BASELINE AQUATIC REPORT FOR ALTERNATIVE DAM SITES ON THE KOOTENAI RIVER - KOOTENAI RIVER HYDROELECTRIC PROJECT NO. 2752

by

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Facility Siting Division

Department of Natural Resources

and Conservation

February, 1981

for

NORTHERN LIGHTS INC.

SANDPOINT, IDAHO

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INTRODUCTION

Northern Lights' application to the Montana Department of Natural Resources and Conservation (DNRC) was determined to be inadequate partially because it lacked ecological information on the alternative dam sites specified by the applicant. Without such information, environmental concerns could not be weighed against the economic concerns of the utility company. In order to overcome this limitation, DNRC investigated the fishery aspects of the alternative sites.

Four dam sites below Kootenai Falls (Katka, Rocky Creek, Ruby Creek, and O'Brien Creek), and one above the falls (the applicants preferred) were considered for this report (see Figure 1). Some of the alternatives would involve the construction of more than one dam. The reservoir elevations of the various alternative dams are shown in Table 1.

Although several parameters were considered in the comparison, the primary concerns are fish population and movement and the amount of slack water that would be created.

PHYSICAL-CHEMICAL PARAMETERS

WATER QUALITY

For site-comparison purposes, the water quality information in Northern Lights' application (Northern Lights Inc. 1980) was considered adequate. It is not necessary to repeat that information here. The water quality at all sites is suitable for supporting a cold-water trout fishery.

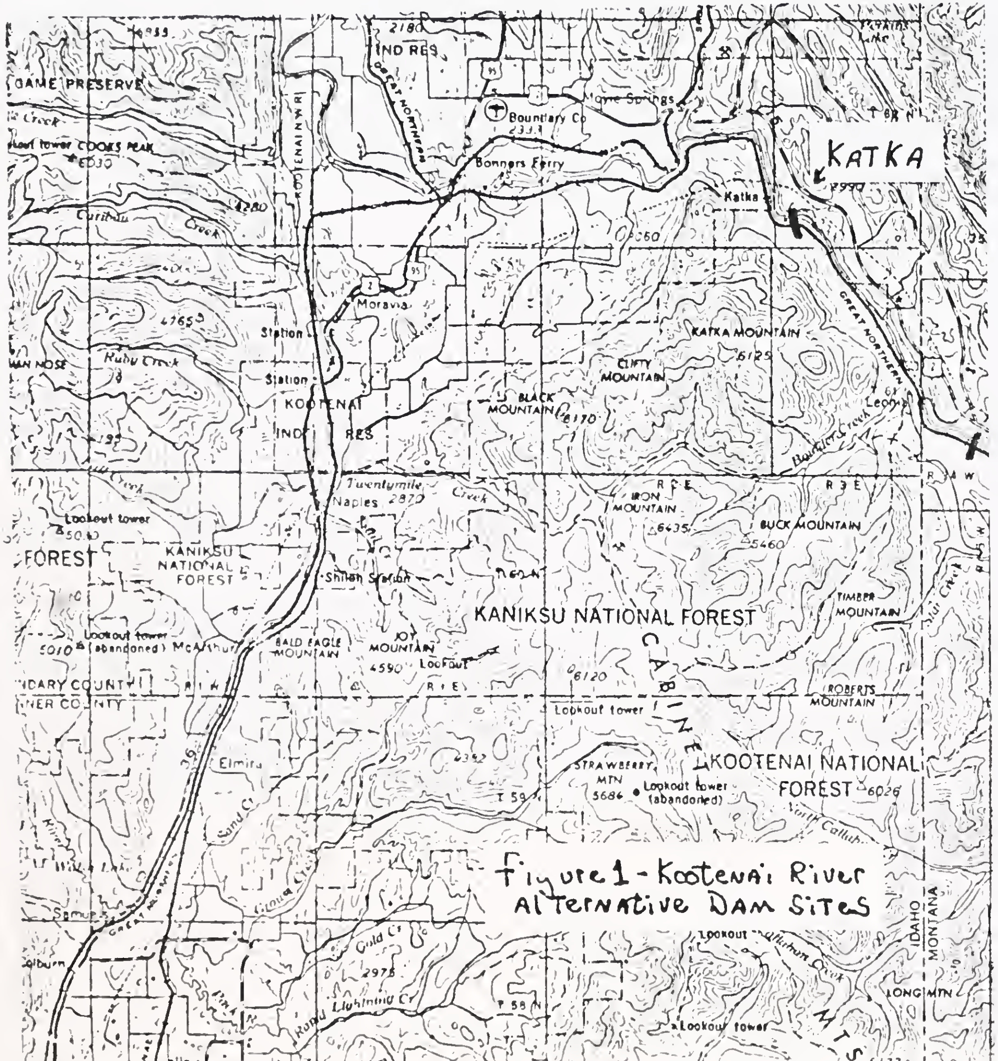

Figure 1 - Kootenai River Alternative Dam Sites

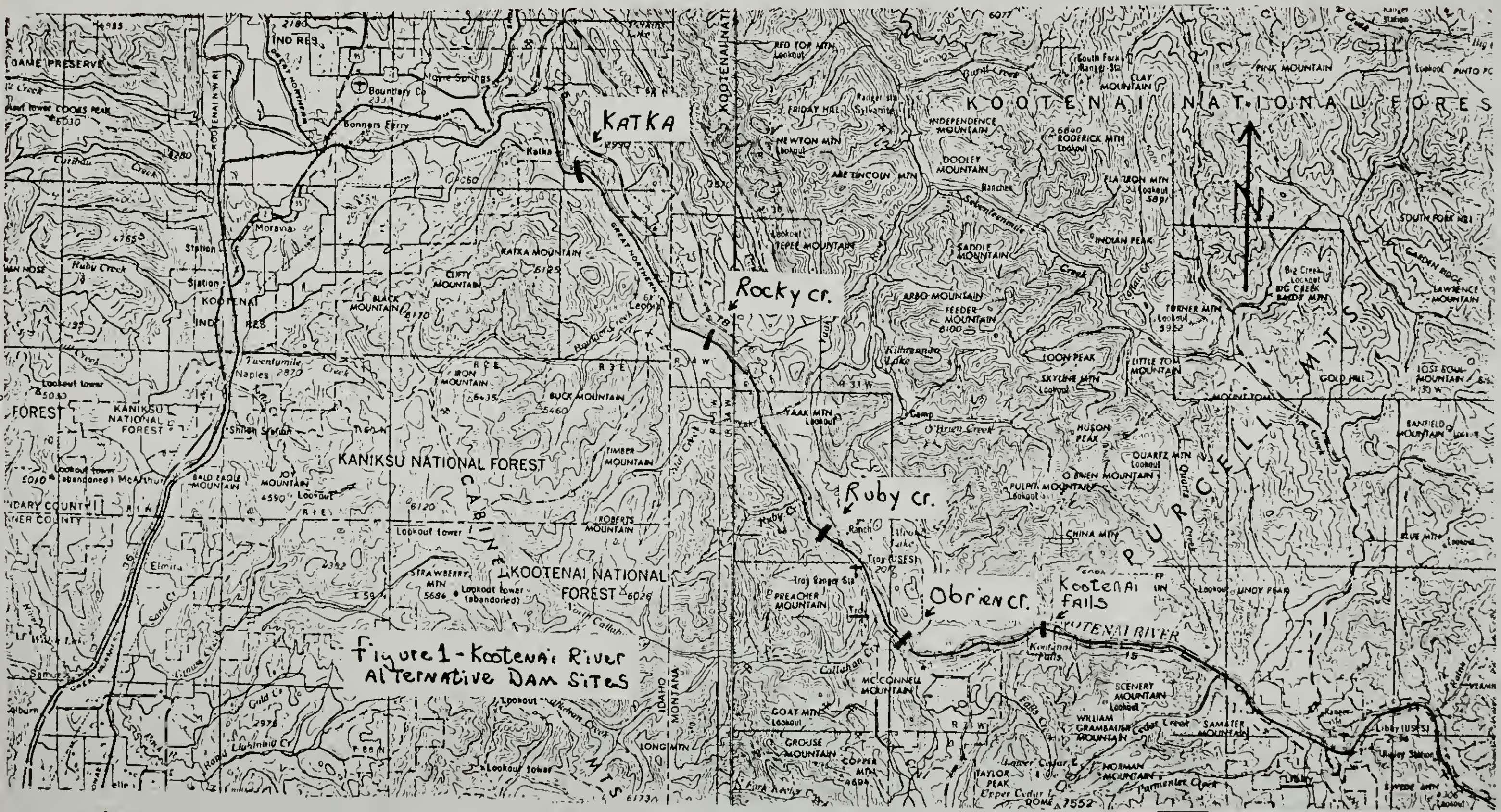

Figure 1 - Kootenai River Alternative Dam Sites

TABLE 1. Reservoir elevations, lengths, and channel gradients, for alternative dam sites.

Dam Site	Normal Reservoir Elevation	Approximate* Reservoir Length (to nearest 1/2 mi)	Existing Water Surface Gradient** (to nearest foot/mi)	Approximate Length of existing pool areas (ft)	Approximate Length of existing riffle areas (ft)
Katka	1817	8	5	29,000	11,000
Katka	1862	19	4	68,000	26,000
Rocky Creek	1842	7-1/2	3	27,000	10,000
Rocky Creek	1857	10	4	36,000	15,000
Rocky Creek	1868	12	4	43,000	16,000
Ruby Creek	1882	7	6	25,000	9,600
O'Brien Creek	1917	5-1/2	7	20,000	7,600
Kootenai Falls	1990	2	7	8,000	2,500
Kootenai Falls	2000	3-1/2	7	13,000	3,500

* Not based on backwater curves as this information is available only for the proposed site. These figures were obtained by finding the river mile of the normal reservoir elevation on the existing river profiles and subtracting the river-mile of the dam site. This is sufficient for comparison purposes.

** These figures are not precise as the water surface gradient changes with flow. Again, they are adequate for comparison.

SOURCE: Water and river profiles in Exhibit A-2 of Harza's Dec. 10, 1980 report to Northern Lights on Alternative Power Sites on the Kootenai River and Figure W-9 of Northern Lights Application.

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SOURCE: Water and river profiles in Exhibit A-2 of Harza's Dec. 10, 1980 report to Northern Lights on Alternative Power Sites on the Kootenai River and Figure W-9 of Northern Lights Application.

FLOWS

Flow regime data for the Kootenai River below Libby Dam also are contained in the application. From a fisheries point of view, these data are adequate for site comparison purposes at all the dam sites, inasmuch as all the dams considered would be operated at a constant reservoir elevation (the low Katka dam could be an exception under flood conditions). The Rocky Creek and Katka sites would be subject to more unregulated flows than the other sites because of the Yaak River's flow contribution to the Kootenai.

More flow information is contained in the geology-hydrology report (Dalby 1981).

CHARACTERISTICS OF THE KOOTENAI RIVER CHANNEL

There are basic channel differences between the areas that would be inundated by the Kootenai Falls project and those that would be affected by any of the downstream dams. This is because the channel morphology immediately upstream from Kootenai Falls is primarily controlled by bedrock, whereas below the falls it is much more dependent on alluvial processes. As a result, the downstream channel has a more regular and predictable distribution of pools and riffles. Both areas have riffles with a substrate primarily of rubble and cobble, but the river above the falls also has areas with a substrate of large blocks which help form rapids. There is much more bedrock substrate above the falls than below. Further, there generally is more fine sediment (gravel and sand) in channel reaches downstream from the falls than immediately above because of a generally lower gradient (see Table 1) and the cumulative contribution of sediments from tributaries entering the river below Libby Dam.

For evaluation purposes, the section of river between the Katka Dam site and the Rocky Creek site was considered to be representative of the channel at all the dam sites below the falls. Although this stretch of channel is bedrock influenced, the channel bed materials are primarily alluvial. This stretch is about eight miles long and has approximately 12 pools and 11 riffles (as determined by aerial photos). The average pool length is approximately 2400 feet and average riffle length is approximately 1000 feet. These figures can be used to roughly approximate the extent of riffles and pools that would be affected by a dam at any of the sites below the falls. The area above the falls was measured separately because of the channel differences mentioned earlier. These measurements are shown in Table 1.

SLACK WATER

Table 1 gives the approximate slack water areas of all the alternative dams, for comparison purposes. The figures in the table are only approximations, because the backwater curves of the alternative sites have not been determined.

FISH POPULATIONS AND MOVEMENTS

INTRODUCTION

Many more fishery data are available for the applicant's proposal than for the alternatives. The gathering of comparable data for the alternatives would require considerable study beyond the scope of this report. Some of the information given in the following sections is based on a consensus of points mentioned in conversation with the persons listed in Appendix A. The fishermen listed are Libby-area residents who use the river extensively.

FISH POPULATIONS

Information from the Aquatic Environment Study (DNRC 1979) on fish populations in the Kootenai River project area and downstream areas (Throop's Lake section) need not be repeated here. In essence, the data indicate that the section of river just above the falls is the most productive and heavily-used trout fishery on the river between Libby Dam and Troy. Trout were much less abundant in the Throop's Lakes section than in the Kootenai Falls section. Whitefish were abundant in both areas but most abundant above the falls. The Throop's Lake section would be within the area to be inundated by the O'Brien Creek site, but for this report the conditions there were considered to represent the river below the falls as a whole. The validity of this assumption is reinforced by the results of fish-shocking done by the Idaho Department of Fish and Game in April of 1980. The Idaho team shocked the Kootenai River upstream of Bonner's Ferry near Hemlock Bar and obtained results similar to those found in the Throop's Lake section (see Table 2).

A limited amount of gill-netting just below the falls indicates that trout are more abundant immediately below the falls than indicated by downstream electrofishing (see Appendix B). The consensus of local biologists, wardens, and fishermen (see Appendix A and C) is that although the trout fishery from the falls to Idaho is not as good as above the falls, it is still good enough to be quite valuable. The confluence of the Yaak and Kootenai rivers was singled out as being particularly good for trout fishing.

White sturgeon, a Montana Department of Fish, Wildlife, and and Parks (DFWP) Class A species of special concern, are found in the Kootenai River between the falls and Idaho (see Appendix D and DNRC's Aquatic Environment Study). This is the only place in Montana where they are known to occur. There have been no

Table 2. Number, species composition, mean size and total biomass of fish sampled by electrofishing on 16 April 1980 in the Hemlock Bar area of the Kootenai River.

Species	Number	Percent	Mean length cm	(in)	Mean weight g	(lb)	Total biomass kg	(lb)	Percent of total biomass
Mountain whitefish	340	70.1	262.6	(10.3)	171.0	(0.38)	58.150	(128.1)	42.4
Rainbow	13	2.7	309.2	(12.2)	348.1	(0.77)	4.525	(10.0)	3.3
Dolly Varden	1	0.2	356	(14.0)	400	(0.88)	0.400	(0.9)	0.3
Largescale sucker	90*	18.6	402.2	(15.8)	740.1	(1.63)	66.610	(146.7)	48.5
Peamouth	34	7.0	270.9	(10.7)	181.6	(0.40)	6.175	(13.6)	4.5
Northern squawfish	6	1.2	307.2	(12.1)	225.0	(0.50)	1.350	(3.0)	1.0
Redside shiner	1	0.2	--	--	75	(0.16)	0.075	(0.2)	0.1

*Only 48 weighed and measured.

SOURCE: Partridge, 1980a

intensive studies of white sturgeon in the Kootenai River. Studies in Montana have been limited to setting nets in 1975 and 1976 (May and Huston 1979) and angling, netting and SCUBA diving from 1978 to 1980 (see Appendix D and E and DNRC's Aquatic Environment Study). Applegate (1971) recorded data from sturgeon caught from 1968 to 1971 in the "sturgeon hole" 2.2 miles downstream from Kootenai Falls. All these studies indicate that the sturgeon population in Montana has declined since the completion of Libby Dam. The present population in Montana is estimated to be no more than a very few fish (Graham 1981). DFWP hopes to develop a recovery plan for white sturgeon in Montana, but it is not certain when this might be accomplished.

The Idaho Department of Fish & Game began a study on white sturgeon in 1979. This study has the following objectives: (1) to determine white sturgeon movement patterns in the Kootenai River, (2) to determine major holding areas for white sturgeon in the Kootenai River, and (3) to assess the present condition of the white sturgeon population in the Kootenai River (Partridge 1980b).

Based on information from holders of sturgeon permits, the 1979 legal harvest of white sturgeon in Idaho was 52, and an additional 341 sturgeon were caught and released (Partridge 1980b). British Columbia biologists began tagging Kootenai River sturgeon in 1977, but population and life history data are still limited. The population of sturgeon in the Kootenai River in British Columbia is roughly estimated at several thousand (Graham 1981). Possible movement of some of these fish into Montana is discussed in a later section.

There is no scientific documentation of white sturgeon occurrence in the river between Kootenai Falls and Libby Dam either recently or in the past, although there are a few reports of people observing sturgeon upstream from the falls. As recently as 1980 a boater reported seeing a small sturgeon in shallow water on a gravel bar near Libby (Graham 1981). This could have been one of the five sturgeon captured below the falls in 1975 by biologists from the Montana DFWP and released in Lake Koocanusa. However, if its estimated size was correct, it was too small to be one of the transplanted fish (Graham 1981). If this fish was a sturgeon, it is impossible to say where it came from. An angler may have caught it below the falls and moved it upstream.

To date, three of the five sturgeon DFWP transplanted into Lake Koocanusa are known to have moved upstream into British Columbia where they were captured in flowing water habitat (Graham 1981). The other two sturgeon have not been recovered. This supports the contention of Coon et al. (1977) that landlocked white sturgeon prefer running-water habitat. In the radio-tracking study by Coon et al., nine out of nine white sturgeon located in the area to be inundated by Lower Granite Dam on the mid-Snake River moved out of the area when the reservoir was filled. This evidence is supported by data from angler catches in the Columbia and Snake rivers where most sturgeon are caught in the free-flowing sections between dams (Coon et al. 1977).

Graham (1981) speculates that sturgeon moved out of these reservoirs because of poor food supply rather than a preference for running water as such. Graham's reasoning stems from the use of the highly productive Kootenay Lake and estuaries by white sturgeon. Whatever the reason, the evidence is strong that landlocked white sturgeon will not remain in reservoirs.

FISH MOVEMENTS

Movement of sturgeon populations seems to vary among river systems but all studies have documented some movement (Haynes et al. 1978, Coon et al. 1977, Partridge 1980b). Almost all of the tagged sturgeon captured by Idaho Fish and Game personnel have shown movement (see Table 3). Sturgeon move in the river between Kootenai Falls and Bonner's Ferry, Idaho, and from Kootenay Lake upstream into Idaho (Partridge 1980b) (appendix D). The purpose of this movement is not known. However, sturgeon probably spawn over rocky or bedrock substrates in swift current near rapids when water temperatures are between 8.9 and 16.7 degrees C. (48-62 degrees F) (Scott and Crossman 1973). It is suspected that sturgeon from Idaho and British Columbia spawn or once did spawn just below Kootenai Falls (Graham 1981). The river channel immediately below the falls is bedrock with some gravel. Currents are swift even at depth because the canyon is narrow and the gradient relatively steep.

Spawning migrations of stream fish usually are triggered by one or a combination of stimuli, including volume and temperature of the water, and the length of the daylight period. Libby Dam has greatly altered flow regimes in the Kootenai. Before the dam was built, high discharges during May and June averaged 33,000 cfs. Now the flow during these months is 3,000 to 5,000 cfs. This alteration of flow could have caused the decline of white sturgeon numbers in Montana by greatly curtailing the spring spawning migration into Montana from Idaho and British Columbia. At present, there are no dams to impede the movement of white sturgeon between Kootenay Lake and Kootenai Falls. Sturgeon do not use fish ladders on the Columbia or Snake River dams (Coon *et al*. 1977).

In order to determine when and where sturgeon spawn in Idaho, the Idaho sturgeon study used a cone-shaped drift net to sample sturgeon larvae using techniques similar to those described by Kolhorst (1976). Sample time varied from 30 min. to one hour with one overnight set of 14 hours. Samples were taken once a week at the U.S. 95 bridge, Crossport, and Hemlock Bar from 25

Table 3. Location, dates and movement of recaptured white sturgeon in the Kootenai River, Idaho. River kilometers increase in an upstream direction.

Tattoo number	Marked: Location (rkm)	Marked: Date	Marked: Total length (cm)	Recapture: Location (rkm)	Recapture: Date	Movement[a] (km)
0007	215.6	3/23/78	134.6	204.7	6/17/78[b]	d-10.9
0011	207.9	3/30/78	99.0	213.4	6/14/80	u- 5.5
0016	207.9	4/25/78	105.4	225.1	6/19/79	u-17.2
1003	207.9	6/20/78	52.1	203.6	7/11/78	d- 4.3
1011	207.9	8/16/78	63.5	225.1	9/15/78	u-17.2
1012	207.1	8/16/78	55.8	207.1	4/27/80	--
1012	207.1	8/16/78	55.8	193.1	6/10/80	d-14.0
1014	225.1	9/15/78	110.5	215.6	5/3/79[b]	d- 9.5
1019	225.1	6/19/79	116.8	215.6	7/7/79[b]	d- 9.5
009	207.1	2/28/80	152.0	225.1	5/31/80[b]	u-18.0
011	207.1	3/14/80	111.0	207.1	3/26/80	--[c]
063	190.0	6/11/80	100.0	193.1	6/21/80	u- 3.1
076	182.0	6/18/80	115.5	176.2	6/19/80	d- 5.8
00719[d]	120	2/8/77	149.9[e]	215.6	4/8/79[b]	u-95.6
06020[d]	120	7/13/77	156.2[e]	219.5	5/5/80[b]	u-99.5

a) d-downriver, u-upriver.
b) Angler returned tag.
c) Fish released at river kilometer 199.5, returned u-7.6.
d) British Columbia tag.
e) Fork length.

SOURCE: Partridge, 1980a

April through 30 June 1980. The results are shown in Table 4. No sturgeon eggs or larvae were found.

It is important to note that no trout eggs or fry were captured in the larval nets. Trout are not thought to spawn in the mainstem Kootenai in Idaho (Appendix F). The same is suspected in Montana (May & Huston 1975), and a 1980 survey by the DFWP found no spawning areas in the Kootenai River between Libby Dam and Pipe Creek (May et al. 1980). The success of any spawning that did occur would be limited by the daily river level fluctuations caused by Libby Dam power peaking. Therefore, access to suitable spawning tributaries is highly important to the survival of Kootenai River trout populations. Table 5 shows the spawning habitat available to trout between the Reregulating Dam site and the Idaho state line. It is likely that trout from Idaho use the tributaries in Montana below Kootenai Falls for spawning (Appendix F.).

The Yaak River, Callahan Creek, and Lake Creek support fall spawning runs of kokanee and mountain whitefish, and large rainbow trout (4 to 10 pounds) spawn in Callahan Creek and the Yaak River in March and April (May and Huston 1975). Fishermen report catching rainbow trout up to 15 pounds in the spring at the mouth of the Yaak. May and Huston (1975) suspect that the large rainbow and the kokanee originate from Kootenay Lake in British Columbia, because they rarely are found in the river during nonspawning periods.

Table 4. Date, water temperature and results of larval drift samples taken on the Kootenai River.

		US 95		Crossport		Hemlock Bar	
Date	Water temperature (^{o}C)	Sample duration (min)	Fish & eggs caught	Sample duration (min)	Fish & Eggs caught	Sample duration (min)	Fish & eggs caught
4/25/80	7.5	30	0	--	--	--	--
5/4/80	--	30	2 burbot	30	1 burbot	30	0
5/10/80	7.5	30	1 egg*	30	0	30	0
5/22/80	10.0	30	1 egg	30	2 eggs	30	1 egg
5/29/80	--	30	1 whitefish fry 3 eggs	30	2 eggs	30	3 eggs
6/9/80	13.5	60	3 eggs	30	1 egg	30	3 eggs
6/16/80	15.0	60	2 eggs	30	6 eggs	30	20 eggs
6/24/80	10.0	30	0	30	2 eggs	--	--**
6/30/80	14.5	14 hr	5 peamouth fry 39 squawfish? 3 eggs	60	0	60	1 squawfish?

*Eggs are unidentified, but are most likely non-game species.
**Not sampled due to high flows.

SOURCE: Partridge, 1980a

Table 5. Summary of trout spawning habitat survey in tributary streams of the Kootenai River downstream from the reregulation dam site 1976-78. Only stream lengths accessible to river fish are included.

Drainage	Miles of stream spawning habitat classified as Good	Fair	Poor
	"Rereg." to Kootenai Falls		
Libby Creek	9.5	38.1	37.1
Bobtail Creek	5.9	1.6	1.6
Pine Creek	12.0	7.1	--
Quartz Creek	8.6	1.5	1.8
Cedar Creek	--	--	3.3
Parmenter Creek	--	1.7	1.2
Flower Creek	--	2.0	2.5
Total	36.0	52.0	47.5
	Kootenai Falls to Idaho State Line		
Star Creek	--	--	0.3
Ruby Creek	--	0.2	--
Yaak River	--	8.8	--
Callahan Creek	--	4.1	--
O Brien Creek	8.5	7.4	--
Total	8.5	20.5	0.3

SOURCE: May & Huston, 1979

CONCLUSION

The actual comparison of the dam sites will be in the draft EIS. It will be based on the information given in this report, the Aquatic Environment Study (DNRC 1979), and on the engineering information given in HARZA's Alternative Power Sites report. It also may be possible to use data resulting from studies DFWP plans to do below the falls this summer as part of their contracts with the U.S. Army Corps of Engineers. The Idaho Department of Fish and Game also is doing Kootenai River Studies that may provide useful information.

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APPENDICES

APPENDIX A

BIOLOGISTS AND GAME WARDENS INTERVIEWED

Bruce May, DFWP biologist

Pat Graham, DFWP biologist

Joe Huston, DFWP biologist

Fred Partridge, Idaho Fish and Game biologist

Harold Burrel, DFWP game warden

FISHERMEN INTERVIEWED

Greg Roberts

Mike Newberry

Bill Armstrong, Jr.

Dave Kreitler

John Petrolich

Dennis Yeager

Gene Van Arsdale

SPORTING GOODS SHOPS CONTACTED

Libby Sport Center

Vimy Ridge Recreational Sports

Grizzly Sports Center

APPENDIX B

MEMORANDUM

TO: Wilbur Rehmann, Project Manager, Kootenai Falls, FSD, DNRC

FROM: Fred Robinson, Aquatic Ecologist, FSD, DNRC *FWR*

DATE: September 11, 1980

RE: Field Work on the Kootenai River below the Falls.

Data from electrofishing done by DFWP in the Throops Lake section of the Kootenai River has been taken by some to mean that the quality of the trout fishing below Kootenai Falls is poor. Relatively few trout were captured in the section and they comprised only about 3% by number of all fish caught. However, conversations with local fishermen indicate that the trout fishing in these areas is actually quite good, although not as good as above the falls. Also, trout fishermen in the falls and footbridge area have been observed to be quite successful. There are a number of possible reasons for these discrepancies between electrofishing data and fishermen success. First of all, most of the electrofishing was done from 1971-74 when the shocking equipment was not as efficient as now. Secondly, the shocking in 1978 was done in a canyon area where deep water and steep canyon walls make sampling with electricity difficult. Lastly, fish populations in the Throops Lake area may not be directly comparable to the immediate falls area because of habitat differences and because of the further distance from upstream recruitment areas.

Because the dewatered stretch and outlet area of the proposed Kootenai Falls facility had not been sampled and because of the discussion in the preceeding paragraph, I attempted to gather some data by gill netting in these areas during the first week of August, 1980. DFWP standard gill nets were used (these nets are 125 feet long and comprised of equal sections of 3/4-inch, 1-inch, 1¼-inch, 1½-inch, and 2-inch meshes). Two nets (one bottom and one surface set) were set overnight in each of two different locations. Specifically, these locations were the cove areas at the Koot Creek gravel bar above the foot bridge and adjacent to the Antler Lodge a couple of hundred yards below the proposed outlet site. The results were interesting. The Koot Creek nets yielded 16 fish, 12 of which were trout averaging 10.7-inches in length with a maximum of 16-inches. The Antler Lodge nets yielded 19 fish, 9 of which were trout having an average length of 12-inches and a maximum of 14½-inches. The numbers of fish caught in these sets are greater than is usually expected for river sets in northwest Montana. This data is useful in that it indicates that trout are apparently more abundant and make up a larger proportion of the fish population in the area than previously indicated by shocking in downstream areas. This conclusion was further comfirmed from observations by divers in the outlet area who were looking for white sturgeon at this time (this will be written up by Pat Graham, DFWP).

We were reluctant to do further gill netting here because it kills the fish.

In light of this new information, I would suggest that it might be useful to sample some of the lower canyon area (which was shocked in 1978) with gill nets. I could do this over a couple of days next spring. It would probably also be useful to shock the Throops Lake section (which was shocked from 1971-74). This shocking should not be done until late next summer when there would be a greater possibility of picking up marked trout from this summer's shocking above the falls.

However, shocking is expensive; this study would require additional funds in the existing monitoring contract with Northern Lights.

FWR/ram

cc: Larry Thompson, DNRC
Kathy Hadley, DNRC
Pat Graham, DFWP
Larry Pederman, DFWP
Bruce May, DFWP

APPENDIX C

STATE OF MONTANA

DEPARTMENT OF

FISH AND GAME

January 9, 1981

RECEIVED
JAN 12 1981
MONT. DEPT. of NATURAL RESOURCES & CONSERVATION

Fred Robinson
Department of Natural Resources
32 South Erving
Helena, Mt. 59601

Dear Mr. Robinson:

This letter is in response to your request concerning information on fishing pressure and fish populations in the Kootenai River downstream from Kootenai Falls. The creel census conducted by Pat Graham upstream from Kootenai Falls in 1978 indicated that this section was the most intensively used part of the river. Unfortunately, little quantitative data is available on the fishing pressure downstream from Kootenai Falls. However, personal observations and conversations with anglers have indicated that the stretch of river from Kootenai Falls downstream to the "Sturgeon Hole" (approximately 1.4 miles) is a popular area for anglers. The catch consists primarely of rainbow trout with numerous mountain whitefish being caught in the winter months.

Data collected in electrofishing surveys conducted near Troy from 1971-1974 and in 1978 indicated that the rainbow trout populations in this area of the river were markedly less than those found upstream from the falls. Additional sampling is scheduled in 1981 for the Troy area, and this data will provide information on the current status of trout populations in the vicinity of Troy.

I have also enclosed the reports that you requested.

Sincerely,

Bruce May

Bruce May
R11, Box 1270
Libby, Mt. 59923

enc
BM/pd

APPENDIX D

STATE OF MONTANA

DEPARTMENT OF

FISH AND GAME

Region One
490 N. Meridian
Kalispell, MT. 59901
November 13, 1980

Fred Robinson
DNRC
32 South Ewing
Helena, MT 59620

Dear Fred,

I prepared this letter to document the results of our monitoring of white sturgeon distribution in the Kootenai River downstream from Kootenai Falls.

Four Department employees (Scott Rumsey, Steve Leathe, Paul Leonard, and myself) completed six dives totaling 2 hours, 5 minutes and 36 seconds in dive time. These dives occurred on August 2 and 3, 1980. The first dive was initiated in the hole just upstream from the proposed outlet structure for the Kootenai Falls Hydroelectric Project. Dives were made in a general downstream direction. The final dive was made in the straight section of Canyon downstream from the cobble bar near the Antlers Cafe. The dive ended just downstream from the "S" curve in the canyon. Less than a mile of the canyon was censused. Visibility was approximately 10 to 20 feet. Because of the nature of the escarpments in the canyon, the entire canyon bottom area on any one transect line could not be censused while moving downstream.

Only one sturgeon was observed at approximately 150 feet downstream from the location of the proposed outlet structure. It was in 30 to 35 feet of water. The sturgeon was observed several times by both divers. This is the furthest upstream we have observed sturgeon. It is also the first time we have looked this far upstream. It would be very difficult to net in this part of the river because it is narrow, deep and has relatively fast currents.

I also wanted to inform you that we have evidence of interstate movement of white sturgeon. Two of the sturgeon which I tagged in the fall of 1978, below Kootenai Falls, were captured by a fisherman near Bonners Ferry, Idaho in the spring of 1980. Also of interest, the fish were both captured in our nets on the same day in October, 1978. They were also caught by the same fisherman in the same location near Bonners Ferry, Idaho.

If you need further clarification of any information please let me know.

Sincerely,

Patrick J. Graham
Project Leader
Flathead Basin Study

PJG:ns

APPENDIX E

STATE OF MONTANA

DEPARTMENT OF
FISH AND GAME
Region One
490 N. Meridian
Kalispell, MT 59901

August 6, 1979

Wilbur Raymond
Dept. Natural Resources
and Conservation
Dept. of Energy Planning
Helena, MT 59601

Dear Mr. Raymond:

I am writing in regards to the recent Interagency meeting held in Libby on July 30,31 and August 1. There were some questions as to the need for additional data on several issues dealing with the fisheries resource in the Kootenai Falls area. Purpose of the first year of study by the Montana Department of Fish, Wildlife and Parks was to collect baseline data and identify potential problem areas. Several problem areas were identified in the Kootenai Falls Environmental Aquatic Study, 1) Impact Assessment, Patrick J. Graham, 1979, Dept. of Fish, Wildlife and Parks, 2) Four specific concerns include minimum flow over the Falls, recreational value and potential losses in the area, effect of minimum flow and intake structure on downstream migrating fish population, distribution of white sturgeon in the study area and potential effects of the project on sturgeon.

The Interagency meeting produced some questions as to the seriousness of the issues. These resulted from a lack of familiarity with the available data. However, I wanted to make available additional data collected this summer to substantiate some of our concerns and present them in a way that may be easier to interpret. All data can be found in existing files or reports of the Department of Fish, Wildlife and Parks.

A case has been made about the potential problems with the intake structure and proposed operating flow. It was agreed that there is a serious problem for downstream migrating aquatic animals due to the volume of water that would be diverted.

Rainbow trout were tagged with individually numbered tags between Kootenai Falls and China Rapids during September of 1978. Tag returns through July of 1979 resulted in 18 recaptures of which 5 had moved downstream over Kootenai Falls representing 28 percent of the recaptures. Since more fishing pressure occurs upstream from the Falls, I believe the number of recaptures below the Falls represents a minimum estimate of movement. Electrofishing samples in the Falls area indicated there were 228 rainbow over 9 inches total length per 1000 feet of stream, but this was a low estimate as the extensive

August 6, 1979

Creel census data revealed a catch of 445 rainbow trout per 1000 feet of stream in the Falls area. Expanding the creel census estimate to population size in the 3.5 miles above the Falls, a minimum estimate of 2,303 wild rainbow trout over nine inches in length migrated over the Falls from this section during the past year. I believe the loss of this portion of the wild rainbow trout population to the segment of the Kootenai River downstream from the Falls is significant.

White sturgeon numbers seem to be declining in the segment of river downstream from Kootenai Falls in the area called The Sturgeon Hole (final report). Study of these fish has been difficult because of the habitat below the Falls and the nature of the fish. On 21 July 1979 I and six other divers, who volunteered to aid in this adventure, entered the Kootenai River Canyon in two areas to search for white sturgeon. We were trying to determine the extent of the sturgeon distribution, their numbers and approximate size. Two dives were made. The first was made approximately 2.5 miles downstream from the Falls. Depths encountered at mid-canyon ranged from 75 to over 100 feet. In this part of the canyon, three pairs of divers descended in the same general area. One team reported seeing two small sturgeon (12 to 18 inches in length) at approximately 85 feet on the bottom of the canyon. Upstream about one mile all divers dove in the canyon in mid-afternoon. One larger sturgeon was observed three times by one group of divers. They estimated it as weighing 15 to 20 pounds and well over three feet long. Another team of divers reported seeing another small sturgeon measuring 12 to 18 inches long although they were not sure. These sitings indicate that the number of sturgeon (particularly small ones) is larger than we first believed and their distribution is further up the canyon than we had previously found using nets. Netting the upper canyon was not efficient and further investigations using SCUBA gear in the upper canyon will be necessary to study the sturgeon.

I will continue to report additional data as it becomes available. I will also be available to help plan additional studies. Please feel free to contact me.

Sincerely,

Patrick J. Graham
Flathead Basin Study
Project Leader

PJG:ns
CC: Jim Posewitz

APPENDIX F

STATE OF IDAHO

DEPARTMENT OF FISH AND GAME

REGION 1
2320 GOVERNMENT WAY
COEUR d'ALENE, IDAHO 83814

RECEIVED
FEB -3 1981
MONT. DEPT OF NATURAL RESOURCES & CONSERVATION

February 2, 1981

Mr. Fred Robinson
Department of Natural Resources
32 South Ewing
Helena, MT 59601

Dear Mr. Robinson:

Currently there is a fair trout and a good whitefish fishery in the 20 miles of the Kootenai River between Bonners Ferry and the Montana-Idaho state line. Whitefish, which are better adapted than trout to spawning in a large river, are the most numerous fish in the river. Trout numbers are lower and are most likely restricted by available spawning tributaries and down river drift of small fish from above Kootenai Falls.

Since good spawning tributaries below Kootenai Falls are limited to the Yaak River and a few other small streams in Montana, it is felt that drift from above the falls makes a significant contribution to these trout populations. Kootenai River tributaries in Idaho above Bonners Ferry are few in number and are restricted by fish barriers at their mouths or by high sediment concentrations in their substrate (Boulder Creek).

Although whitefish numbers are higher and they supply the bulk of the catch, most of the anglers are seeking trout. If trout numbers decrease in this area due to a decrease in recruitment, there will most likely be a decrease in fishing effort in this section of the river for both trout and whitefish.

Sincerely,

W. H. Goodnight

W. H. Goodnight, Regional Fishery Manager
Region 1