*	109	Shortfin molly
15	Lake whitefish	112	Variable platyfish
85	Mountain whitefish	115	Green swordtail
86	Pygmy whitefish	71	Brook stickleback
87	Chinook salmon	72	White bass
88	Splake	17	Largemouth bass
89	Salmon*	18	Bass*
118	Trout*	19	Sunfish*
119	Trout/Salmon*	21	Crappie*
120	Rainbow x golden hybrid	73	Smallmouth bass
121 #	Upper Missouri cutthroat (pure)	74	Bluegill
122 #	Native rainbow trout	75	Pumpkinseed
99	Rainbow Smelt	76	Green sunfish
23	Northern pike	77	Black crappie
29	Peamouth	78	White crappie
30	Goldfish	79	Rock bass
32	Carp	20	Yellow perch
33	Northern squawfish	22	Sauger/Walleye*
35	Utah chub	81	Sauger
37	Minnow*	82	Walleye
39	Longnose dace	83	Iowa darter
41	Northern redbelly/Finescale dace*	36	Freshwater drum
42	Brassy minnow	16	Sculpin*
43	Silvery/Plains minnow*	130	Mottled sculpin
44	Flathead chub	131	Slimy sculpin
45	Lake chub	132	Torrent sculpin
46 #	Sturgeon chub	133 #	Shorthead sculpin
47	Emerald shiner	134 #	Spoonhead sculpin
48	Sand shiner		
49	Redside shiner		
50 #	Creek chub		
51	Pearl dace		
52	Fathead minnow		
53	Golden shiner		
54 #	Sicklefin Chub		
140	Silvery minnow		
141	Plains minnow		
142 #	Finescale dace		
143	Northern redbelly dace		
144	Peamouth x Northern squawfish		

*Undesignated -- use these codes only if more specific identification cannot be made.

#Fishes of special concern due to limited numbers and/or limited habitats in Montana.

Standards For Large-Sized Fish

Species	kg	lbs.	Species	kg	lbs.
Shovelnose sturgeon	2.7	6	Northern pike	6.8	15
Paddlefish	34.0	75	Bullhead - black & yellow	.3	.7
Mountain whitefish	.9	2	Channel catfish	3.6	8
Kokanee	.9	2	Burbot	2.7	6
Cutthroat trout	.7	1.5	Smallmouth bass	.9	2
Rainbow trout	1.4	3	Largemouth bass	1.8	4
Brown trout	1.4	3	Crappie, black & white	.5	1
Brook trout	.5	1	Yellow perch	.5	1
Dolly Varden	3.6	8	Sauger	.9	2
Arctic grayling	.9	2	Walleye	1.8	4
Golden trout	.5	1			

Land Description (Township - Range - Section - Subsection)

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Townships are located by a numbered grid system consisting of Range and Township lines. The Township lines run east and west of a principal meridian. The Range lines run north and south of an established base line. Thus, a Township is described as a number N or S of the base line, and a number E or W of the principal meridian.

A desirable modification of the usual method of describing a location on a map is the one used by several agencies including the USGS. A location is specified by using 12 characters - the first three give the Township; the next three the Range; the next two the Section number within the Township; and the next four the location within the quarter section (160 A), the quarter-quarter section (40 A), the quarter-quarter-quarter section (10 A) and the quarter-quarter-quarter-quarter section (2½ A). The subdivisions of the 640 A section are designated as A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. For example, if a lake is located in Township 9N, Range 20W, Section 21 the description would be 09N20W21DAA. The letters DAA indicate the lake is in the NE¼ of the NE¼ of the SE¼. As indicated above, a still further breakdown to a 2½-acre area is possible using a fourth letter (A, B, C, or D).

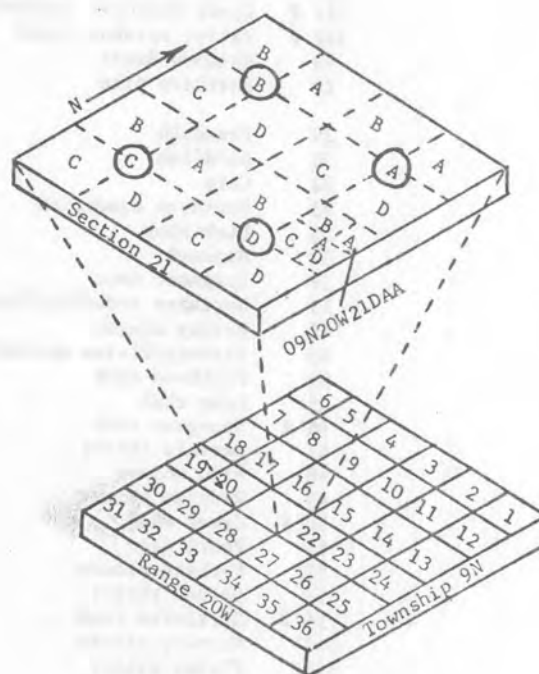


FIGURE 1. FISH ABUNDANCE - FISH PER 300 METERS (APPROX. 1,000 FEET)

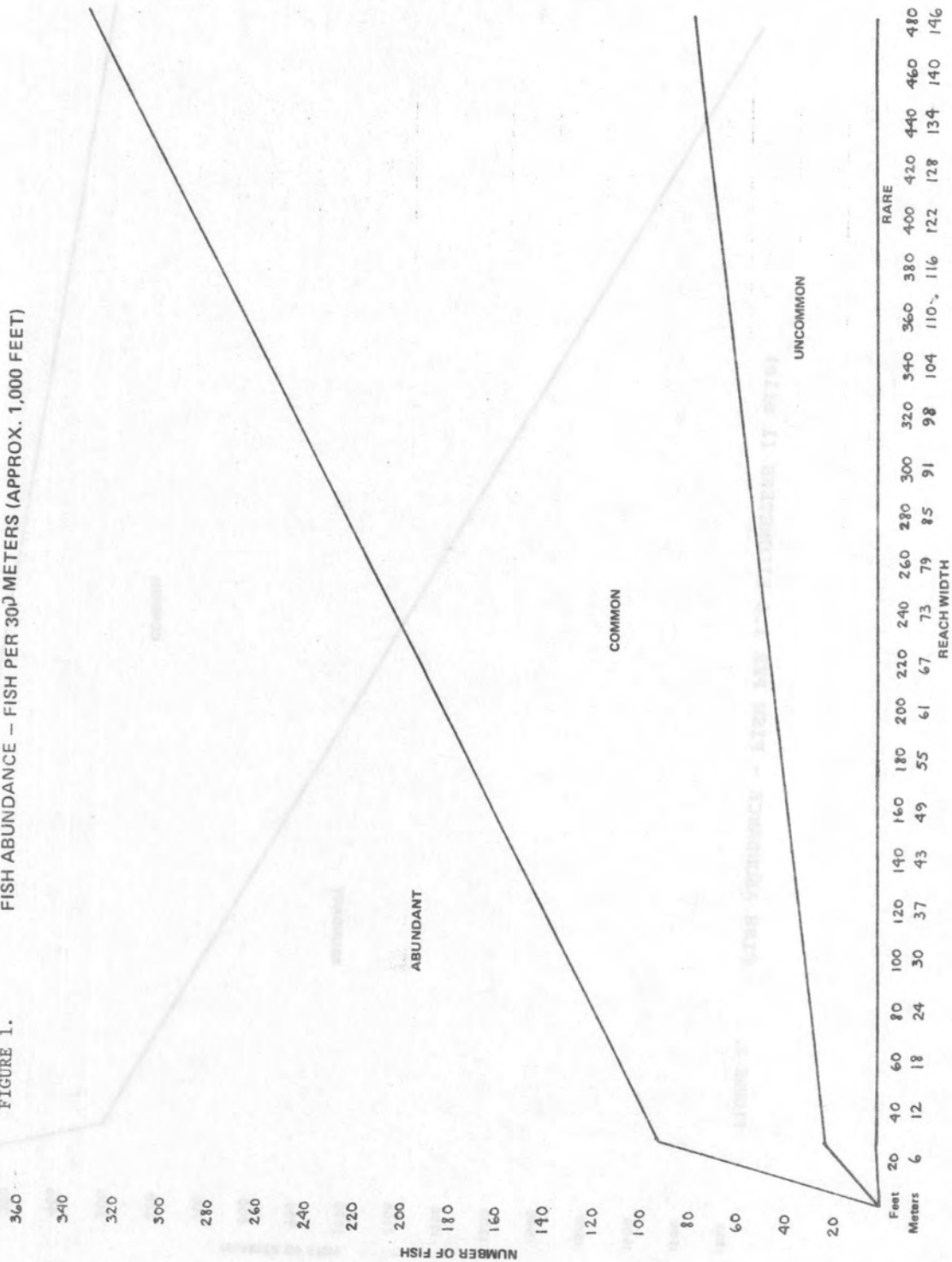
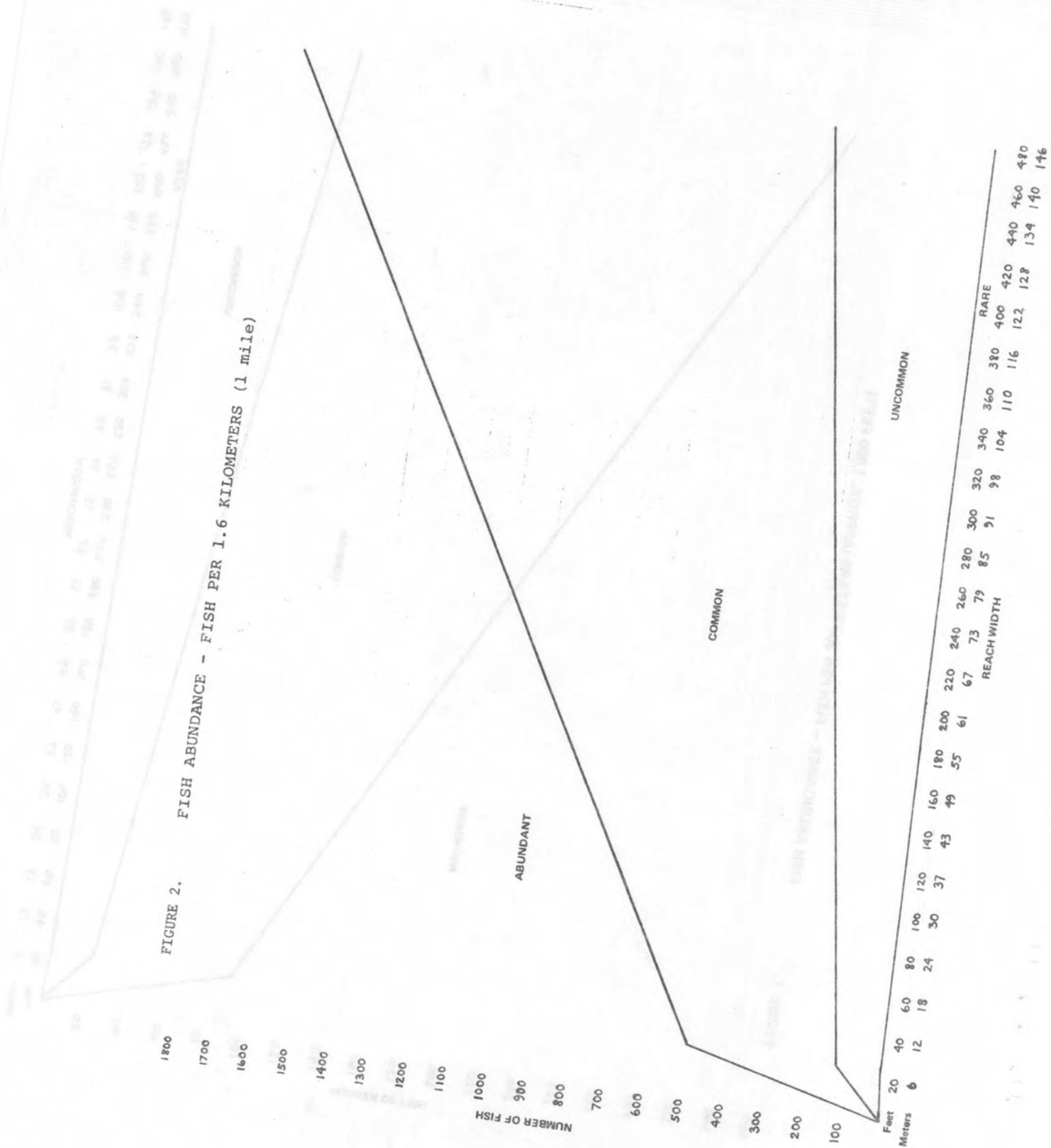


FIGURE 2. FISH ABUNDANCE - FISH PER 1.6 KILOMETERS (1 mile)



* SEE DISPOSITIONS

* SEE INSTRUCTIONS

INTERAGENCY STREAM FISHERY DATA INPUT FORM

SPECIAL REPORT

This card need be filled out ONLY if card 22(s) below are submitted at a different time than the first three pages of the input form.

		IDENTIFYING NUMBER		TEACH	
		STATE WATER CODE	WATER NUMBER		
		DRAINAGE	AGE		
CARD 1	1	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					
CARD 2	2	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					
CARD 2	2	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					
CARD 2	2	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					
CARD 2	2	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					
CARD 2	2	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75			
ADDITIONAL INFORMATION					

SUPPLEMENT V - ATTACHMENT C

STATUS OF WHITE STURGEON IN
THE KOOTENAI RIVER

STATUS OF WHITE STURGEON IN
THE KOOTENAI RIVER

BY

Patrick Graham

Montana Department of Fish, Wildlife and Parks
Kalispell, Montana 59901

January, 1981

ABSTRACT

The white sturgeon (*Acipenser transmontanus*) is the largest freshwater fish in North America. In Montana, their distribution is limited to the Kootenai River downstream from Kootenai Falls. Although classified as a game fish, taking of white sturgeon has been prohibited since 1979. Indications of their diminishing numbers prompted this closure. Further investigations have led to the preparation of this report requesting classification of white sturgeon as endangered under the State of Montana Endangered Species Act, 1973.

Limited reports on the catch of white sturgeon in Montana ranged from five to 17 per year from 1968 to 1972. The sturgeon appear to migrate between British Columbia, Idaho and Montana. They probably moved upstream into Montana in late spring or early summer to spawn in the canyon areas below Kootenai Falls. Investigations in 1978 resulted in location and tagging of only three sturgeon, two of which were caught in Idaho. Only one sturgeon was observed by divers in 1980 and it had a tag in its back.

Conditions which probably contributed to the decline of white sturgeon in Montana include the operation of Libby Dam which was constructed in 1972 approximately 30 miles upstream from Kootenai Falls. Poor water quality in the Kootenai River in the 1950's and 1960's resulting from several mining operations upstream probably impacted the food supply of the sturgeon and possibly their reproduction.

No conclusive evidence is available on the cause for the decline in the sturgeon population. Rehabilitation efforts would have to include 1) evaluation of factors which trigger upstream migration of sturgeon and identifying the furthest upstream point in their spawning migration; 2) evaluation of

present reproductive success of sturgeon and residual contaminants in fish tissues; and 3) reintroduction of sturgeon into the Kootenai River. These studies would require additional funding and cooperation with the Idaho Department of Fish and Game, British Columbia Fish and Wildlife Branch, U.S. Army Corps of Engineers, Bonneville Power Administration and other agencies which might be involved.

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INTRODUCTION

The status of white sturgeon (*Acipenser transmontanus*) in the Kootenai River from Kootenay Lakes, British Columbia to Kootenai Falls, Montana, is evaluated in this report with regard to the State of Montana "Nongame and Endangered Species Conservation Act." Endangered species means any species or subspecies of wildlife actively threatened with extinction due to any of the following factors: 1) the destruction, drastic modification, or severe curtailment of its habitat; 2) its overutilization for scientific, commercial, or sporting purposes; 3) the effect on it of disease, pollution or predation; 4) other natural or man-made factors affecting its prospects of survival or recruitment within the state; or 5) any combination of the foregoing factors. These factors are evaluated in respect to the status of white sturgeon. Recommendations are made for studies and actions necessary to improve the status of white sturgeon in Montana.

POPULATION EVALUATION

DISTRIBUTION

White sturgeon are anadromous in most of the large rivers in which they occur but are landlocked in the middle and upper Columbia River system. They are restricted to the Pacific shores of North America from Aleutian Islands of Alaska to Monterey, California (23).

In Montana, their natural distribution is restricted to 21.5 miles of the Kootenai River from Kootenai Falls to the Idaho-Montana border (Figure 1). In 1976, five white sturgeon were captured downstream from Kootenai Falls and released in Libby Reservoir which is about 27 miles

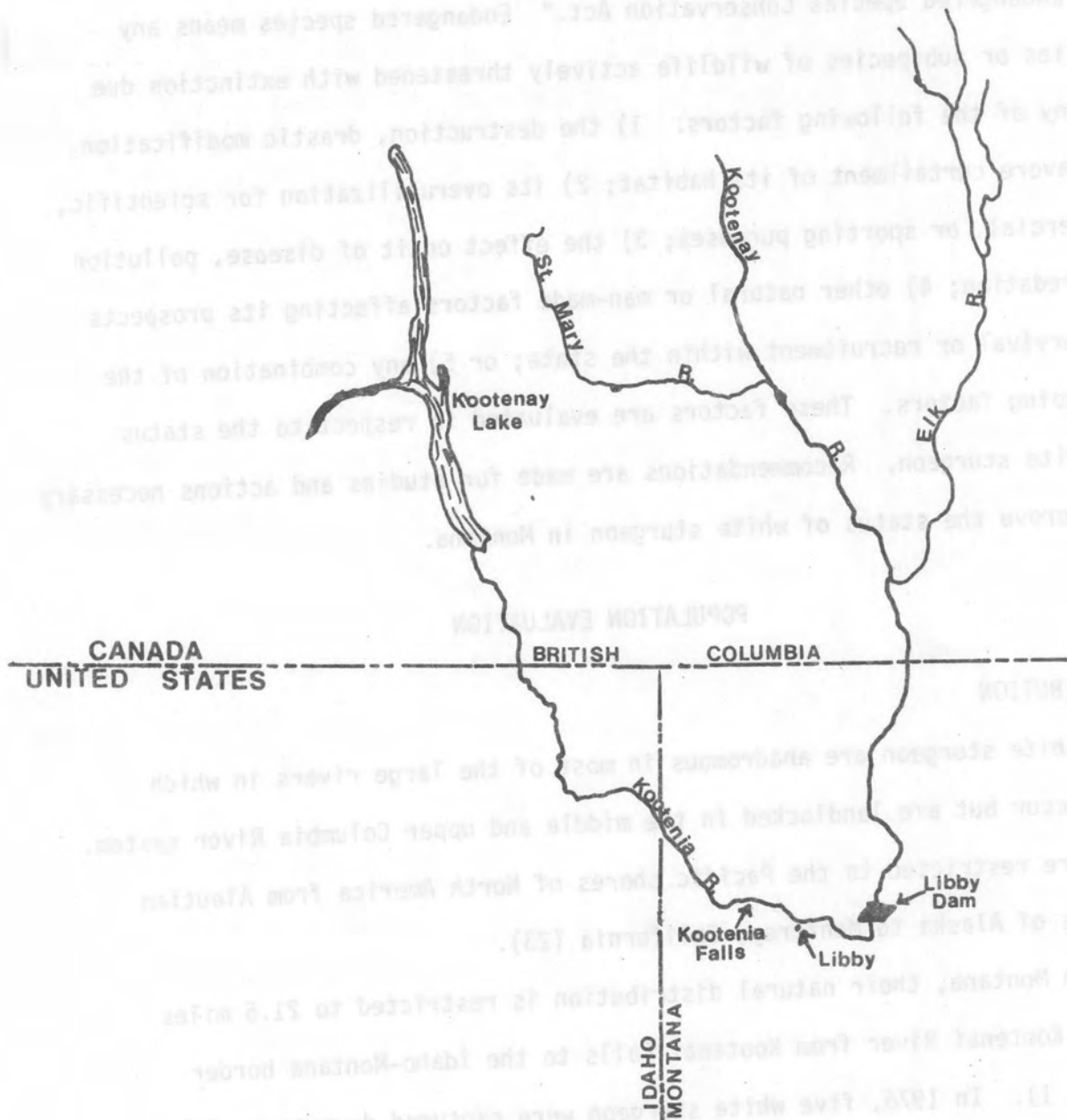


Figure 1. Kootenai River drainage basin.

upstream from Kootenai Falls.

The Kootenai River flows downstream through Idaho for 66 miles. It crosses the Idaho border into British Columbia and flows 29 miles to Kootenay Lake. The white sturgeon are found throughout this portion of the Kootenai River and downstream to Kootenay Lake.

LIFE HISTORY

White sturgeon are the largest freshwater sport fish in North America, with the largest sturgeon purported to be 1800 pounds and caught in the Fraser River near New Westminster, British Columbia in 1897 (23).

Both anadromous and landlocked forms of white sturgeon exist. In freshwater, they prefer large, cold rivers. Little information has been collected on the life history of sturgeon in the Kootenai River. However, some data is available on white sturgeon in the lower Columbia, Snake, Fraser and Sacramento river systems (7, 12, 14, 15, 17, 18, 24).

Movement

Movement of sturgeon seems to vary between systems but all studies have documented some movement. In the middle Columbia River adult fish moved upstream in late spring and early summer and a few moved back downstream in late summer and early fall (12). The upstream movement was presumably a spawning migration.

In the mid-Columbia River small sturgeon moved downstream in summer and intermediate-sized sturgeon remained near release points (12). Movement ceased from mid-October to May. In the Snake River small sturgeon (less than three feet in length) tended to move downstream, while movement of

fish over six feet long was more localized (7). White sturgeon in the Sacramento-San Joaquin estuary remained in the estuary during summer, fall and early winter (18). They migrated upstream in late winter and spring, apparently on a spawning migration.

Efforts were made by a local fisherman to tag white sturgeon downstream from Kootenai Falls (2). The tags were ineffective and apparently pulled out of the fish. Four fish were caught with torn fins. Examination of the data suggests that at least two of these may have been caught in years following the year they were tagged in.

Latter efforts to assess movement of sturgeon in the Kootenai River system have found movement upstream from Kootenay Lakes into Idaho and downstream from Montana into Idaho. In 1978, personnel of the Montana Department of Fish, Wildlife and Parks caught and tagged three sturgeon downstream from Kootenai Falls (10). One of the fish had been tagged in 1976. Two of the three sturgeon were recaptured in the same location in October of 1978. One had been captured previously on May 26 and again on July 14. Both of these sturgeon were later captured downstream by an angler near Bonners Ferry, Idaho in the spring of 1980 (21).

Personnel from British Columbia have tagged sturgeon at the mouth of the Kootenai River on the south end of Kootenay Lake (1). Two of these fish were recaptured in Idaho, a distance of 58 and 61 miles (93 and 97 km) upstream from their tagging location. Personnel from the Idaho Department of Fish and Game tagged a total of 136 sturgeon in the Kootenai River between November, 1977 and June, 1980 (20). Nine fish have been recaptured by Department personnel and anglers returned tags from three fish.

Reproduction

Spawning period for white sturgeon occurs in May and June (23) although spawning in the Sacramento River occurred in March and April (14). Spawning probably occurs over rocky or bedrock substrate in swift current near rapids, when water temperatures are between 8.9 and 16.7 C (48-62°F)(23).

Spawning criteria has been measured for several species of sturgeon (Table 1). Literature on other species of sturgeon report that they spawn in swift water at the foot of riffles or below a waterfall on rocky or bedrock substrate (27).

It is suspected that sturgeon spawn immediately below Bliss Dam on the Snake River in moderately fast water over bedrock substrate (6). I suspect that sturgeon spawn or use to spawn in the canyon below Kootenai Falls. The river bed is large bedrock mixed with large amounts of gravel, with fast current even at depth because the canyon is narrow and gradient is relatively steep.

Depth criteria for spawning of sturgeon native to rivers range from 5.0 - 16.4 ft. (1.5 - 5.0 m) and at velocities of 2.3 - 3.6 f/s (0.7 - 1.1 m/s) (Table 1). Depths at which spawning occurs for lake sturgeon, a small adfluvial species, ranges from 2.0 - 15.0 ft. (0.6 - 4.6 m).

A recommendation for minimum depth criteria for white sturgeon was set at 5 ft. (1.5 m) (27). The criteria was based on 1) criteria measured for other species; 2) the large size of mature white sturgeon; and 3) the fact that one female is accompanied by two or more males during the spawning act. A recommended range of velocities for spawning is 2.0 - 3.6 f/s (0.6 - 1.1 m/s) (27).

Mature sturgeon survive spawning and return to spawn more than once,

TABLE 1. Spawning Requirements of several sturgeon species. (Adopted from White and Cochnauer 1975).

Sturgeon	Literature source	Life cycle	Temperature	Time	Depth	Velocity	Habitat
White	5, 23	An.	48-62F (8.9-16.7 C)	May-June			Rocky bottom; swift current near rapids
Lake	5, 23	Ad.	53.6-66.2 F (12-19 C)	April-June	2-15 ft (0.6-4.6 m)		Swift water; often at foot of falls
Lake	22		53-60 F (11.7-15.6 C)	April-May			Just under water surface; outside bends of river banks, especially in upwelling current along steep angle riprap
Atlantic	5, 23	An.	56-64 F (13.3-17.8 C)				Assumed to spawn in pools below falls
Shortnose	23	Ad.		April-June			Middle reaches of large tidal rivers
Sevryuga	13	An.	(?-24 C) (?-24 C)	May-June	13.1-16.4 ft (4-5 m)	2.3-3.6 fps (0.7-1.1 mps)	Gravel bars with linear flow
Sturgeon sp.	25	An.	49.1-64.4 F 9.6-18 C	May-June	4.9-6.6 ft (1.5-2 m) (eggs found)	High	

1 = An: anadromous (freshwater & salt water) Ad: adfluvial (freshwater stream & lake) Fl: fluvial (freshwater stream)

but only after several years. In the Fraser River, the time interval between repeat spawning was variable, occurring at intervals of 4 - 9 years (24). Slower growth was exhibited in the years prior to spawning in males (for 2-5 years) and females (3-8 years). The interval increased each time spawning occurred beginning at four years in young females and up to 9 - 11 years in older females (23).

Age at maturity or first spawning is variable, occurring from 11 to 22 years of age for males and 26 to 34 years of age for females (24). Number of eggs per female increases with size ranging from 699,000 eggs in a female seven feet ten inches long to three to four million eggs weighing up to 250 pounds in large females (23).

White sturgeon are broadcast spawners and do not dig a nest. Their eggs are quite adhesive and the large, gray egg masses adhere to the rocks or bedrock on the stream bottom.

Age and Growth

Seven sturgeon captured below Kootenai Falls in 1975 and 1976 averaged 18 years of age and 39.3 in (99.8 cm) inches in length. The weighted average length of 19 sturgeon from 17 - 19 years of age was 43.4 inches (110.1 cm). The weighted average length of 9 sturgeon from 17 - 19 years of age in the Snake River was 112.9 inches (7). Of 129 sturgeon captured in British Columbia and 165 sturgeon captured in Idaho from 1977 to 1979, only 11.2% (33) of these fish were less than 40 inches (102 cm) in length (20) (Figure 2). Sixty-three sturgeon caught in the Idaho portion of the river were aged. Only 11% (7) were less than 15 years of age. This is in contrast to the Snake River Study where 86% (518) of the sturgeon aged were less Than 15 years old (7). Either the small sturgeon have not been located

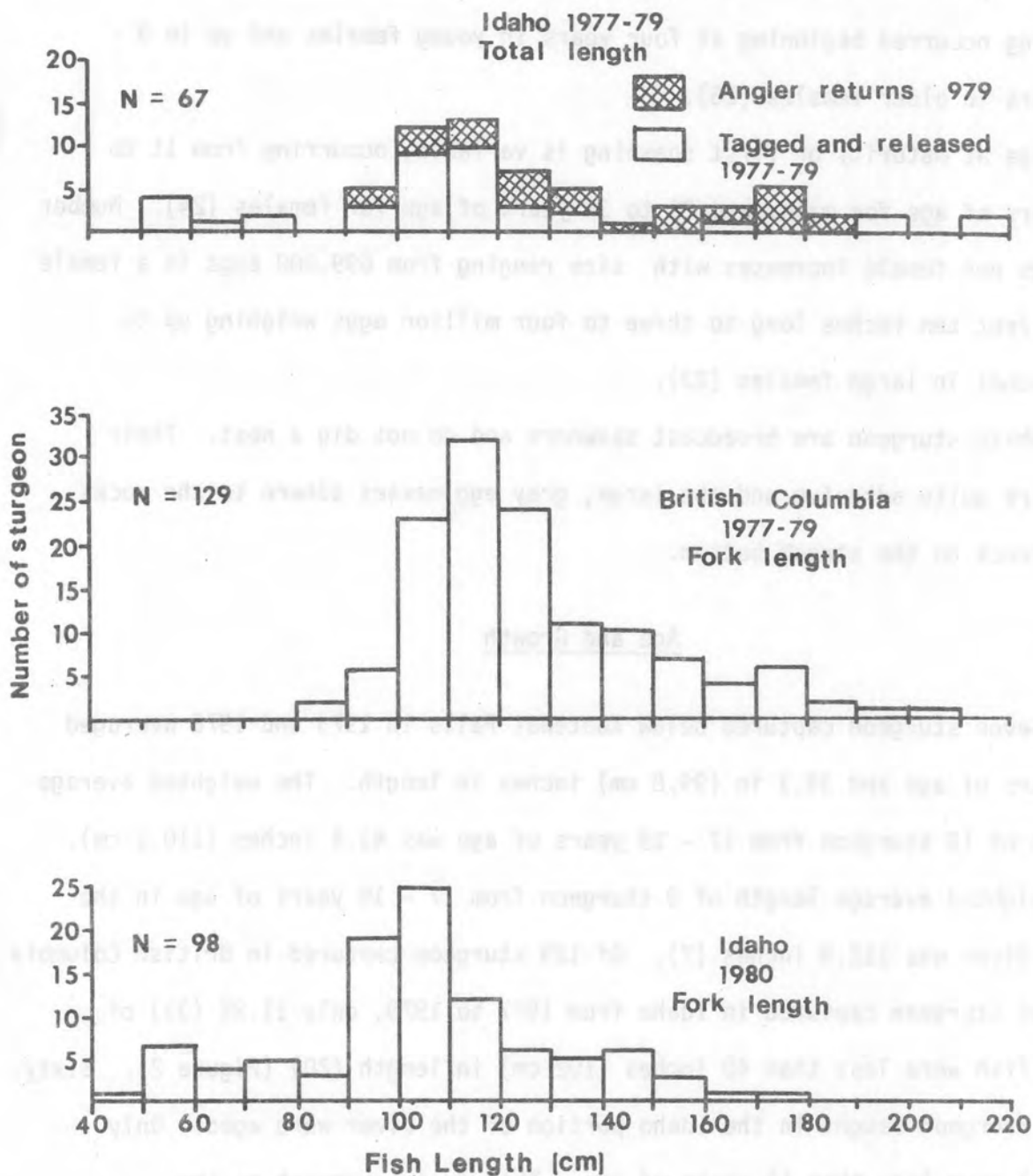


Figure 2. Length frequency of sturgeon tagged and released in the Kootenai River in Idaho and British Columbia from 1977 to 30 June 1980 and fish caught by Idaho anglers during 1979 (from Partridge, 1980).

or reproduction in the Kootenai River has been reduced since as early as 1965.

Food Habits

White sturgeon are a bottom feeder with a ventral, protrusible mouth for suction feeding. Ventral sensory barbels anterior to the mouth aid in locating food. Sturgeon are opportunistic and feed on a wide variety of items. Small sturgeon feed primarily on small aquatic insects like chironomid larvae. Their diet also includes clams, crayfish and *Daphnia* (23). Larger sturgeon become piscivorous feeding on live or dead fish including sculpins, three-spine stickleback, lampreys and other sturgeon (23, 24). Sturgeon in a laboratory tank rarely ate spoiled or fungused food or vegetable matter, but were observed eating small live fish held in the same tank (7).

POPULATION STATUS

HISTORICAL ABUNDANCE

Historical abundance of white sturgeon in the Kootenai River cannot be determined with accuracy. White sturgeon were utilized by Kootenai Indians at least several hundred years ago. Early explorers noted that canoes used by Kootenai Indians had a nose shaped like the head of a sturgeon.

More recently a fishery is known to have existed in the Kootenai River downstream from Kootenai Falls in Montana, Idaho and British Columbia. In the Montana portion of the Kootenai River, fishermen reported frequently catching sturgeon in the 1940's and 1950's on set-lines and while fishing for ling. The ling population rapidly declined in the late 1950's and

early 1960's. This coincided with increased algal growth in the late 1950's and a subsequent decrease by the mid-1960's.

The catch of sturgeon during this period reportedly declined. Whether this was a result in a decrease in fishing pressure due to the small ling population or to an actual decrease in the number of sturgeon is not known. This is reviewed in a subsequent segment of this report (Factors Affecting Population Abundance: Pollution).

PRESENT STATUS

Estimates of the present abundance of white sturgeon have been obtained from a combination of sources including volunteer information by fishermen, recapture of marked sturgeon, angler interviews and sturgeon tags. No intensive studies have been conducted on white sturgeon in the Kootenai River.

Tagging of white sturgeon in British Columbia began in 1977, but population abundance and life history data is limited. A study was initiated in the Idaho portion of the Kootenai River in 1979. This was preceded by two years of periodic tagging of sturgeon. The present study is funded by the U.S. Army Corps of Engineers (20). The study is directed at 1) assessing movement patterns; 2) identifying major use areas; and 3) determining the status of white sturgeon in the Idaho portion of the Kootenai River.

Studies in Montana have been limited to setting nets in 1975 and 1976 (16), netting and SCUBA diving from 1978 to 1980 (10), and fisherman logs of partial angler catch from 1968 through 1972 in the most popular fishing area in the Montana portion of the Kootenai River (2).

British Columbia

In British Columbia, anglers fish for sturgeon upstream from the

delta of the Kootenai River at Kootenay Lake. A guess at the population size is up to several thousand, and it is believed they migrate upstream to Idaho and Montana to spawn (1). Sturgeon fishermen are required to secure a tag and return their catch information on an annual basis, although some illegal harvest is expected to occur. An average of 55 white sturgeon permits have been issued annually since 1973 (Table 2) (9). The annual harvest of legal and illegal fish is estimated to be between 10 and 20 sturgeon (1).

Idaho

An estimate of population size in Idaho is even more difficult because of fish movement. A rough estimate of 800 - 900 sturgeon was based on mark and recapture of sturgeon (21). Tag returns in Idaho included fish tagged in both British Columbia and Montana indicating that the sturgeon population uses the entire river. Based on contacts of permit holders, the legal harvest was estimated at 52 sturgeon, and an additional 341 sturgeon were caught and released (20). The illegal harvest is of course unknown, but is thought to be large, possibly equalling the legal harvest. Fishing pressure is apparently increasing because 57% of the fishermen contacted said it was their first year of sturgeon fishing (20).

Montana

The present population size in Montana is estimated to be from one to five sturgeon. Sturgeon fishing has been closed since 1979. The apparent stability of the sturgeon population in the British Columbia and Idaho portions of the Kootenai River suggest that few, if any, sturgeon migrate upstream into Montana and do not reside in Montana waters for extended periods of

TABLE 2. Number of permits issued, percent returned, number caught and mean total length of white sturgeon in the Kootenay River upstream from Kootenay Lake in British Columbia from 1973-1980. (Data provided by Les Flech, B.C. Fish and Wildlife, Nelson).

Year	Number of (% returned)	Number of fish	Total mean length (range)(in)
1973	35	7	
1974	64 (78)	10	
1975	76 (53)	17	
1976	63 (49)	10	
1977	40 (83)	6	
1978	55 (74)	5	72 (60 - 95)
1979	48 (89)	18	64 (48 - 84)
1980	56 (79)	8	62.5 (48 - 84)

time as they have in the past.

Vic Applegate, a Libby resident, recorded the catch of individuals that fished with him between June 1968 and May 1972. They caught 43 sturgeon of which 9 were killed (Table 3). This included the state record of 96 pounds captured by Herb Stout. Some of the sturgeon were probably caught more than once. Applegate began tagging sturgeon in August 1969 and tagged 13 over a three year period. No tags were observed on subsequent catches, although four fish had torn fins indicating tags may have pulled out.

Even the catches reported by Applegate are thought to be low compared to reports of sturgeon fisherman that catches were common in the 1940's and 1950's. In 1975, biologists from the Montana Department of Fish, Wildlife and Parks captured and tagged only six sturgeon. Two more sturgeon were captured the following year. Five of these sturgeon were taken upstream and placed in Libby Reservoir in an effort to establish a population.

In 1978, numerous net sets, set-line fishing and rod and reel fishing produced only three sturgeon, all of which were captured at least twice (one of these sturgeon was tagged in 1976). Two of the sturgeon were captured downstream in Idaho by the same fisherman in the spring of 1980.

Biologists searched about two miles of the canyon below Kootenai Falls in the summers of 1979 and 1980 using SCUBA gear and observed only one sturgeon each summer. The sturgeon observed in 1980 had a tag in its back, although no number could be observed.

The introduction of sturgeon into Libby Reservoir was probably not successful. Three of the sturgeon have been captured upstream from the reservoir in flowing-water habitat. It is also not known what their sex or state of maturity was. This was impossible to determine without sacrificing the fish. A discussion of further introductions is contained in the section

TABLE 3. Records kept by anglers in the Kootenai River, below Kootenai Falls including number caught and kept and the mean and range of total fish length. (Data provided by Vic Applegate).

Year	Number caught (kept)	Total mean length (in)(range)
1968	17 (5)	33 (19-75)
1969	5 (1)	43.5 (28-72)
1970	8	30.8 (23-43)
1971	5 (1)	37.8 (31-47)
1972	8 (2)	35.5 (24-45)

"Population Recovery Alternatives".

FACTORS AFFECTING POPULATION ABUNDANCE

There has been a significant decline in the number of white sturgeon in the Montana portion of the Kootenai River where they were once common, at least seasonally. A direct link to the cause of their decline has not been determined due in part to several factors including; 1) paucity of life history data; 2) absence of long-term indicators of population size; and 3) poor understanding of factors which trigger upstream spawning migrations. Factors which may have contributed to the decline of white sturgeon in Montana are discussed.

DAM RELATED FACTORS

Migration Barriers

No conclusive evidence is available to indicate that sturgeon can migrate upstream and over Kootenai Falls. There are a few reports of people observing sturgeon upstream from the Falls. The most recent was a floater in 1980. He reported seeing a small fish near the town of Libby. It was laying in shallow water on a gravel bar. The unique characteristics described were those of a sturgeon. The estimated length would make it smaller than those fish transplanted into Libby Reservoir.

No dams presently impeded the movement of white sturgeon between Kootenay Lake and Kootenai Falls. Low stream flows from altered river discharge could create a natural barrier to migrating sturgeon, but none have sufficiently been documented to date. Construction of migration barriers downstream

from Kootenai Falls would probably eliminate the movement of white sturgeon upstream from that point. Sturgeon do not utilize fishways at any of the Columbia or Snake River dams. They could use the boat locks, but apparently are not attracted to them (26).

Power Peaking

Fishermen in Idaho and Montana stated that fishing was best during the muddy, high water in late May and June. The construction of Libby Dam in 1972 completely altered the normal seasonal patterns of discharge. During the late spring when the river flows would naturally peak, the flows are low because Libby Dam is storing water (Figure 3). Natural high water during May and June averaged about 33,000 cfs, and now the flow is 3,000 to 5,000 cfs. Daily power peaking from the dam (24,000 cfs) does not usually begin until July. Water temperatures in May and June are now 4 - 12°F cooler than prior to impoundment and sediment loads have been reduced by 90 percent.

The decline in white sturgeon numbers in Montana and the apparent stability of white sturgeon numbers in British Columbia and Idaho suggests that the spring spawning migration to Montana no longer occurs. Spawning migrations of stream fish are usually triggered by one or a combination of water temperature, discharge or photoperiod. Of these factors, the major change in the river environment during the late spring was the reduced stream flow. Similar concerns have been reported in connection with a decline in sturgeon numbers in the Sacramento-San Joaquin river system (15).

Gas Supersaturation

Significant problems with gas supersaturation in the Kootenai River from 1972 through 1975 was a result from the use of sluices, and to a

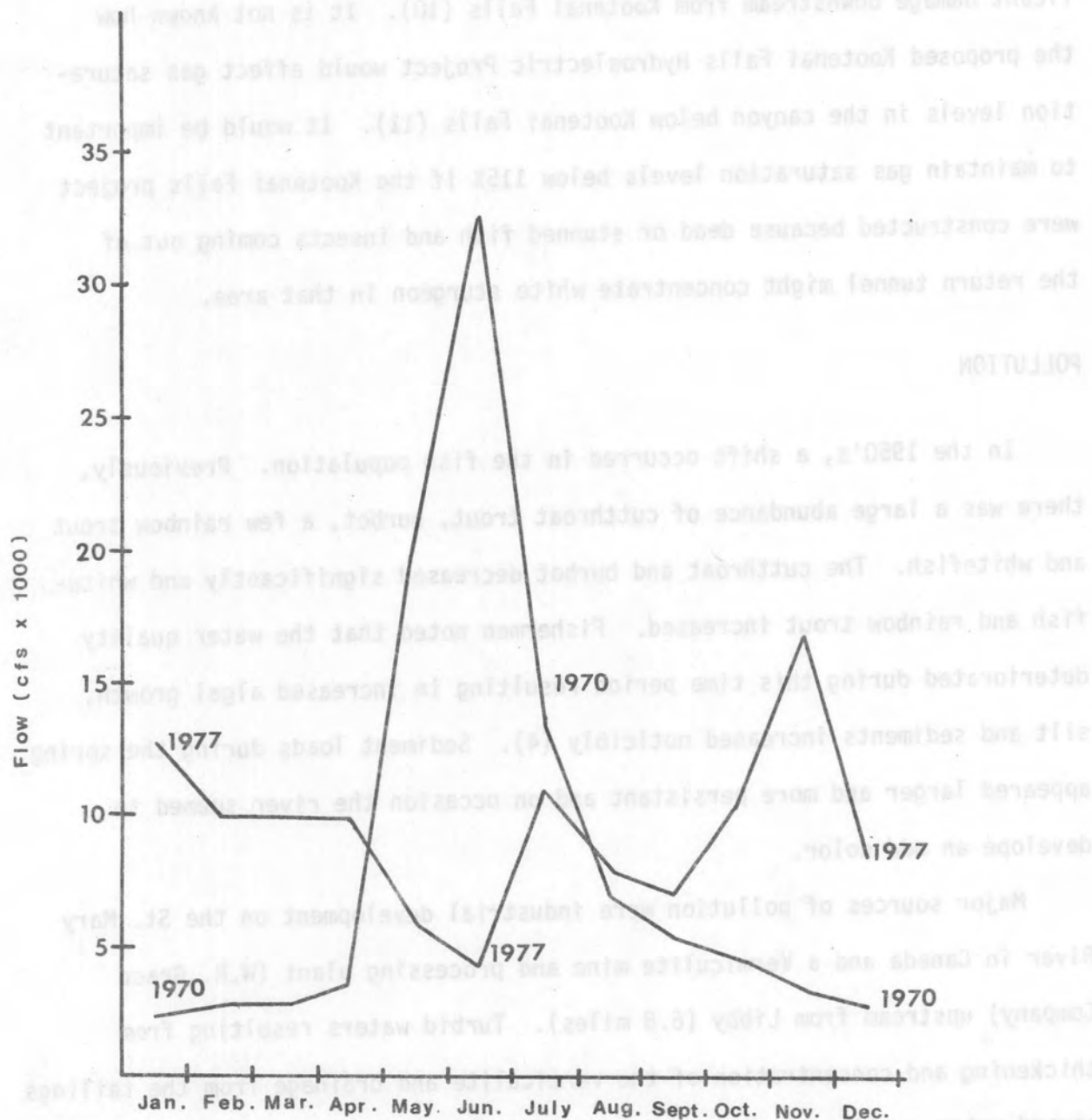


Figure 3. Mean monthly discharge of the Kootenai River at Libby, Montana prior to impoundment (1970) and post impoundment (1977)

lesser degree, spillways to discharge water from the dam. Gas supersaturation, when high, had marked effects on aquatic life in the Kootenai River causing flotation of insects clinging to gas bubbles resulting in increased downstream drift and susceptibility to predation.

It is not believed that these gas supersaturation problems caused significant damage downstream from Kootenai Falls (10). It is not known how the proposed Kootenai Falls Hydroelectric Project would affect gas saturation levels in the canyon below Kootenai Falls (11). It would be important to maintain gas saturation levels below 115% if the Kootenai Falls project were constructed because dead or stunned fish and insects coming out of the return tunnel might concentrate white sturgeon in that area.

POLLUTION

In the 1950's, a shift occurred in the fish population. Previously, there was a large abundance of cutthroat trout, burbot, a few rainbow trout and whitefish. The cutthroat and burbot decreased significantly and whitefish and rainbow trout increased. Fishermen noted that the water quality deteriorated during this time period resulting in increased algal growth, silt and sediments increased noticeably (4). Sediment loads during the spring appeared larger and more persistent and on occasion the river seemed to develop an odd color.

Major sources of pollution were industrial development on the St. Mary River in Canada and a Vermiculite mine and processing plant (W.R. Grace Company) upstream from Libby (6.8 miles). Turbid waters resulting from thickening and concentration of the vermiculite and drainage from the tailings caused water quality problems in the Kootenai River prior to 1971 (4).

Pollution in the St. Mary River resulted from effluents from a lead-zinc mine, a concentrator, an associated fertilizer plant and city sewage plant (15). The mine began operation in 1900, the fertilizer plant in 1953 and the iron and steel plants operated from 1961 to 1972.

Water quality improved in 1968 following implementation of some waste water controls (4). Significant improvements in water quality were made in 1975 and 1977 largely by recycling effluents (15). Water quality samples in the St. Mary River in February 1968 had a ph of 3.8, conductivity of 1,693 mohm and total dissolved solids of 1,414 mg/l. Water quality measurements in 1970 - 1974 had large concentrations of phosphorus and heavy metals (Table 4). Water quality problems also existed in the Elk River drainage as a result of coal mine operations.

The decline and shift in the fish population in the 1950's is undoubtedly the result of water quality problems. The poor water quality could have had two significant impacts on the white sturgeon. First, their food base could have been reduced, altered or both. Second, the heavy metals could have collected in the ovaries or eggs deposited in the river, reducing their rate of survival. This could have initiated the decline in the sturgeon utilizing the portion of the Kootenai River in Montana.

EXPLOITATION

Commercial exploitation of white sturgeon in the Columbia River resulted in a decrease in the harvest from 5.5 million pounds in 1892 to 73,000 pounds in 1899 (8). Early day exploitation probably removed the very large old sturgeon from the population. Present day limits restrict both the number and size of sturgeon that can be kept to protect both the young sturgeon and the older spawning fish.

TABLE 4. Selected water quality parameters of the St. Mary River upstream and downstream from effluents from the mine complex prior to (1970 - 74) and following (1976 - 77) effluent recycling.
(Adopted from Malick 1978).

PRE EFFLUENT RECYCLING							
	pH	Suspended solids*	Dissolved phosphorus*	Dissolved F*	Dissolved Zn*	Dissolved Pb*	Dissolved Fe*
1970 - 1974 Upstream	6.8 - 7.5	<40 - 50	<0.005	<0.15	0.02	0.001 - 0.005	<0.01
Downstream	3.5 - 7.5	<100 - 270	<2 - 9	0 - 20	0.05 - 0.6	<0.02 - 0.12	0.5 - 10
POST EFFLUENT RECYCLING							
	pH	Suspended solids*	Dissolved phosphorus*	Dissolved F*	Dissolved Zn*	Dissolved Pb*	Dissolved Fe*
1976 - 1977 Upstream	6.0 - 7.9	1 - 13	<0.01 - 0.06	<0.1 - 0.7	<0.01 - 0.05	<0.01 - 0.01	<0.05 - 0.10
Downstream	6.3 - 7.9	1 - 36	0.01 - 0.66	0.1 - 1.9	0.02 - 0.36	<0.01 - 0.01	<0.05 - 0.50

*Expressed in MG/L

Regulations which apply to the Kootenai River in British Columbia require fishing by permit only, one sturgeon per year, larger than 100 cm in length, and by set-line only. In the Idaho portion, fishermen are allowed two fish per year, a minimum size of 36 inches in total length and a maximum size of 72 inches. Fishing for white sturgeon was terminated in 1979 in Montana. Prior to that, regulation included both a minimum and maximum size limit. Because of the lack of work done on the Kootenai River in Montana, and through the efforts of a concerned fisherman, the white sturgeon was only made a game fish in 1972.

EXISTING CONSERVATION MEASURES

Fishing for white sturgeon has been prohibited in Montana since 1979. No other specific conservation measures are known to exist.

ANTICIPATED FUTURE

WITHOUT LISTING AS AN ENDANGERED SPECIES

The limited information on white sturgeon in Montana would indicate they are very near extinction. Lack of adequate information on the life history and population changes in years past make it difficult to accurately identify the cause of their decline. Without further study, the feasibility and subsequent implementation of a recovery program would have questionable value.

An assessment of the feasibility of rehabilitating the sturgeon population without listing as an Endangered Species would require convincing

potential funding sources and cooperators of our sincerity and concern for the white sturgeon. A recovery plan would entail the same alternatives with or without the proposed change in status and is contained in the section entitled "Population Recovery Alternatives".

WITH LISTING AS ENDANGERED SPECIES

The purpose of the state "Nongame and Endangered Species Conservation Act" of 1973 in regard to endangered species or subspecies indigenous to this state is to provide a means whereby the ecosystem upon which this species depends may be preserved and to provide a program for the conservation of the species to maintain or enhance its numbers.

The State is directed to assist in the protection of endangered wildlife by:

- 1) Prohibiting the taking, possession, transportation, exportation, processing, sale or offer for sale, or shipment within the state of endangered wildlife.

- 2) The director of the Department of Fish, Wildlife and Parks shall establish programs of land or aquatic habitat acquisition as are deemed necessary for management of endangered wildlife.

- 3) The department can enter into agreements with Federal agencies, political subdivisions of the State or with private persons for management of any area established for management of endangered wildlife.

Items 1 and 2 do not appear to offer significant opportunity for added protection of the white sturgeon at this time. Item 3 allows the department to negotiate with agencies such as the Corps of Engineers for the purpose of management of white sturgeon. Cooperative agreements with the Bonneville Power Administration, which controls flow regimes, would be reached under

the new Pacific Northwest Power Planning and Conservation Act to fund studies to identify the problems and assess the feasibility of recovery of the population. Recovery will also depend on securing a supply of sturgeon or sturgeon eggs from other states.

RECOVERY PLAN

PROBLEM IDENTIFICATION (Phase I)

1) A more complete assessment of the spatial and temporal distribution of white sturgeon in the Kootenai River must be initiated in cooperation with Idaho and British Columbia to determine the present upstream limit of their spawning migration.

2. An assessment of the other fish and invertebrate populations downstream from Kootenai Falls to determine the available food source. Considerable work has been done upstream from the falls, but virtually none has been done downstream.

3) Model streamflow-temperature changes at Kootenai Falls and below the major tributaries downstream such as the Yaak and Moyie rivers to further evaluate moderating influence of major tributaries on the regulated flows resulting from Libby Dam.

4) Fish tissue analysis of white sturgeon for heavy metals in the Kootenai River. Studies in the Columbia River system (3) and the Sacramento-San Joaquin system (15) indicate PCB contamination of eggs may be causing problems with egg survival.

DEVELOP AND ASSESS RECOVERY ALTERNATIVES (Phase II)

These alternatives cannot be addressed specifically until the problem

identification phase is completed. If regulated flows were the problem, the assessment would include: 1) determine potential for altering the existing flow regime; 2) assess impacts of flow alterations on other aquatic populations; and 3) determine impact of flow alterations on power production.

If a workable solution can be obtained, it might be necessary to secure a source of mature white sturgeon or eggs to begin a new run. Sturgeon hatcheries are non-existent, however, efforts are being made to incubate white sturgeon eggs in California to develop a population of sturgeon to supply caviar. This project is still in the early stages.

A potential egg supply may be the large sturgeon population downstream from Bonneville Dam in the Columbia River estuary. These fish do not migrate upstream in the Columbia anymore because of the numerous dams.

One possibility is to continue with the introduction of sturgeon into Libby Reservoir. This would have questionable value for Montana at this time. Studies in Idaho showed that white sturgeon moved upstream into flowing water habitat following impoundment of the Snake River (7). It is known that sturgeon are anadromous and young sturgeon move downstream into the ocean or some suitable large water body i.e. Kootenay Lake.

I speculate that sturgeon moved out of the Snake River reservoir because of the poor food supply. They are very large fish and probably forage a considerable amount of time. Like the Snake River Reservoir, Libby Reservoir undoubtedly has a poor food supply for the bottom-feeding sturgeon. It is likely that the sturgeon would move upstream out of the reservoir which backs up into Canada. To date, three of the five sturgeon put in Libby Reservoir have been caught. All three were caught in Canada, in flowing-water habitat (19). This alternative would be workable when and if Libby Reservoir developed a food base for sturgeon.

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SUPPLEMENT V - ATTACHMENT D

CRITICAL WILDLIFE HABITATS ADJACENT TO MAJOR
WESTERN MONTANA STREAM CORRIDORS

ATTACHMENT D TO SUPPLEMENT V: CRITICAL WILDLIFE HABITATS ADJACENT TO MAJOR WESTERN MONTANA STREAM CORRIDORS

STREAM	TRIBUTARY TO:	REACH DESCRIPTION	REACH LENGTH	ELEVATION	Wildlife Species of Major Importance and Primary Season(s) (W=Winter, Sp=Spring, Su=Summer, F=Fall, or All)			
					BIG GAME	FURBEARERS	WATERFOWL	NONGAME
1) Kootenai River	Columbia River	Idaho-Montana Border to Troy, Montana	8 miles	1800'-2050'	Whitetail Deer-All Moose - All	Bobcat - All River otter - All Mink - All Marten - All	Harlequin Duck-Sp,Su Canada goose-Sp,Su,F Other waterfowl-All	Bald Eagle-All Osprey-Sp,Su,F
2) Kootenai River	Columbia River	O'Brien Creek to Pipe Creek	14 miles	1900'-2200'	Bighorn Sheep-W,Sp Whitetail Deer-All Mule Deer - W,Sp Moose - All	Bobcat - All River otter - All Mink - All Marten - All	Harlequin Duck-Sp,Su Canada goose-Sp,Su,F Other waterfowl-All	Bald Eagle-All Osprey-Sp,Su,F
3) Kootenai River	Columbia River	Rainy Creek to Libby Dam	10 miles	2350'-2600'	Grizzly Bear-migration - All Mule Deer - W,Sp Elk - W,Sp Moose - All Whitetail Deer-All	Bobcat - All Beaver - All Mink - All Muskrat - All Marten - All	Various species - All	Bald Eagle-All Osprey-Sp,Su,F
4) Yaak River	Kootenai River	Mouth to Bunker Hill Creek	35 miles	1850'-3000'	Grizzly Bear-migration - All Grizzly Bear - Sp Mountain lion - All Black Bear - All Whitetail Deer - All Mule Deer - W,Sp Moose - All	River otter - All Mink - All Beaver - All Bobcat - All Lynx - All Wolverine - All Marten - All	Various species-Sp,Su,F	Bald Eagle-Sp,Su,F Osprey-Sp,Su,F
5) Clark Fork River	Columbia River	Thompson River to Weeksville Creek	13 miles	2400'-3000'	Bighorn Sheep-W,Sp Elk - W,Sp Whitetail Deer - All Black Bear - Sp,F Mountain Lion - All	River otter - All Mink - All Beaver - All Bobcat - All Marten - All	Wood Duck - Sp, Su Canada Goose-Sp,Su,F Mallard - Sp,Su,F Other waterfowl-All	Bald Eagle-All

ATTACHMENT 3 TO SUPPLEMENT V: CRITICAL WILDLIFE HABITATS ADJACENT TO MAJOR WESTERN MONTANA STREAM CORRIDORS

STREAM	TRIBUTARY TO:	REACH DESCRIPTION	REACH LENGTH	ELEVATION	Wildlife Species of Major Importance and Primary Season(s) (W=Winter, Sp=Spring, Su=Summer, F=Fall, or All)			
					BIG GAME	FURBEARERS	WATERFOWL	NONGAME
6) Clark Fork River	Columbia River	Henry Creek to Patrick Creek	18 miles	2500'-3500'	Bighorn Sheep-W,Sp Elk - W,Sp Mule Deer - W,Sp Whitetail Deer-W,Sp Mountain Lion - All	River Otter - All Mink - All Beaver - All Bobcat - All Marten - All	Wood Duck - Sp,Su Canada Goose-Sp,Su,F Mallard - Sp,Su,F Other waterfowl-All	Bald Eagle - All
7) Clark Fork River	Columbia River	Schwartz Creek to 3 miles above confluence of Rock Creek	6 miles	3500'-4000'	Whitetail Deer-All Mountain Lion-All Mule Deer - W,Sp	River Otter - All Mink - All Beaver - All Bobcat - All Marten - All	Various species-All	Bald Eagle - All
8) Bull River	Clark Fork River	Mouth to Basin Creek	4 miles	2200'-3000'	Elk - W,Sp Mule Deer - W,Sp Whitetail Deer-All Mountain Lion - All Grizzly Bear - Sp,F Black Bear - Sp,F	River Otter - All Mink - All Bobcat - All Marten - All	Various species - Sp, Su, F	
9) Thompson River	Clark Fork River	Mouth to Fishtrap Creek	15 miles	2400'-3200'	Bighorn Sheep-W,Sp Mountain goat-mi gra- tion - Sp,F Elk - W,Sp Mule Deer - W,Sp Whitetail Deer - All Grizzly Bear - Sp,F Black Bear - Sp,F Mountain Lion - All	River Otter - All Mink - All Bobcat - All Marten - All	Various species - Sp, Su, F	Bald Eagle - All
10) Saint Regis River	Clark Fork River	Mouth to Twelvemile Creek	13 miles	2800'-4000'	Mule Deer - W,Sp Whitetail Deer - All Elk - W, Sp Black Bear - Sp, F Mountain Lion - All	Mink - All Bobcat - All Marten - All	Various species - Sp Su, F	Bald Eagle - All

ATTACHMENT D TO SUPPLEMENT V: CRITICAL WILDLIFE HABITATS ADJACENT TO MAJOR WESTERN MONTANA STREAM CORRIDORS

STREAM	TRIBUTARY TO:	REACH DESCRIPTION	REACH LENGTH	ELEVATION	Wildlife Species of Major Importance and Primary Season(s) (W=Winter, Sp=Spring, Su=Summer, F=Fall, or All)			
					BIG GAME	FURBEARERS	WATERFOWL	NONGAME
11) Fish Creek	Clark Fork River	Mouth up South Fork to Lupine Creek	25 miles	3500'-5000'	Elk - All Mule Deer - W, Sp Whitetail Deer - All Moose - All Black Bear - All Mountain Lion - All	Bobcat - All Mink - All Marten - All Wolverine - All	Various species - Sp, Su, F	
12) East Fork of Bitterroot River	Bitterroot River	Cameron Creek to Meadow Creek	12 miles	4500'-6000'	Bighorn Sheep - All Moose - All Mule Deer - W, Sp Elk - All Whitetail Deer - All Black Bear - All Mountain Lion - All	Bobcat - All Mink - All Marten - All	Various species - Sp, Su, F	
13) Blackfoot River	Clark Fork River	Gold Creek to Belmont Creek	8 miles	3600'-4500'	Elk - W, Sp Black Bear - All Whitetail Deer - All Mule Deer - W, Sp Mountain Lion - All	Bobcat - All Mink - All Marten - All	Various species - Sp, Su, F	Bald Eagle - All
14) Blackfoot River	Clark Fork River	Clearwater River to Cottonwood Creek	8 miles	4000'-4500'	Elk - W, Sp Whitetail Deer - All Mule Deer - W, Sp Mountain Lion - All Black Bear - All	Bobcat - All Mink - All Marten - All	Various species - Sp, Su, F	Bald Eagle - All
15) Blackfoot River	Clark Fork River	Nevada Creek to Lincoln Montana	35 miles	4300'-5300'	Whitetail Deer - All Mule Deer - W, Sp Elk - W, Sp Black Bear - All Mountain Lion - All	Bobcat - All Mink - All Marten - All	Various species - Sp, Su, F	Bald Eagle - All
16) Clearwater River	Blackfoot River	Inlet to Blanchard Lake to outlet of Salmon Lake	5 miles	4000'-4500'	Whitetail Deer - All Mule Deer - W, Sp Elk - W, Sp Black Bear - All Mountain Lion - All	Bobcat - All Mink - All Marten - All	Various species - Sp, Su, F	Bald Eagle - All

SUPPLEMENT VIII - ATTACHMENT A

LAKE KOOCANUSA TRIBUTARY DEVELOPMENT

FINAL JOB REPORT

MONTANA DEPARTMENT OF FISH AND GAME

In Cooperation with U. S. Army Corps of Engineers

Contract No. DACW 67-73-C-0004

FISHERIES DIVISION

Final Job Report

July 1, 1972 - June 30, 1975

LAKE KOOCANUSA TRIBUTARY DEVELOPMENT

Lake Koocanusa, Montana

By

Joe E. Huston and Bruce May

Reservoir Investigations Project

October 1975

MONTANA DEPARTMENT OF FISH AND GAME

FISHERIES DIVISION

Final Job Report

Project No. 2275

Project Title: Development of Lake Koocanusa Tributaries

Period Covered: July 1, 1972 through June 30, 1975

INTRODUCTION

Libby Dam impounding the Kootenai River near Libby, Montana created a 90-mile-long, 48,000 surface-acre multipurpose reservoir. This fluctuating reservoir (Lake Koocanusa) inundated 48 miles of mainstem Kootenai River and about 14 miles of tributary streams in the State of Montana. The remainder of the reservoir is in British Columbia, Canada. Libby Project was authorized for flood control, power production and recreation benefits but not for fish and wildlife.

Prior to impoundment, Kootenai River sustained an excellent sport fishery of regional importance. Populations of sport fish included rainbow trout (Salmo gairdneri), cutthroat trout (Salmo clarki), Dolly Varden (Salvelinus malma), mountain whitefish (Prosopium williamsoni), and burbot (ling) (Lota lota). Fisheries management by the State of Montana was minimal since these game fish populations were self-sustaining.

Montana Department of Fish and Game realized that impoundment of the Kootenai River by Libby Dam would drastically change the fisheries management needs of the area. Intensive programs would have to be undertaken to maintain a fishery in the new multipurpose impoundment to replace that of the free-flowing Kootenai River. Two principle programs were formulated - (1) the development of tributary streams of the impoundment as spawning and rearing areas for reservoir-living game fish and (2) the release of large numbers of suitable species of hatchery fish into the reservoir. This report gives a summary and analysis of tributary stream development work done from 1966 through 1975.

DISCUSSION

Montana Department of Fish and Game conducted an intensive survey of all Montana tributaries of the Kootenai River within the Montana portion of Lake Koocanusa from 1966 through 1975 to determine streams with potential for development as spawning and rearing areas for reservoir-living game fish. We also determined the best methods of development and the most suitable species of fish for each stream that had spawning and rearing potentials. Types of development were:

- A. Removal of barriers inhibiting upstream-downstream movement of fish.
- B. Making imprint plants of suitable fish species.

C. Removal of barriers and making imprint plants.

D. Removal of barriers, suppression of resident fish populations and making imprint plants of suitable fish species.

Species of fish for which streams were to be developed included all stream-spawning salmonids within the Kootenai River which might survive in the reservoir. Species of fish to be imprint planted into a stream were limited to mountain whitefish and the adfluvial strain of westslope cutthroat trout (Salmo clarki subsp.).

It was originally planned that streams with treatment type D would be planted with westslope cutthroat trout for at least three years and that other streams to be stocked with cutthroat would be planted as fish were available, but for not more than three years. This plan was made with the assumption that the reservoir would not be operated in a manner that would encourage downstream losses of reservoir fish. However, severe drafting of Lake Koocanusa in winter 1972-73 and spillway release of water in summer-fall 1974 caused numerous cutthroat trout and mountain whitefish to move out of the reservoir. These downstream losses will delay reaching spawning run capacities in tributaries for several years; thus, additional imprint plantings will be required to maintain maximum in-stream adfluvial cutthroat trout populations.

Creeks to be stocked with mountain whitefish were scheduled for three plantings. Sufficient numbers of fish were not available to fill the 1974 planting schedule. Montana Department of Fish and Game will collect the necessary eggs and plant the needed fish in winter 1976.

Conversion of a stream containing a resident fish population to one used for spawning and rearing by a migratory fish is a new fisheries management technique for Montana. This method was tested on Young Creek, a Lake Koocanusa tributary, starting in 1969. Stream development included barrier removal, suppression of the resident fish population and replacement of the resident population with adfluvial westslope cutthroat trout. An upstream-downstream fish trap constructed by the Corps of Engineers was operated by Montana Department of Fish and Game under Contract No. DACW 67-73-C-0004 to determine the success of these developments.

By summer 1972, results of the Young Creek experiment indicated a successful conversion to adfluvial cutthroat from a resident brook trout (Salvelinus fontinalis)-resident cutthroat trout population. It was decided to continue development of other reservoir tributary streams.

A list of the streams developed, type of treatment, species planted and spawning runs developed is given in Table 1. Figure 1 shows the location of these streams. Procedures, methods used and treatment details for each stream were discussed by Bruce May 1974*.

*May, Bruce. 1974. Lake Koocanusa Tributary Development. Job Progress Report, 1972-1974, Contract No. DACW 67-73-C-0004, Montana Department of Fish and Game, pp 13.

Table 1. Summary of development of Lake Koocanusa tributary streams

Stream	Type of treatment ^{1/}	Imprint Plantings ^{2/}		Spawning Runs ^{3/}	
		Wct	Mwf	Wct	Mwf
Murray Creek	C	yes (1)			
Therriault Creek	A				
Deep Creek	C	yes (1)			
Clarence Creek	D	yes (3)			
Grave Creek	C	yes (1)		yes ^{4/}	yes ^{4/}
Fortine Creek	B	yes (2)		yes	yes
Pinkham Creek	D	yes (3)			
Sutton Creek	C		yes (2)		yes
Five Mile Creek	D	yes (4)	yes (2)	yes	yes
Cripple Horse Creek	C		yes (2)	yes	yes
Canyon Creek	A			yes	
Jackson Creek	A				
Barron Creek	A				yes
Bristow Creek	C		yes (2)	yes	yes
Big Creek	D	yes (3)	yes (2)		
Sullivan Creek	D	yes (3)			

^{1/} Types of treatment are: A-barrier removal only, B-imprint plants only, C-barrier removal and imprint plants and D-barrier removal; suppression of resident fish populations and imprint plants.

^{2/} Wct is abbreviation for westslope cutthroat trout and Mwf is for mountain whitefish, yes indicates fish planted and number in parenthesis is number of years planted.

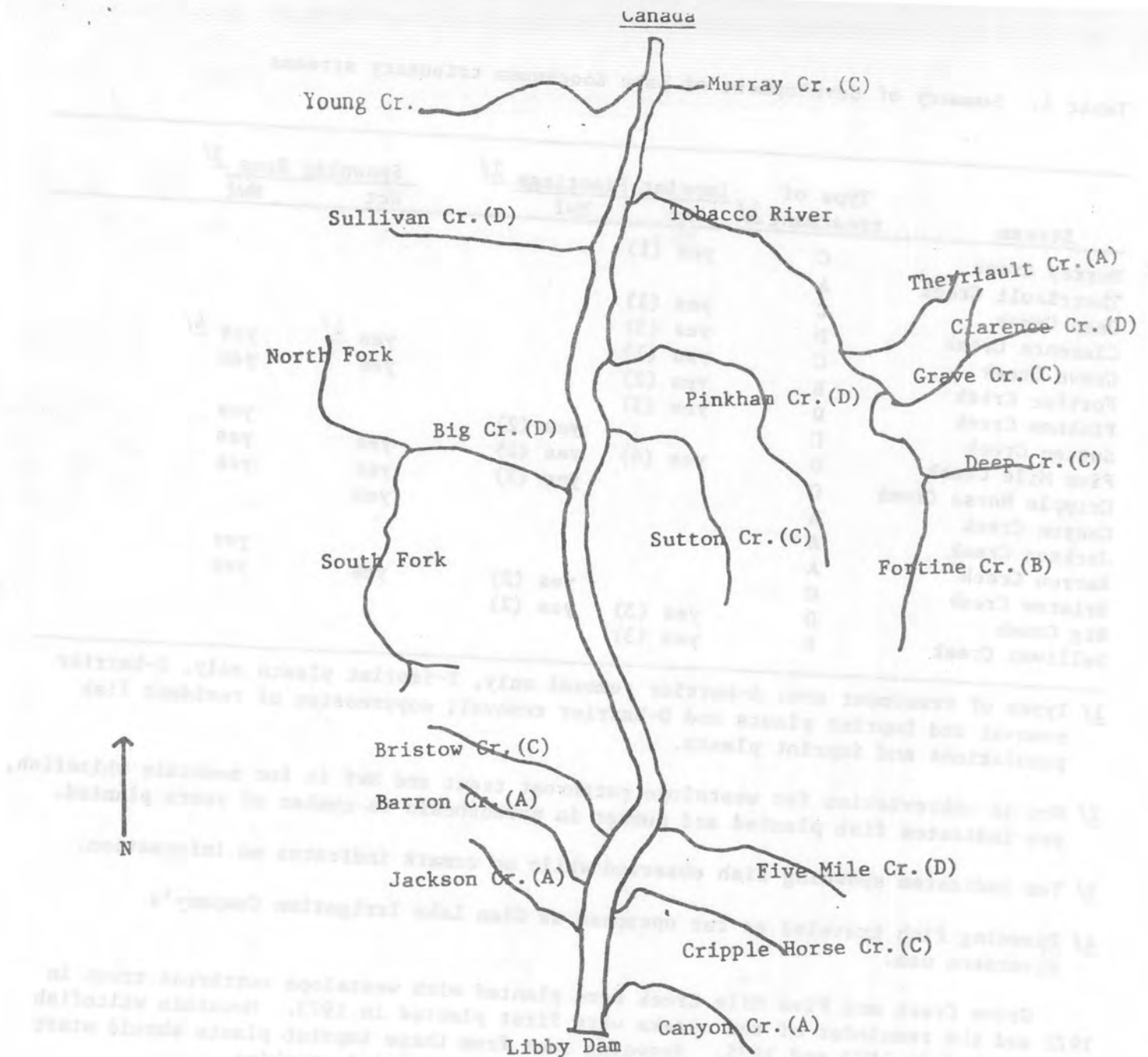
^{3/} Yes indicates spawning fish observed while no remark indicates no information.

^{4/} Spawning fish traveled as far upstream as Glen Lake Irrigation Company's diversion dam.

Grave Creek and Five Mile Creek were planted with westslope cutthroat trout in 1972 and the remainder of the creeks were first planted in 1973. Mountain whitefish were stocked in 1973 and 1975. Spawning runs from these imprint plants should start to develop within three or four years following the initial stocking.

Table 1 shows that spawning cutthroat trout and whitefish have been observed in six creeks. These spawning runs are probably the result of both the tributary development program and continuation of some prior runs. It is suspected that cutthroat and whitefish runs in Five Mile Creek are a direct result of stream development. Grave and Fortine Creeks, tributary to Tobacco River, contained whitefish, cutthroat trout, rainbow trout and Dolly Varden spawning runs from Kootenai River prior to impoundment. Likely spawning runs observed in the Tobacco River drainage were a combination of continuing existing runs, fish from imprint plants and fish from general plantings made in Lake Koocanusa.

Cutthroat spawning runs into Cripple Horse, Canyon and Bristow Creeks are likely from fish planted directly into the reservoir. Whether or not these spawning runs will continue in these short creeks with little rearing capacity is unknown at this



- LEGEND
- 5mm = 1 mile
- A. Barrier removal only
 - B. Imprint plants only
 - C. Barrier removal and imprint plants
 - D. Barrier removal, suppression of resident fish populations and imprint plants

Figure 1. Map of Libby Reservoir flowage and management plan for each tributary developed

time. They will likely disappear unless heavy plantings of cutthroat into the reservoir are continued.

Mountain whitefish which spawned in Sutton, Cripple Horse, Barron and Bristow Creeks probably are not related to the imprint plantings but to pre-impoundment whitefish straying into the available areas. It is suspected that even if river-born whitefish eventually are able to adjust to a lake environment and survive, it will take some time. Continued good spawning runs of whitefish in these streams indicate that the imprint plantings were successful. Whitefish planted into Lake Koocanusa tributaries are from Hungry Horse Reservoir stocks which either adjusted to a lake environment in the 20 years since impoundment or are the descendants of Flathead Lake runs cut off by Hungry Horse Dam.

Development of Lake Koocanusa tributaries has been a long-term project which started in 1966. Evaluation of the development cannot be completed until at least 1980. Total cost to the Corps of Engineers for their part of the stream development program (July 1, 1972 through June 30, 1975) was \$19,100.00. Cost to Montana Department of Fish and Game has been \$7,175.00 for initial survey work from 1966 through 1969, \$1,210.00 for additional follow-up survey work done in summer 1975, \$400.00 for an overrun during the three-year Corps of Engineers funded contract and \$4,910.00 for the cost of planting cutthroat trout from 1972 through 1975.

Additionally, Montana will spend an estimated \$1,850.00 to collect whitefish and make imprint plants in winter 1976, plus an additional minimum of \$3,000.00 for future imprint plants of cutthroat required because of reservoir operations in 1972-73 and in 1974. Montana's total costs will probably exceed \$18,500.00 for work which would have been unnecessary if Libby Dam had not been built.

There is no doubt these tributary developments have resulted in somewhat larger numbers of game fish in Lake Koocanusa than would be present had the work not been done. Because the second development program (hatchery construction) has remained unfunded this tributary development program is of much greater importance to the present reservoir fishery than it was originally expected to be. Thus, it is quite important to the immediate future of the Lake Koocanusa fishery that the evaluation of this development program be intensified in 1976 and continued through spring 1980. Corps of Engineers will be requested to provide funds for this work. Detailed cost estimates for the work have not been made.

SUPPLEMENT VIII - ATTACHMENT B

HABITAT DEVELOPMENT OF YOUNG CREEK, TRIBUTARY TO

LAKE KOOCANUSA

FINAL JOB REPORT

MONTANA DEPARTMENT OF FISH AND GAME REPORT

In Cooperation with the U.S. Army Corps of Engineers

Contract No. DACW 67-73-C-0002

Fisheries Division

Final Job Report
July 1, 1969 - August 15, 1975

HABITAT DEVELOPMENT OF YOUNG CREEK, TRIBUTARY TO LAKE KOOCANUSA

By

Bruce May and Joe E. Huston

Reservoir Investigation Project

MONTANA DEPARTMENT OF FISH AND GAME

FISHERIES DIVISION

FINAL JOB REPORT

Project Title: Habitat Development of Young Creek, Tributary to Lake Koocanusa
1 July 1969 through 15 August 1975

ABSTRACT

The number of westslope cutthroat trout (303) in the 1975 spawning run was less than expected. This is attributed to the loss of large numbers of fish downstream out of the reservoir in the summer of 1974 and winter 1972-1973. About 30 percent of the 1975 spawning run had been marked as juveniles emigrating from Young Creek.

The number of out-migrant smolts captured in 1975 was comparable to 1973 and 1974. Nearly all of the smolts were two or three years old. The hatchery reared cutthroat planted in Young Creek appear to be following the typical adfluvial life cycle.

Tag returns from anglers in 1974 and 1975 indicate definite downstream movement of cutthroat related to reservoir drafting. Anglers returned tags from less than seven percent of the fish tagged at Young Creek in 1973 and 1974. About 60 percent of the tags returned were from fish caught in the Kootenai River below Libby Dam.

BACKGROUND

The impoundment of the Kootenai River by Libby Dam destroyed the historic spawning grounds of game fish in over 90 miles of the main-stem of the Kootenai and in approximately 25-30 miles of tributaries - thus the decision was made to manage all suitable remaining sections of the tributaries as spawning and nursery areas for migrating game fish from Lake Koocanusa.

Young Creek was selected as a test stream to determine the feasibility of establishing spawning runs of an adfluvial strain of westslope cutthroat (Salmo clarki supsp.). Adfluvial refers to fish that migrate from a lake or reservoir into a stream to spawn, whereas fluvial fish migrate from a river to spawn in a tributary stream.

Young Creek's source is on the east slopes of the Purcell Mountains in Lincoln County, Montana. The stream flows east approximately 15 miles to its confluence with Lake Koocanusa, about three miles south of the Montana-Canadian border. The gradient in the lower miles of Young Creek is moderately high, averaging 120 feet per mile. Peak annual flows have averaged over 100 cfs

and the average annual low flows have been between 5 and 10 cfs. Water temperature extremes have ranged from 32°F to 65°F with the highs in August averaging 60°F. Young Creek is a moderately productive stream with total alkalinities of over 130 ppm and standard conductivities of more than 200 micromhos per cc in the summer and fall. Fish species found in the stream include fluvial and resident westslope cutthroat, rainbow (Salmo gairdneri) and brook trout (Salvelinus fontinalis).

The Corps of Engineers designed and built an upstream-downstream fish trap immediately above full-pool elevation on Young Creek in the fall of 1969. Initial development work on the project consisted of removal or alteration of barriers to fish migration from the junction of the North and South Fork downstream to the mouth (a distance of about 11 miles) in the summer of 1970. The fish population in the upper seven miles of this section was eliminated using rotenone in August, 1970. An initial imprint plant of 50,000 adfluvial westslope cutthroat fingerlings was made in September, 1970. Annual plantings of about 50,000 fingerling cutthroat were made from 1970-1972, about 32,000 were planted in 1973; 45,000 in 1974 and 60,000 in 1975.

Adfluvial cutthroat live from one to three years in the natal stream before emigrating into the lake or reservoir. They grow and mature for one to three years in the lake before returning to spawn. The majority spend two years in the natal stream and two years in the lake before maturing and returning to spawn.

The first adfluvial cutthroat were planted in 1970 as Age 0+ fish. The majority of these fish should have emigrated in 1972 and returned to spawn for the first time in 1974. Smolting appeared to be delayed by one year. This is believed due to slow growth rates and comparatively low densities, (May and Huston, 1973). The spawning run increased to about 300 fish in 1974, from 100 or less in previous years, but few of them had been marked as juveniles emigrating from Young Creek (May and Huston, 1974). Large plants of adfluvial westslope cutthroat were made in the reservoir beginning in 1972.

PROCEDURES

From 1970 to 1973 juveniles caught in the downstream trap were fin-clipped to distinguish age group and year of emigration; beginning in 1974, adults and juvenile fish were cold branded using liquid nitrogen as the coolant. Four different brand symbols were utilized to distinguish age classes and to separate adults from juveniles. The outmigrants were branded in 1974 on the right side midway between the dorsal fin and lateral line. Brands were placed on the left side below the lateral line in 1975. Spent adults and juveniles over 7.0 inches were jaw-tagged also.

Methods outlined by Vincent (1971) were used when sampling with electro-fishing gear and population parameters were calculated from the field data by the use of a computer program.

A 30 day thermograph was used to monitor water temperatures and a continuous flow recorder was installed and operated by the United States Geological survey.

FINDINGS

Habitat Development and Maintenance

Young Creek has been surveyed annually from 1970 through 1975 for potential barriers to fish migration from the junction of the mouth, a distance of 11 miles. Potential barriers were found at only two spots in 1975. Stream profile data were collected from three sections in summer 1975 and flows were recorded at a U.S.G.S. gauge station from March 1973, through November 1975. This information will be used to file for a water reservation to maintain adequate instream flows for cutthroat spawning and rearing.

Over 500 brook trout were removed from the meadow section of Young Creek in July 1975, by electrofishing. The void was filled with an imprint plant of westslope cutthroat trout fingerlings.

Spawning runs

Data for cutthroat trout entering Young Creek from Lake Koocanusa in 1973, 1974 and 1975 are listed in Table 1. No data are presented for the small spawning runs of cutthroat trout from Kootenai River. Many of the cutthroat in the 1973 spawning run were also fluvial fish, but that years' run did include some precocious adfluvial cutthroat.

In all years except 1975, the spawning run started about the first of May and continued for about one month. The 1975 spawning run did not start until May 21st and the last fish was caught July 8th. Water temperatures in Young Creek are thought not to be the reason for the late 1975 spawning run. Low reservoir pool levels coupled with later than normal spring run-off probably delayed warming of the reservoir which in turn delayed the spawning run compared to other years.

Lake Koocanusa pool elevation in mid-May 1975, was 2,295 feet msl compared to 2,326 in 1974. At the lower elevation Young Creek flows into the Kootenai River. Siltation of the lower end of Young Creek since its inundation by the reservoir, has created a severe braided channel when reservoir levels are down. This braided channel may be a physical block to fish moving up Young Creek until either the area is inundated by the reservoir or spring run-off re-cuts a primary creek channel.

The number of fish in the 1975 spawning run (303) was almost identical to the 1974 run (306), but much larger than the 1973 run (102) fish. Movement of cutthroat downstream out of the reservoir area was a major factor contributing to the 1975 run being less than expected. Over 60 percent of the 33 tags returned by anglers in 1974 and 1975 were caught in the Kootenai River below the dam.

Table 1. Parameters for cutthroat trout spawning run from Lake Koocanusa into Young Creek, 1973-1975

Parameter	Year		
	1973	1974	1975
Number of spawners	102	306 ^{1/}	303 ^{1/}
Sex ratio (male;female)	1.0:1.0	1.0:1.6	1.0:2.7
Average length (male) in inches	12.6	13.7	14.7
Average length (female) in inches	13.2	14.2	14.7
Number of repeat spawners from past years	2	4	2
Number of fish marked or tagged as juveniles emigrating from Young Creek	1	7	76
Estimated fecundity ^{2/}	43,680	150,130	220,000

^{1/} Calculated from a modified Peterson Index

^{2/} Fecundity based on data collected from Hungry Horse Creek where a one pound female contained about 1,000 eggs.

There were two repeat spawners in the 1975 run, but the number of fish in the run, previously marked as juveniles emigrating from Young Creek, rose to 76 fish. Sixty-six of these fish were marked in 1973 with only eight fish coming from the 1972 and two from the 1974 smolt emigrations. The comparatively few fish from the 1972 smolt class is probably a result of a loss downstream triggered by a 230 foot drawdown of the reservoir in winter 1972-1973.

The growth of cutthroat in the new reservoir has been excellent to date. The average length of the fish in the run increased to 14.7 inches in 1975. The growth of juvenile cutthroat tagged emigrating from Young Creek in the summer of 1973 and returning to spawn in June of 1975 averaged 8.0 inches. The growth rates from the scale analysis indicated that the 1971 year class has grown faster than the 1969 or 1970 year class.

Upstream Fish Populations

Two sections have been sampled annually to determine the survival and growth of imprint plants and rate of brook trout repopulation. The Tooley Lake Section (1,150 feet long) is located in the lower four miles of Young Creek which was not chemically treated. Prior to development, this section contained resident and fluvial cutthroat with a few brook trout. Section 3 (1,500 feet long) is located in the middle of the area which was treated to

reduce resident fish populations. Prior to treatment, this section contained resident brook trout and cutthroat in about equal proportions. This section has received annual imprint plants of about 6,000 adfluvial fingerlings per mile from 1970 to 1972 and about 4,000 per mile in 1973 and 1974.

The population estimated for cutthroat in the Tooley Lake section, (Table 2.) appeared to decline in 1975. Higher than normal creek flows prevented efficient sampling in 1974 and 1975 and the overlapping of the large confidence limits indicate that the difference may not be significant. The standing crop of around 60 pounds of cutthroat per surface acre indicates that this is a productive section. The age composition of the population has remained relatively stable with age 1+ fish comprising from between 60 to 80 percent of the population (Table 3). The percent of brook trout in the population rose to about 20 percent in 1975.

Table 2. Population estimates and average condition factors for cutthroat trout in Tooley Lake Section and Section 3, Young Creek 1972-1975
The 95 percent confidence limits are in parenthesis

Tooley Lake Section				Section Three			
Number/ 1,000 feet	Pounds/ 1,000 feet	Pounds/ surface acre	Average condition factor	Number/ 1,000 feet	Pounds/ 1,000 feet	Pounds/ surface acre	Average condition factor
362(+29%)	18	64	July, 1972 38	648(+26%)	16	53	41
489(+20%)	17	58	Sept. 1973 38	724(+45%)	20	69	40
359(+37%)	19	64	Aug. 1974 40	NA ^{2/}			
188	-	-	July 1975 -	288	-	-	-

1/ Initial estimates not run through computer

2/ Not enough fish marked to make an estimate

The populations estimated (Table 2) for westslope cutthroat in Section three were higher in 1972 and 1973 than 1975. The number of fish inhabiting this section in 1972 and 1973 was probably higher than the carrying capacity of the stream. In addition, the January, 1974, flood caused some habitat damage which probably lowered the population considerably in 1974. The population recovered in 1975 from the 1974 flood, but it probably won't reach the

levels of 1972 and 1973 again. The age composition in Section Three was similar to the Tooley Lake Section (Table 3).

Table 3. Growth rates and age composition of the cutthroat populations in Tooley Lake Section and Section Three, Young Creek, 1972-1974

Tooley Lake Section			Section Three		
Age class	Ave. length in inches at capture	Percent age composition	Age Class	Ave. length in inches at capture	Percent age composition
<u>July 1972</u>					
1+	3.4	65	1+	3.1	70
2+	5.8	21	2+	4.6	29
3+	7.3	13	3+	7.3	1
4+	1-.4	1			
<u>Sept. 1973</u>					
1+	3.8	81	1+	3.5	78
2+	5.4	15	2+	5.0	19
3+	7.2	3	3+	6.2	3
4+	8.5	1			
<u>Aug. 1974</u>					
1+	3.9	64			
2+	5.6	26			
3+	7.1	9			
4+	9.1	1			

Table 4. Annual instream survival rates of adfluvial cutthroat planted in Young Creek - Section three

Year class	Number planted by 1,000 feet of stream	Percent annual survival rate to 1/		
		1971	1972	1973
1970	1,350	29	47(14)	13(2)
1971	1,350	--	33	30(10)
1972	1,350	--	--	42

1/ Percent of original number surviving to second and third year shown in parenthesis

The annual in-stream survival rates (Table 4) of the imprint plants were excellent from 1970 to 1973. The lack of competition from large resident fish has contributed to these high survival rates. In addition, some fish leave the stream at age 1+ and most at age 2+, thus, the actual survival of each year class is higher than indicated.

The species composition of the catch from 1970 to 1975 has ranged from 90 to 97 percent cutthroat with the remainder consisting of brook trout. This indicates that the repopulation of this area by brook trout has been quite slow.

Outmigrant Juveniles

The number of outmigrant smolts (1,341) captured in 1975 was comparable to the previous two years (Table 5). The estimated number of migrants was somewhat less than in 1974, due to the fewer number of days the trap was inoperative as a result of high flows in 1975. The number of smolts is still below the estimated number of 5000 to 10,000 smolts which the stream could produce if all of the spawning and rearing habitat was utilized.

The age composition of the smolts has varied from year to year (Table 6) with age 2+ fish comprising most of the fish in all three years. Age 3+ fish were second in abundance in 1974 and 1975 with age 1+ fish second in numbers in 1973. The growth of smolts (Table 7) in the stream has been comparable to that recorded by Huston (1969) for juvenile cutthroat from Hungry Horse Creek in the Flathead drainage. Basically, the fish from the imprint plants in Young Creek appear to be following the typical life cycle of adfluvial cutthroat from Hungry Horse Creek quite closely.

Migration and Angler Harvest

The angler harvest of fish tagged at Young Creek in 1973 and 1974 has been comparatively low (Table 8). Only 4.6 and 7.0 percent of the fish tagged in 1973 and 1974, respectively, have been returned by anglers. This is likely due to low fishing pressure caused by poor access and the reservoir large annual drawdown.

The tag return data indicates that Young Creek fish migrated considerable distances with a definite tendency towards downstream movement. Twenty (61 percent) of the fish were caught below Libby Dam with the furthest downstream movement from Young Creek being 76 miles. Nine fish (27 percent) were caught in the Canadian part. The longest recorded upstream movement from Young Creek was 30 miles.

Differences in fishing pressure and the influence of the drawdown in the different areas had an effect on the tag return data. The drawdown concentrated the fish and fishing pressure in the lower 20-30 miles for as long as five to six months a year. In addition, turbidities in the upper part during the spring run-off reduce fishing pressure until late July. Thus, it is not surprising that more fish have been caught in the U.S. than the Canadian part of the reservoir as the U.S. portion is least influenced by the drawdown and turbidities. The large number of fish caught below Libby Dam clearly indicate that the downstream loss of cutthroat has been a major factor in producing a lower than expected spawning run at Young Creek in 1975.

Table 5. Downstream trap operation schedule, migratory cutthroat captured and total estimation of outmigrants 1972 through 1975

Parameter	Year			
	1972	1973	1974	1975
Period trap operated	March 17-Nov. 13	April 6-Sept. 28	April 1-Sept. 30	April 16-July 31 ^{1/}
Number days trap inoperable due to high flows	16	7	44	19
Number of smolts	352	1,408	1,558	1,341
Peak Migration period	July and October	June and September	July	June 18-July 17
Estimated number of outmigrants	500-1,000	2,000-3,000	3,000+	2,000-3,000

^{1/} Data collection, for report ended on this date

Table 6. Percent age composition of outmigrant juveniles from Young Creek 1972-1974

Year	Age		
	1	2	3
1972	35	49	16
1973	14	48	38
1974	5	54	41

Table 7. Growth of outmigrant juveniles from Young Creek 1972-1974

Year Class	Age at Migration	Back calculated growth at age		
		1	2	3
1970	2	1.8	4.6	-
	3	2.1	3.8	6.1
1971	1	2.1	-	-
	2	2.0	4.4	-
	3	2.0	3.1	4.5
1972	1	2.3	-	-
	2	2.2	4.5	-
1973	1	2.0	-	-

Table 8. Angler harvest and migration of cutthroat trout tagged in Young Creek in 1973 and 1974

Year Tagged	No. tagged	No. caught by angler	No. caught at these distances from Young Creek in miles					
			0-5	6-9	10-19	20-30	30-47	47+(Libby Dam Site)
1973	237	11	1	1	-	1	2	6
1974	313	22	4	-	2	-	2	14

Evaluation of Fish Trapping Facilities

Modifications made on the upstream trap since 1970 have greatly improved trap efficiency. Approximately 97 percent of the estimated upstream spawning migration was captured in 1975. Periodic inspections and maintenance of trap leads and placing baffles in the velocity barrier helped produce the high efficiency in 1975.

The major problem with the downstream trap occurs during the spring when high flows carrying large amounts of organic debris preclude efficient trap operation. The use of one-half inch screen and a modified self-cleaning screen in the bypass channel has helped somewhat, but it is still not possible to operate the trap in flows of over 70 cfs with any degree of efficiency.

The trap efficiency was checked from June 18, 1975, to July 7, 1975, by releasing tagged and marked fish upstream. Eighty-six percent of the test fish in the first lot and 70 percent of the fish in the second lot were recaptured in the downstream trap. The flows during this period ranged from 30 to 20 cfs.

The percent of smolts caught in the downstream trap varies from year to year, depending primarily on the flow curve. In high water years, where the trap is inoperable on many days and when much water must be passed through the bypass channel, the overall trap efficiency is probably less than 50 percent. In low water years, the trap efficiency can be 60 to 70 percent.

RECOMMENDATIONS

Loss of cutthroat trout out of Lake Koocanusa which was caused by reservoir operation has resulted in considerable delay in reaching an adequate spawning run into Young Creek. Montana Department of Fish and Game has had to plant an unanticipated 137,000 cutthroat to maintain maximum instream populations. Montana has also planted about three million cutthroat directly into the reservoir since 1972. Lake Koocanusa and its tributaries have been planted with cutthroat at the expense of eliminating or reducing the plants into other State waters.

The Department has decided that planting of fish into Lake Koocanusa will cease until such a time as fish are available without affecting plantings in other State waters. Additional imprint plants of cutthroat into Lake Koocanusa tributary streams will be done only where spawning runs from the reservoir are insufficient to maintain the instream populations.

Specific recommendations for Young Creek include:

1. The upstream-downstream fish trap should be operated for at least four years to determine strength of the spawning run and emigration of juvenile fish.
2. The upstream trap should be operated at least every other year after the initial four years to determine strength of the spawning run. Strength of spawning runs is direct measure of the health of the population in the reservoir.
3. Fish passage through-out the drainage should be maintained. The U.S. Forest Service may take this responsibility on Forest land but the Department would have to perform this task on State and private lands.

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