Reference or File No. _____

Dog Salmon Creek (102-60-038)

Date: 4/16/82

FISHERIES REHABILITATION AND/OR ENHANCEMENT NEW PROJECT OPPORTUNITY FORM*

1. WHAT (give a brief description):

A falls 12-15' in height formed by bedrock. This falls occurs in a series of 3 steps with the lowest step about 6 feet high. The site appears to be a total barrier to pink salmon and a partial barrier to coho and sockeye salmon.

2. WHERE (be specific):

The falls is located approximately one-half mile upstream from the intertidal area.

3. BENEFITS:

Spawning and rearing habitat appear to be abundant above the falls. Pink salmon could have access to unutilized spawning habitat. Coho & sockeye could have greater utilization of the habitat available.

4. SUBMITTED BY (name, address, telephone, etc.):

Mike Pease, Fisheries Biologist
U.S. Forest Service
Ketchikan Alaska 99901 907-225-3101

Distribute this form to the following persons:

1. Your Supervisor
2. Regional Supervisor(s)
   Appropriate ADF&G Office
   a. Commercial Fisheries
   b. Sport Fisheries
   c. F.R.E.D.
   d. Habitat Section

   Regional Office
   210 Ferry Way
   Juneau, AK 99801
   or
   Regional Office
   333 Raspberry Rd.
   Anchorage, AK 99502
3. Director of Fisheries & Wildlife
   USDA Forest Service
   Box 1628
   Juneau, AK 99802
4. Program Manager Fish & Wildlife
   (Appropriate Forest Service)
   a. Stikine Area
      Tongass National Forest
      P.O. Box 309
      Petersburg, AK 99833
   b. Chugach Area
      Chugach National Forest
      Pouch 6606
      Anchorage, AK 99502
   c. Ketchikan Area
      Tongass National Forest
      Federal Building
      Ketchikan, AK 99901
   d. Chatham Area
      Tongass National Forest
      P.O. Box 1980
      Sitka, AK 99835

* This form is to be used by Fish & Game and Forest Service personnel to identify opportunities that may be worthy to pursue to help rehabilitate and/or enhance the fisheries. Use of this form is not limited to these agencies as all persons are encouraged to help identify opportunities. Use of this form will inform the agencies that have responsibility for projects. This form is not intended to be a proposal. Development of a Project Proposal would be in subsequent documents.

POTENTIAL FISHWAY VERIFICATION FORM

Name: Dog Salmon Creek
Latitude:
Longitude:
Geodetic Map No.: Craig B-2
Location: Pdk Inlet
Aerial Survey Notes:

ADF&G Cat. No.: 102-60-038
USFS Cat. No.:
Date: 4/16/82
Surveyed by:

Trails:

Ladder will primarily accommodate: Pinks, Coho, Sockeye, Chum

AVAILABLE ESCAPEMENT DATA:

Year	Pink	Chum	Coho	Sockeye	King	Steelhead
Aug 28, 1974		600				
Aug 31, 1973	---3500---					
Sept 26, 1972		10				
Aug 27, 1971		6000				
Sept 9, 1970		800				
Sept 4, 1969	2200	300				
Aug 26, 1968	1200	Few				
Sept 13, 1966	600	1100				
Aug 25, 1965	500		500			
Oct 5, 1964	---700---					
Aug 29, 1963	---1100---		3000 Chum in IT 2			
Sept 13, 1962	400+					
Sept 27, 1948	375	2120				
Sept 21, 1942	5000	15000	10000 fish at Mouth			
Sept 21, 1940	20,000		3000 fish at mouth			

Other species present: Coho, Sockeye, and possibly steelhead

TIMING: June & July for Sockeye

ESTIMATED SPAWNING AREA:
1) Below Barrier: How Surveyed:
2) Above Barrier: How Surveyed:

REARING AREA:
1) Below Ladder: How Surveyed:
2) Above Ladder: How Surveyed:

DRAINAGE AREA: 13.2 square miles
DISCHARGE: June 95 cfs, July 47 cfs, Aug 51 cfs, Sept 110 cfs 25 Yr flood 3831 cfs.
GRADIENT:
SURVEY OF BARRIER:
SKETCH MAP OF ENTIRE SYSTEM:
PHOTOGRAPHS:

DISTANCE OF LADDER SITE FROM SALT WATER: Approx 1/2 mile
DISTANCE OF LADDER SITE FROM NEAREST ROAD: Approx 1/8-1/4 mile from Abandoned Log Road.

ENGINEERING CRITERIA:
1) Ladder Type: Had previous steeppass installed
2) Etc.:

CHECK LIST (these should be in letter form to USFS)

COMMERCIAL FISH MANAGEMENT COMMENTS: _____

SPORT FISH MANAGEMENT COMMENTS: _____

HABITAT PROTECTION COMMENTS: _____

COST ESTIMATE OF PROJECT: _____

REMARKS: A steeppass was installed in mid-1970's & later destroyed by floods & ice. The site is a total barrier to pink and chum salmon and partial barrier to coho & sockeye salmon. A level 4 stream survey was conducted by USFS in 1980.
See attached reports for further information.

1982

PRELIMINARY SUMMARY OF HYDROLOGY & HYDRAULICS FEASABILITY ANALYSIS FOR THE DOG SALMON FALLS FISH PASSAGE FACILITY

By: L.R. Bartos - Hydrologist

Dog Salmon Creek is located in Polk Inlet, near Hollis, on the east side of Prince of Wales Island, approximately 55° 20' N and 132° 30' E. The drainage of Dog Salmon Creek above the falls is 13.2 square miles. This drainage is composed of two distinct sub drainages; one 8.5 $mi.^2$ and the other 4.7 $mi.^2$. The mean basin elevation is 813 feet above mean sea level and the main channel slope averages 20 feet per 1,000.

A project varification survey was conducted on July 6, 1981, by Bob Aassarude-Engineer, Mike Pease-Fishery Biologist, and Louie Bartos-Hydrologist.

The total falls complex is divided into two units, the lower unit being 6' high, while the upper is 5'. The upper falls can be negotiated around the left side through a series of pool jets. The average channel slope above the falls is 1 percent $\pm$ 0.5 percent.

The discharge at the time of our visit to the site was measured at 27 cubic feet per second. The mean annual discharge of Dog Salmon Creek based on a synthetic analysis using the Alaska Water Atlas model is 130 cubic feet per second, the average discharge for July is 47 cfs. The average July discharge of 47 cfs is nearly twice the flow of 27 cfs measured on July 6. Therefore the monthly average flow level can be estimated quite well from photographs taken that day . The average 30 day-2 year recurrence low flow of 26 cfs resembles very closely the measured stream flow value.

The monthly mean discharges, based on synthetic analysis, for the four critical months related to fish passage in Dog Salmon Creek are as follows:

June	95 cfs.
July	47 cfs.
August	51 cfs.
September	110 cfs.

Peak flood flows for the site, also synthetically determined, are as follows:

25 year recurrence flood	= 3,831 cfs.
50 year recurrence flood	= 4,136 cfs.
100 year recurrence flood	= 4,521 cfs.

A more detailed flood analysis will be developed in an expanded site hydrologic and hydraulic analysis report.

Summer low flows synthetically determined are dangerously low for the passage of spawnable salmon in Dog Salmon Creek, and the projected flows are as follows:

7 day low flow 2 year recurrence	=	13.4 cfs.
7 day low flow 5 year recurrence	=	6.1 cfs.
7 day low flow 10 year recurrence	=	6.1 cfs.

At some time the low flows indicated could possibly make sections of the channel below the falls a barrier.

In 1968 the Forest Service installed a series of Alaska steep pass sections at the Dog Salmon Creek Falls. This steep pass was installed on the left side of the lower falls jet by cables anchored to eye bolts.

Continuous abrasion of the aluminium fishway caused by a cavitation like vibration cut through cables holding the fishway onto the bed of the channel. The fishway was subsequently carried down stream by high velocity flood flows and destroyed.

Twisted fragments of the fishway are presently strewn in and along the stream bed nearly to the mouth at salt water.

In order to re-establish a series of fishways on Dog Salmon Creek, the most feasable and structurally safe would be the excavation, by blasting a slot through the left bank rock wall. An Alaska steep pass would again be installed, however, bolted and grouted into the trough. A protective baffle, sluice gate like (figure 1), could be bolted to the rock above the intake to give protection against the onslaught of impending flood flows.

To obtain an adequate Hydrologic data base, a simple stilling well should be installed above a control section that has easy access. The site should be determined in the spring of 1982 for easy installation during a period of low water. Other data needs for this site are velocity profiles below the falls and a topographic map.

Discussion:

The salmon species targeted for the Dog Salmon Fishway Project are Humpback and Chum salmon, which are weak swimmers compared to Sockeye and Coho salmon. From observation Sockeye and Coho salmon can negotiate the falls with little difficulty and but very few Humpback salmon have negotiated the falls at certain flow volumes.

The type of fish passage structure we would install at this site would have no affects on the stream flow characteristics of Dog Salmon Creek at or near the falls. The site is in a massive rock out-crop that controls all the flows passing through that section.

If the fish passage structure were not well protected, ice would present some adverse effects on safety of the structure. This could be mitigated somewhat by physically closing the system down before winter. The opening and closing of the fishway intake and annual maintenance should be performed on the same visitation to the site. If protected, the structure will be unaffected by ice scour.

U.S. DEPARTMENT OF AGRICULTURE

SPEED MEMO

PART NUMBER	DATE
3	April 20, 1982

TO

Mike Pease

FROM

Bryce Rickel

SUBJECT

Dog Salmon Cr. - Habitat Analysis

MESSAGE

The barrier falls on Dog Salmon is approximately 0.60 miles up from saltwater. There is approximately 5700 m^2 (1.4 acrea) of ASA below the falls, and 26,453 m^2 (6.5 acres) of ASA above the Falls, including all tributaries. There is approximatly 9641 m^2 (2.4 acres) of rearing habitat below the falls and 45,042 m^2 (11.1 acrea) above the falls, including habitat in a tributaries. There may be addidtional rearing habitat in a marsh pand area created by a beaver dammjust below the falls. The habitat in this area has not been estimated due to the difficulty in doing so.

SIGNATURE

REPLY

SIGNATURE

DATE

(DESTROY THIS PART 3 UPON RECEIPT OF REPLY)

FORM AD-311 (REV. 11/79)

Dog Salmon Creek - Project Verification

On 7/6/81, Louie Bartos, Bob Aaserude, and Mike Pease traveled to Dog Salmon Creek (102-60-038) in Polk Inlet. Approximately 1/2 mile upstream from the intertidal zone there is a falls site approximately 14-15 feet in height. This site is a 3 step falls; 6 feet to the first pool, 5 feet to a second pool area, and 2-3 feet up to a bedrock channel area.

A few early run sockeye were observed at the falls. One fish was observed in the first pool. At the present flow (estimated at 40-60 cfs), passage at this falls appears to be flow limited due to the presence of hydraulic jumps and inclined flow over bedrock. An additional 1-2 feet of pool elevation at the lower most pool would greatly enhance the passage capabilities of this site.

No observations were made upstream of the site but it appeared that the stream transformed immediately into an area of gentle gradient with suitable spawning habitat. The lower stream below the falls is a mixture of stream gradients. Several areas of gentle 1-2% gradient were observed in addition to some white water rapids at about 5-7% gradient. No passage problems exist below the main falls.

This stream is difficult to walk in due to large slippery rocks and very course substrate in many areas. It would be extremely tough if not impossible to walk in this stream at higher water levels. Areas on both sides of the falls and most of the lower stream has been clear cut in the past (approximately 12-15 years). The proximity of a road to the falls is probably close but not known at present. It would be highly desirable to cut a helispot near the falls for ease of access.

In the early 1970's, an aluminum steeppass was installed by the Forest Service at the main falls in Dog Salmon Creek. This structure has subsequently been destroyed by ice and flood conditions. Many remains of this steeppass were present in the lower stream.

An engineering site survey for this falls will be difficult to do. Within the falls area, the stream banks are steep and rocky, with deep, fast flowing water. The stream bed at the falls site is very rough and broken with abundant evidence of geologic fractures and jointing. A thorough hydraulics analysis of this site will be needed. Hydrologic studies of Dog Salmon Creek are now in progress. Level 4 stream surveys were conducted in 1980.

Frequent observatons of flow/stage/fish presence/fish passage are needed.

P. MICHAEL PEASE
Fisheries Biologist, S.O.

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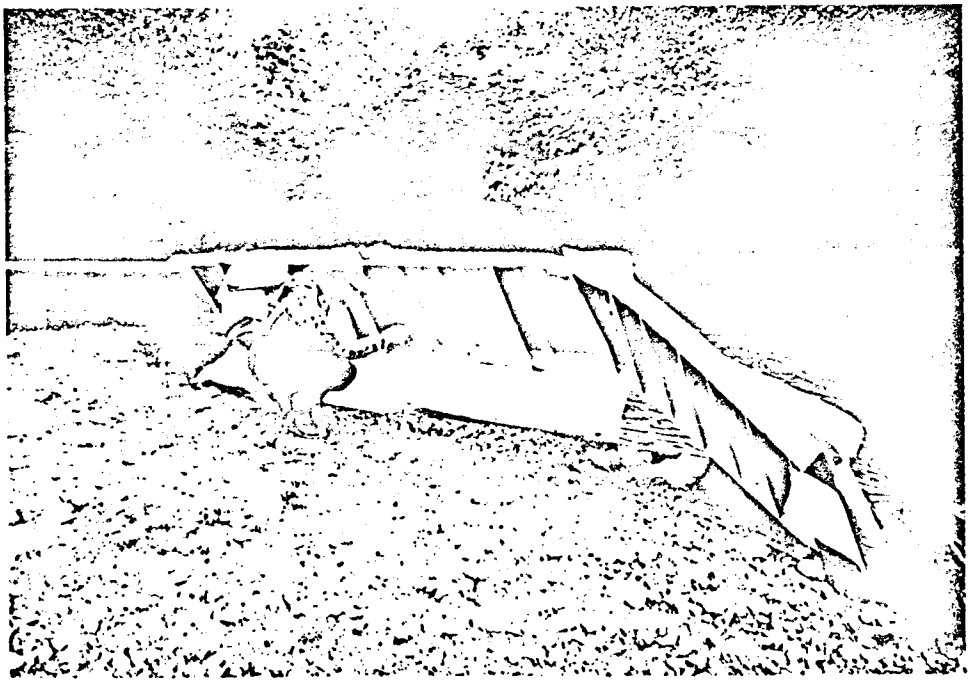
Dog Salmon Creek Falls 1981

Dog Salmon Creek Falls and Lower Pool 1981

Dog Salmon Falls Intermediate
Pool 1981



Remains of Previous Steeppass
installed on Dog Salmon Creek

1980 Survey

Dog Salmon Creek 102-60-038

This stream enters Polk Inlet from Prince of Wales Island. Approximately one half mile upstream from saltwater is a falls approximately 15 feet in height. This fall is thought to be a total barrier to pink salmon and a partial barrier to coho and sockeye salmon. A Level 4 stream survey was conducted for this stream in 1980.

In the early 1970's, an aluminum steeppass was installed by the Forest Service at this falls. This installation was soon destroyed by winter ice and flood conditions. Extensive areas of spawning habitat appear to exist above the falls.

P. MICHAEL PEASE
Fish Biologist