SAINT JAMES BAY SURVEY

FISHERIES PRODUCTION POTENTIAL

By

John Edgington
Jim Cariello
and
Chiska Derr

Regional Information Report No.1J89-05

Alaska Department of Fish and Game
Division of Commercial Southeast Region
Juneau, Alaska

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INTRODUCTION

On August 3 and 4, 1988, stream surveys were conducted by the Land Use Project, Alaska Department of Fish and Game on the streams that empty into St. James Bay. Also included in the survey were the major watersheds immediately north and south of St. James Bay. The overall land drainage of the survey area is comprised of the eastern side of the Chilkat Range and the collective watersheds that drain into the southern portion of salmon fishing district 115-10, lower Lynn Canal.

St. James Bay has been proposed as a terminal harvesting area for hatchery origin salmon which has focused attention on the natural salmon resources of the streams in this area and their potential fisheries production.

This report presents the stream channel identification, field sample results, and analysis of stream habitat potential using channel type as the basic unit to estimate fish production.

METHODS

The streams within the study area were channel type mapped by the U.S. Forest Service, Chatham Area. The mapped channel types were field verified during this study as part of Alaska Department of Fish and Game's cooperative work effort with the USFS to classify all streams within Southeast Alaska. Reference for the channel type differentia and the field verification methods are in appendix A. The channel type stream survey is a standardized method currently used throughout Southeast Alaska.

Each stream is rated for potential pink and chum salmon escapement based on the available spawning area (ASA) for the salmon species occurring in a particular stream. By comparing the potential escapement with current escapement estimates, each stream is evaluated as either a low, medium, or high producer and projects an estimate of the stream's value.

The potential number of salmon needed to populate the available spawning gravel is:

pink = 1 pair per $1m^2$
chum = 1 pair per $10m^2$

Because of the lack of escapement data for this area, coho salmon are difficult to evaluate using escapement numbers. To evaluate coho salmon production in these streams, we used a simple model based on available rearing area (ARA) in each channel type and calculated numbers of smolts by multiplying the average density of parr for each channel type (S. Paustian, USFS, Sitka, personal communication). It is assumed, for use of the model that mortality from parr to smolt is negligible (Crone, 1968). A survival of 14% from smolt to return adult was used to arrive at total adult return. A harvest rate of 60% (L. Shaul, Alaska Department of Fish and Game, Juneau, personal communication) was finally factored into the model to arrive at escapement to the stream.

RESULTS

Analysis of the study area is by each individual stream, starting in the north and progressing south.

115-10-65 Beardslee River

The Beardslee River is the most consistent producer of pink salmon in our study area and shows an increasing trend over the last 10 years. The average escapement from 1960 to 1987 is 3,148. Chum salmon averaged 255 during the same period, and 100 coho were counted in 1961. Estimates of escapement potential are 14,848 pink, 1,485 chum, and 124 coho. This stream produces a substantial number of fish.

115-10-50

No escapement information is available for this stream. Estimates by channel type analysis give 7,186 pink salmon, 718 chum, and 129 coho. This stream is rated as a high fish producer, especially for coho.

115-10-46, St. James River

This stream system is the largest in the study area and is considered an important stream in St. James Bay. Escapement records show an average of 894 pink salmon and 528 chum salmon from 1969 to 1987. Side channel areas and tributaries provide the best spawning gravels. The overall system is influenced by glacial water, and the downstream section contains a large percentage of small gravel and fines which appears to be subject to shifting during high flows. Estimated escapement for pink salmon is 90,000, 9,027 for chum, and 277 for coho. There is an abundance of spawning gravel in this stream, but the quality may be affected by high fine content or instability. Numbers of pink and chum salmon seem to be increasing over the last 10 years. Based on potential, this stream appears to be a high fish producer for the study area.

115-10-45

The Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes shows this stream to originate as a tributary to the South Fork of 115-10-46, St. James River. This stream actually upwells in a large clear cut approximately a quarter mile below the south fork and is not connected to the St. James River. No escapement counts are available for this stream. Estimated pink salmon escapement would be 10,800 fish; chum salmon 1000, and coho salmon 91. We rate this stream as a high fish producer.

115-10-42

This stream occurs in a medium-sized watershed and is blocked to salmon migration about a mile upstream. Excellent spawning substrate occurs in the accessible area downstream. A good escapement record is maintained for this

stream and shows an average pink salmon peak count over all years of 1,608 and an average chum salmon count of 833. Estimated escapement for pink salmon would be 9,800 and 980 for chum salmon. The coho escapement count for one year only (1985) was 70 fish. Coho escapement is estimated at 37 adults. This stream is rated as a high fish producer.

115-10-32

This small stream contains excellent spawning and rearing habitat estimated to accommodate an escapement of 22,000 pink and 489 coho salmon. It is rated as a high fish producer. No chum salmon are thought to use this stream.

115-10-308

This stream is relatively large but is blocked to upstream salmon migration about 2 miles from the mouth. Substrate, size, water velocity and the influence of glacial water appear to limit the spawning area of this stream to side channel areas suitable for about 1,355 chum salmon. Tributary channels increase the spawning habitat in this system to accommodate an escapement of 94 coho. This stream is rated as a high fish producer.

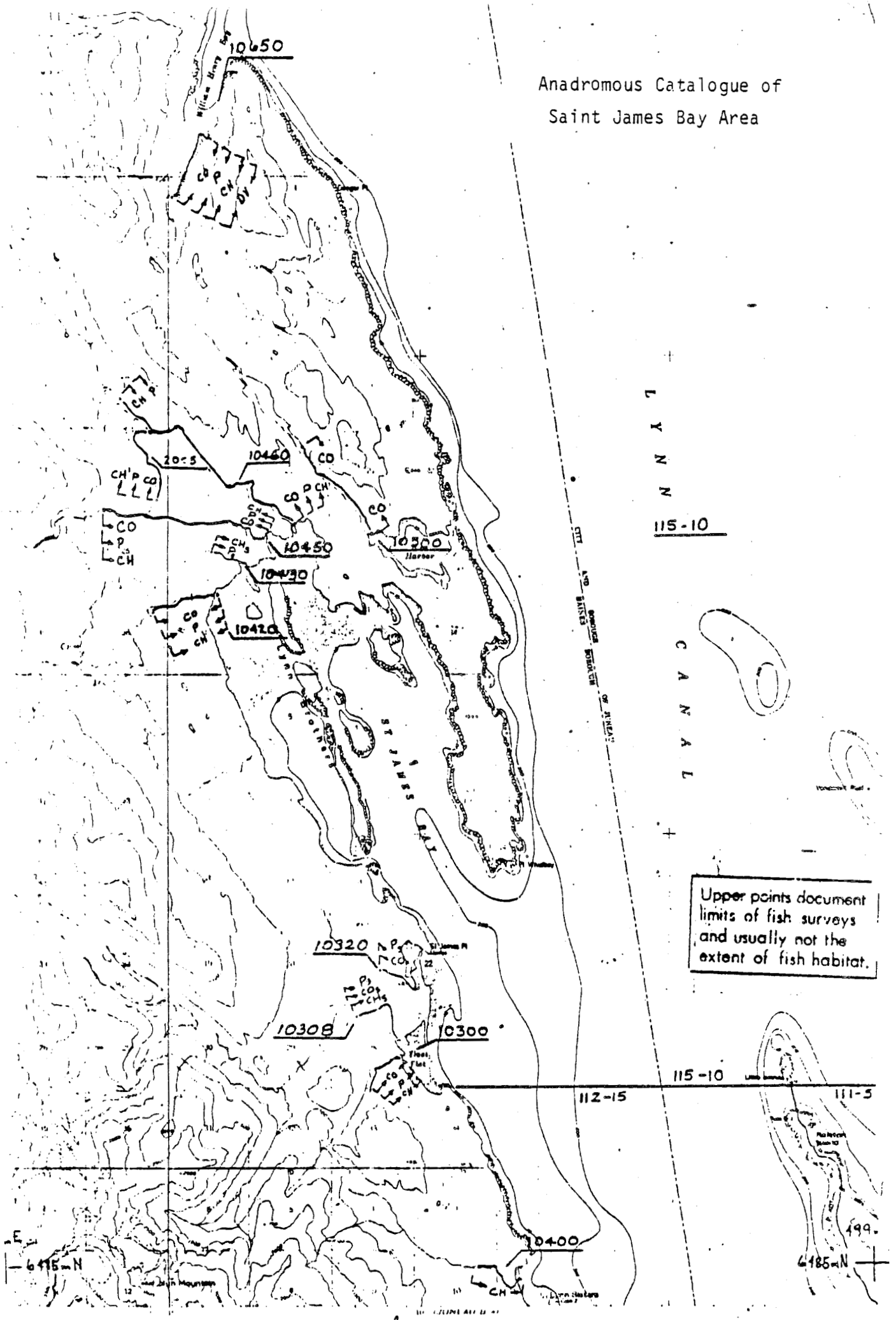
115-10-30

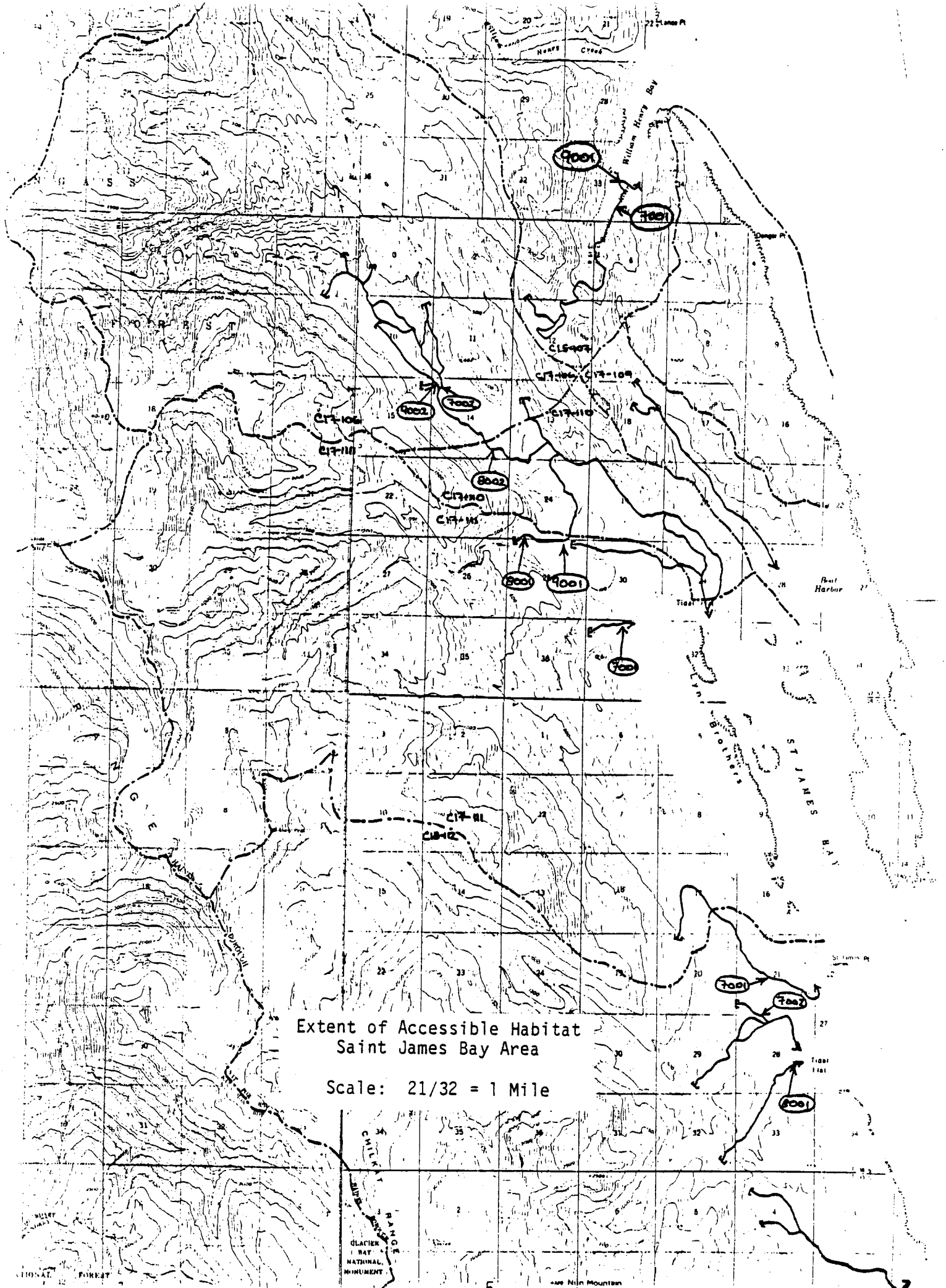
This small stream had pink salmon spawning at the time of the survey. Coho fry were visually abundant in the survey area. An estimate of 400 pink salmon would seed the stream, and about 500 chum. Coho escapement is estimated at 32 fish. This stream is rated as a low fish producer.

112-50-40

This small stream was considered to occur near enough to St. James Bay to be influenced by a targeted fishery. No escapement records are available, although spawning gravels would accommodate about 9,600 pink salmon. The large amount of rearing area indicates that this stream is more suited to coho production. Coho escapement is estimated at 64 adults. This stream is rated as a medium fish producer.

Anadromous Catalogue of
Saint James Bay Area





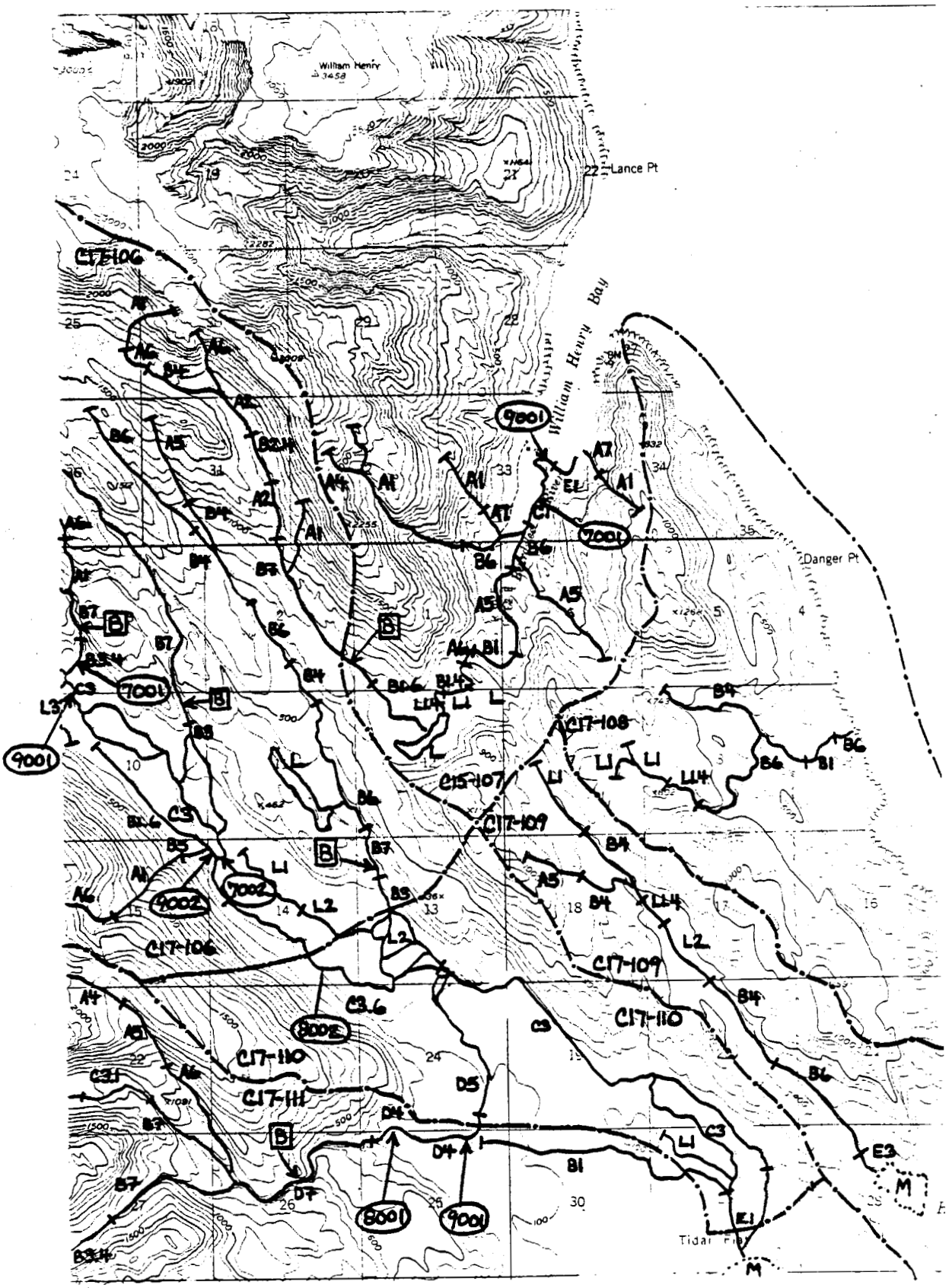
Extent of Accessible Habitat
Saint James Bay Area

Scale: 21/32 = 1 Mile

CHANNEL TYPE MAPS

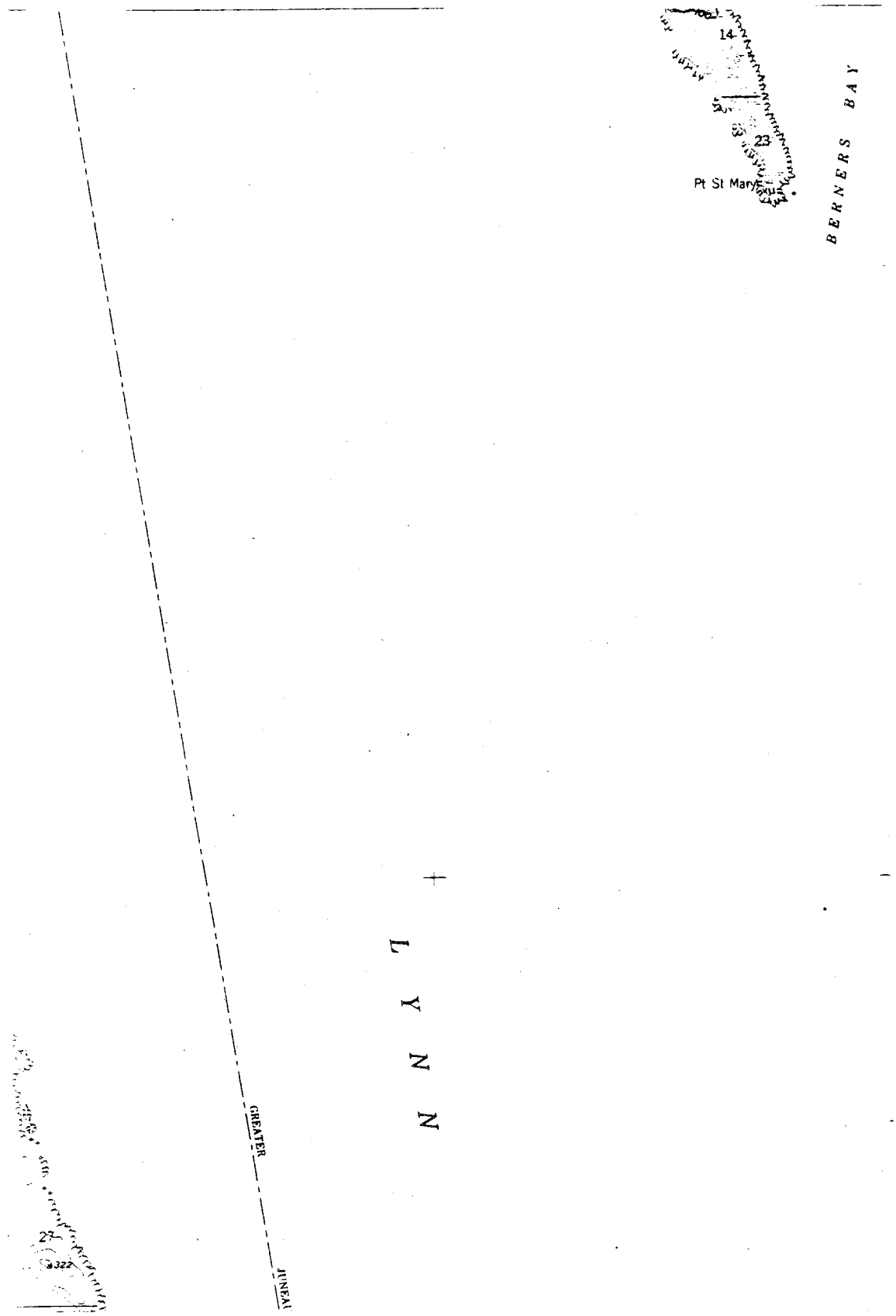
JUNEAU C-4 NW

1 inch = 1 mile



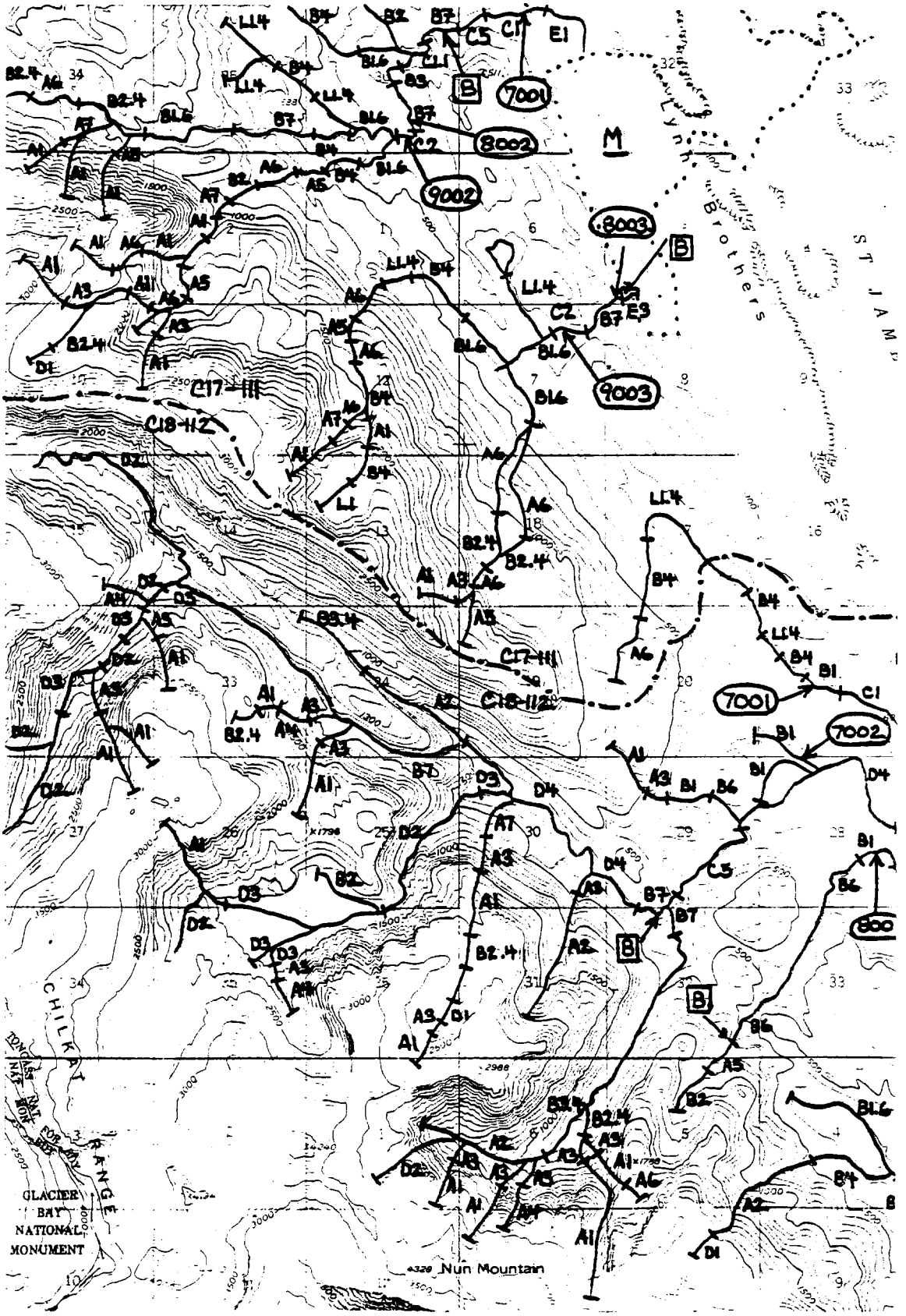
JUNEAU C-4 NE

1 inch = 1 mile



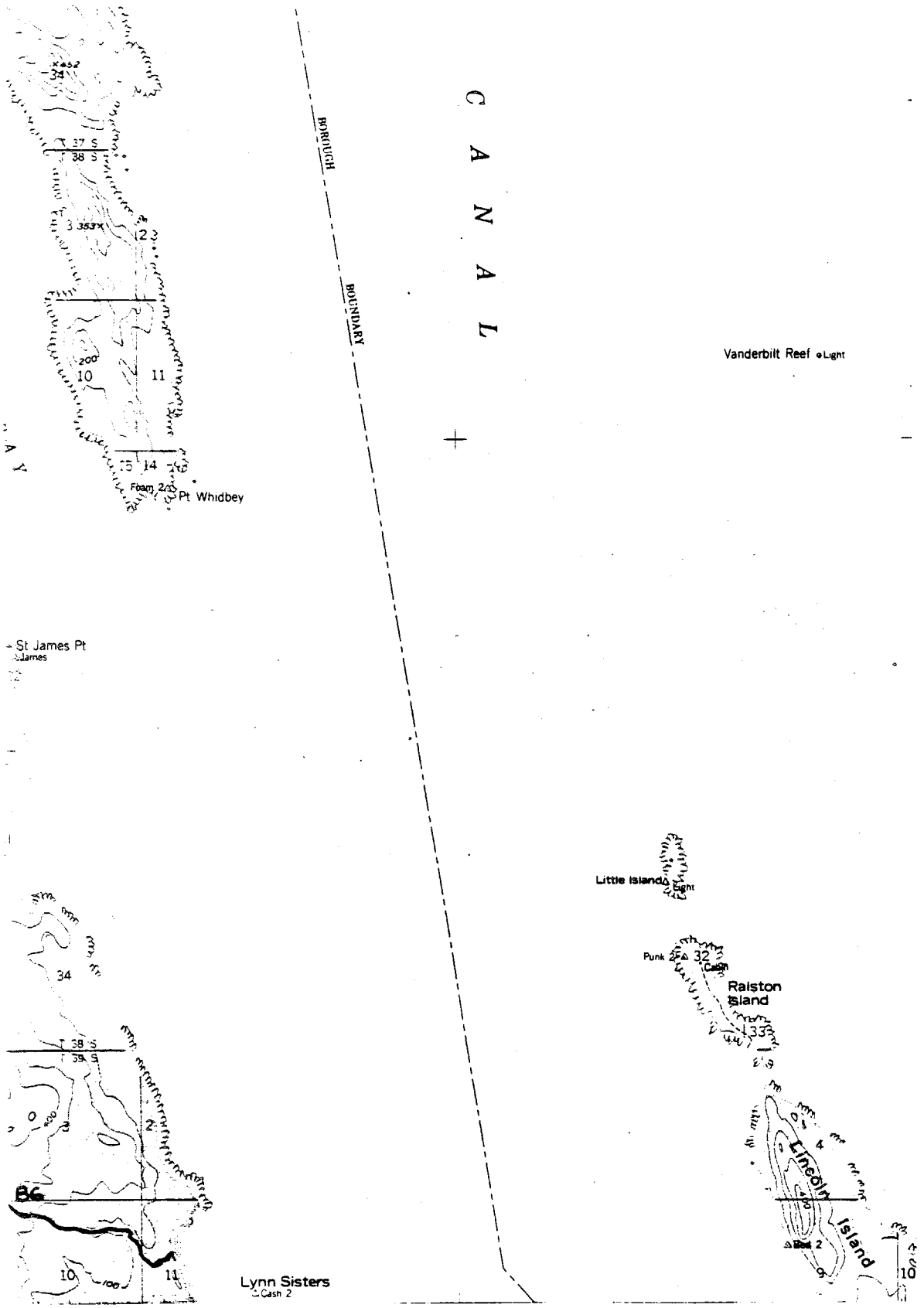
JUNEAU C-4 SW

1 inch = 1 mile



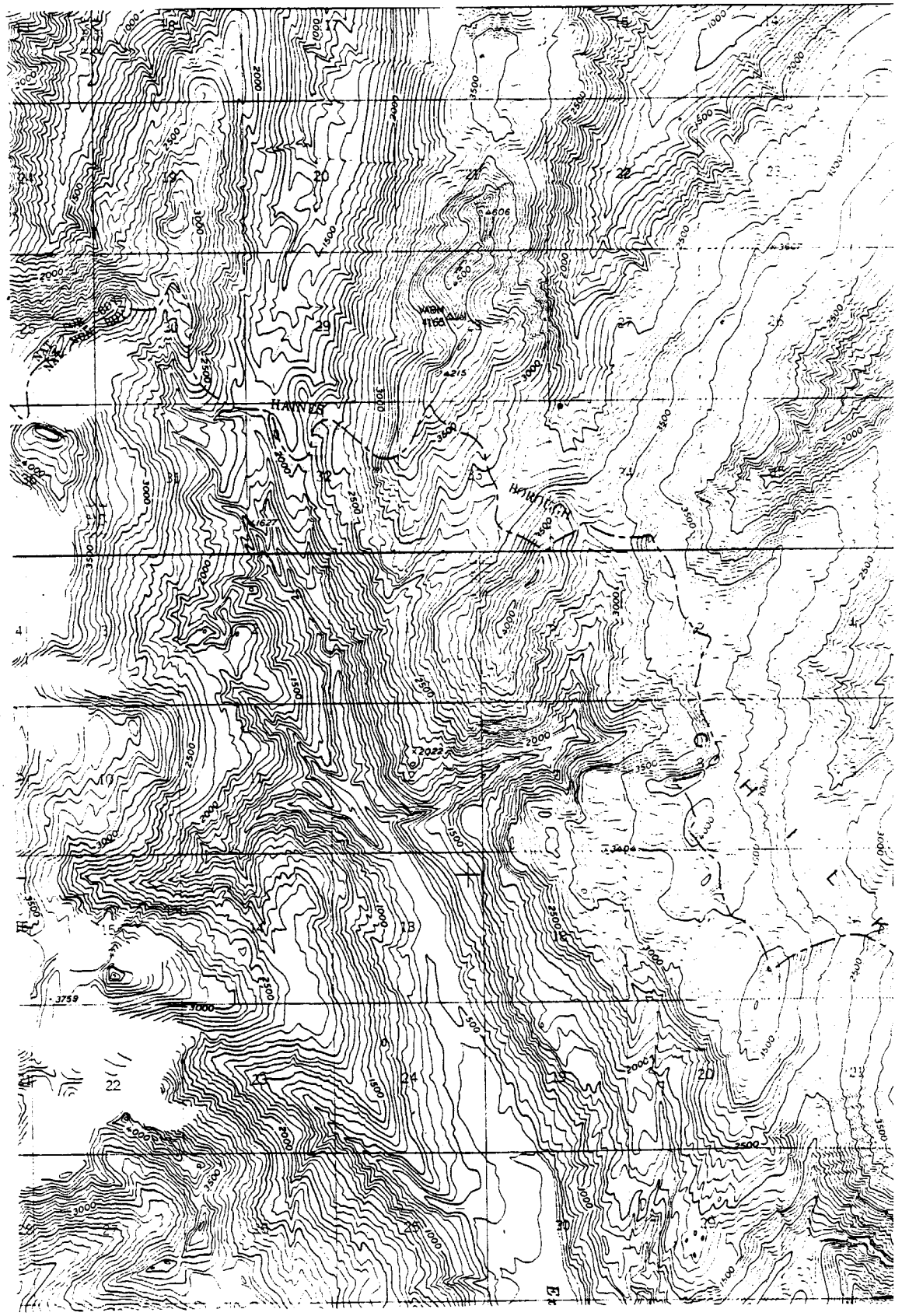
JUNEAU C-4 SE

1 inch = 1 mile



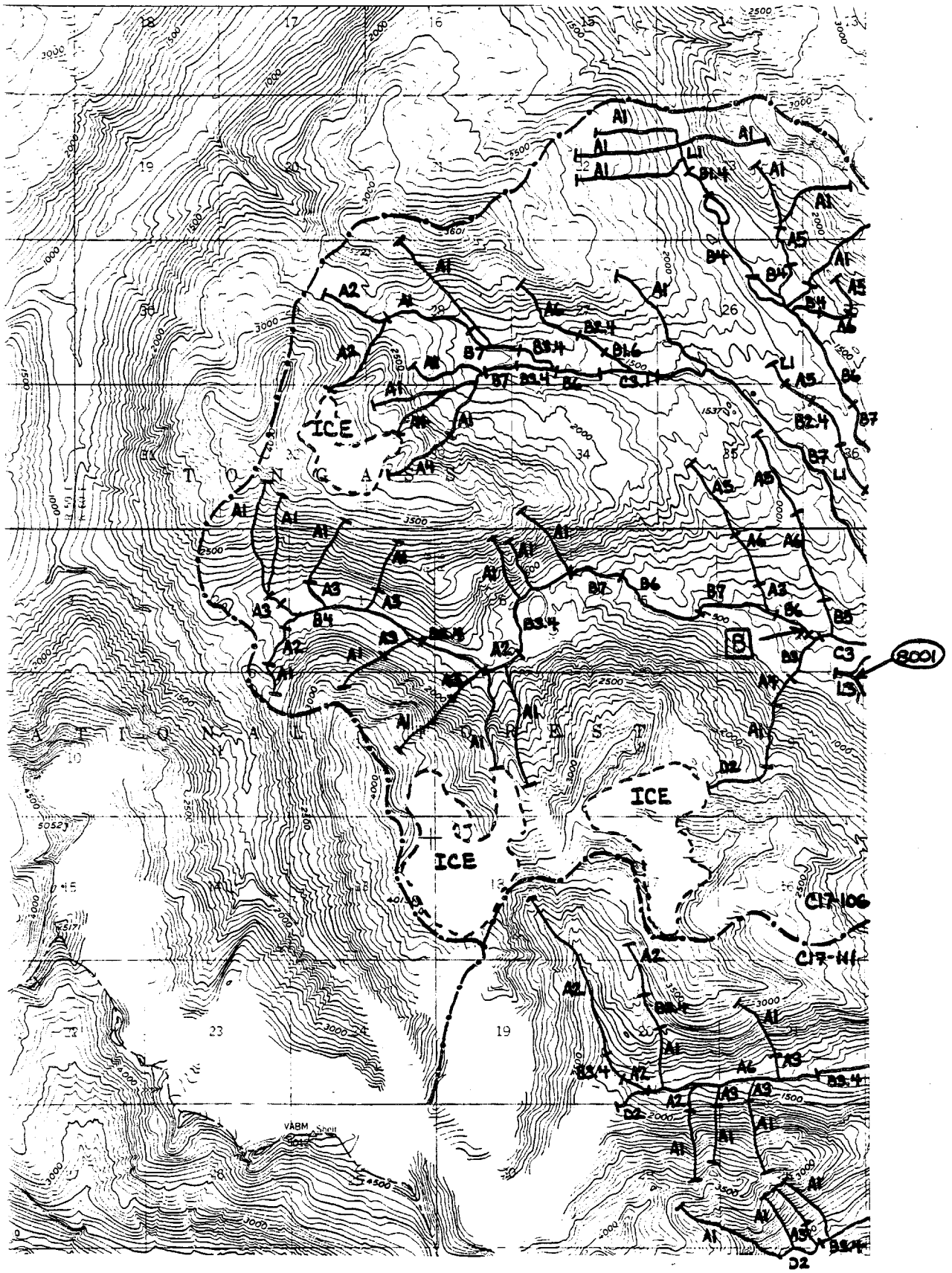
JUNEAU C-5 NW

1 inch = 1 mile

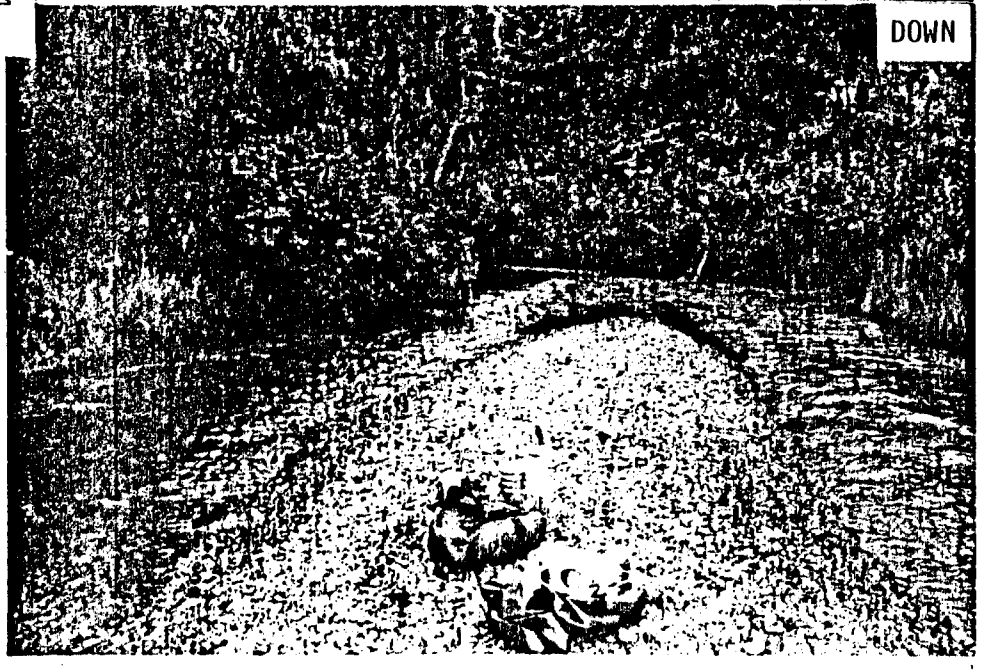


JUNEAU C-5 NE

1 inch = 1 mile



CHANNEL TYPE
VERIFICATION CARDS



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VCU: 107 SEG: - SITE: 7001 AREA: 03 **********
R.D.: 033 MGT AREA: 015 SUB SEC: - 1/4 QUAD: JUN-04-NW *PRELIM CT: CI *
STREAM: BEARDSLEE RIVER * *FINAL CT: CI *
ADFG: 115-10-10650 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/49 GRADIENT: 1.3 %
UPSTREAM PHOTO: 703-24 DOWNSTREAM PHOTO: 703-25 STREAM PATTERN: BRAIDED
WATER: 11.0 C. AIR: 19.0 C. TIME: 12:30 BANK CONTROL: ALLUVIUM
SITE DISTURBED: Y WEATHER: RAIN BANKFULL WIDTH: 43.0 ft.
ACTIVE WIDTH: 35.0 ft.
AVG.POOL DEPTH: 3.0 ft.
POOLS: 0

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	C5	C5
INCISION:(meters)	1-2	1-2

POOLS: 10 % FISH OBSERVED: Y
ASA: 80 % LIFESTAGE: JA
ARA: 10 % IDENTITY:SS,CT,PS

PLANT ASSOCIATION/DIST.

	LEFT BANK	*RIGHT BANK*
PA#1:	25-U-50% 35-U-30% 20-U-20%[200']	93-G-80% 35-U-20%[10']
PA#2:		80 [180']
PA#3: -		
PA#4: -		
PA#5: -		

TRAP RESULTS
(30 min. set)
T#1 2 DV,2 SS
T#2 10 SS,3 DV
T#3 -

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	1 %
LG RUBBLE:	0 %
SM RUBBLE:	30 %
CRS GRAVEL:	40 %
FINE GRAVEL:	20 %
VEG/SAND:	9 %
ORGANIC/SILT:	0 %

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	25/15	75/0	25/30	50/10	25/25
L.BANK	200/0				

STREAM GEOMETRY

BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft): NO
BANKFULL DEPTH(ft): STREAM
ACTIVE DEPTH(ft): *LEFT* GEOMETRY *RIGHT*
THALWAG LOCATION: N/A

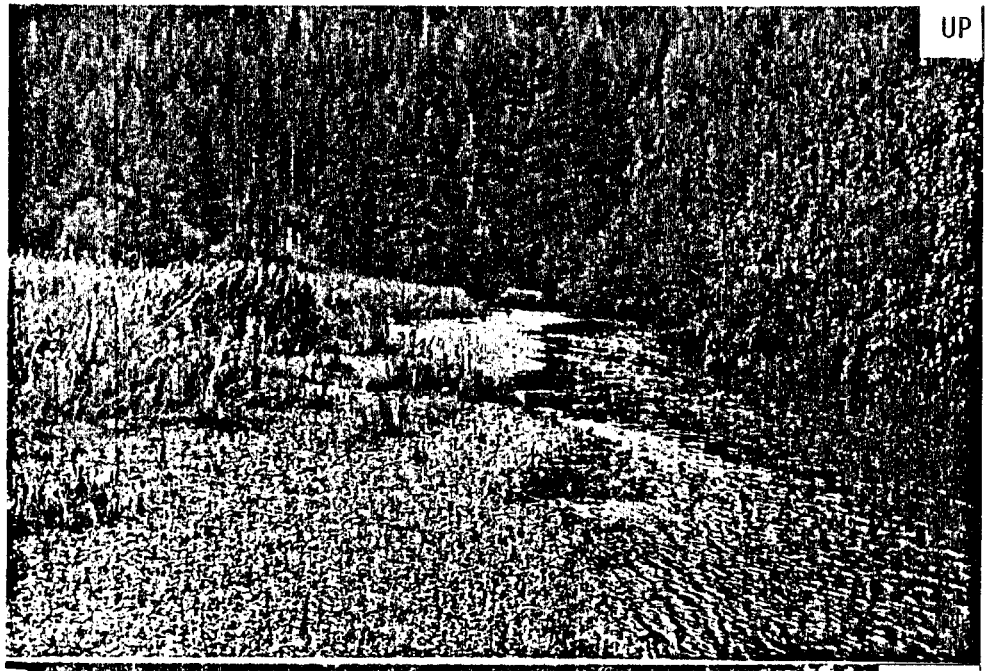
L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			NO L.O.D.		
10-25 ft			NO L.O.D.		
25-50 ft			NO L.O.D.		
50-100 ft			NO L.O.D.		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 300 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Old logged area. Beaver and wood debris removed. 2,345 pink salmon were in the stream at the time of the survey. Some clay present. Traps were set for 45 minutes.



CHANNEL TYPE VERIFICATION CARD

DATE: 83/08/15 VOL: 107 SES: - SITE: 9011 AREA: 03 **********
R.D.: 033 MGT AREA: C15 SUB SEC: - 1/4 QUAD: JUN-C4-NW *PRELIM CT: C1 *
STREAM: BEARDSLEE RIVER * FINAL CT: C1 *
ADF&G: 115-10-10650 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/5)
UPSTREAM PHOTO: 902-12 DOWNSTREAM PHOTO: 902-13
WATER: 10.0 C. AIR: 17.0 C. TIME: 12:00
SITE DISTURBED: Y WEATHER: OVERCAST

GRADIENT: 0.5 %
STREAM PATTERN: SINGLE
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 42.0 ft.
ACTIVE WIDTH: 16.0 ft.
AVG.POOL DEPTH: 2.5 ft.
POOLS: 3
POOLS: 30 % FISH OBSERVED: Y
ASA: 20 % LIFESTAGE: JA
ARA: 20 % IDENTITY:SS,PS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	C3	C3
INCISION:(meters)	<1	<1

	PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1:	13-3-100% [70']	13-6-100% [150']
PA#2:	410 [130']	352 [50']
PA#3: -		
PA#4: -		
PA#5: -		

TRAP RESULTS
(30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	150/0	10/90	40/0		
L.BANK	70/0	30/90	25/0	75/-5	

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	0 %
CRS GRAVEL:	35 %
FINE GRAVEL:	60 %
VFS/SAND:	5 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	BF	*LB*	***	***	***	***	***	*LB*	*BF*
DISTANCE(ft):					NO				
BANKFULL DEPTH(ft):					STREAM				
ACTIVE DEPTH(ft): *LEFT*					GEOMETRY				*RIGHT*
THALWAG LOCATION:					N/A				

L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			NO L.O.D.		
10-25 ft			NO L.O.D.		
25-50 ft			NO L.O.D.		
50-100 ft			NO L.O.D.		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 300 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Evidence of very old logging (1950's). Site disturbed due to extensive clearcut upstream. Nothing to the tape to for geometry. BF depth about 5 feet. 2100 pink salmon were seen 1/2 mile above intertidal area. No traps were set but coho fry were observed. Some maple was present in the L.B.understory.

CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VCU: 111 SEG: - SITE: 9001 AREA: 03 **********
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-04-NW *PRELIM CT: D4 *
STREAM: ST. JAMES RIVER * FINAL CT: D4 *
ADF&G: 115-10-10460-2005 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/43 GRADIENT: 2.0 %
UPSTREAM PHOTO: 902-06 DOWNSTREAM PHOTO: 902-07 STREAM PATTERN: BRAIDED
WATER: 4.0 C. AIR: 14.0 C. TIME: 2:10 BANK CONTROL: ALLUVIUM
SITE DISTURBED: N WEATHER: OVERCAST BANKFULL WIDTH: 30.0 ft.
ACTIVE WIDTH: 40.0 ft.
AVG.POOL DEPTH: 1.2 ft.
POOLS: 1
POOLS: 5 % FISH OBSERVED: Y
ASA: 5 % LIFESTAGE: J
ARA: 5 % IDENTITY: DV

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1: 25-0-50% 20-U-20 70-G-80%[60']	810 [200']
PA#2: 840 [80']	
PA#3: 530 [60']	
PA#4: -	
PA#5: -	

TRAP RESULTS
(30 min. set)
T#1 3 DV
T#2 -
T#3 -

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	60/0	20/65	120/0		

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	20 %
LG RUBBLE:	30 %
SM RUBBLE:	15 %
CRS GRAVEL:	15 %
FINE GRAVEL:	5 %
VEG/SAND:	15 %
ORGANIC/SILT:	5 %

STREAM GEOMETRY

BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft):
BANKFULL DEPTH(ft):
ACTIVE DEPTH(ft): *LEFT* *RIGHT*
THALWAG LOCATION:

TOO FAST FOR GEOMETRY N/A

L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft			A-1	A-4	
10-25	ft		C-1	A-2 C-4	A-1 C-1	
25-50	ft			B-1	A-1	
50-100	ft			NO L.O.D.		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
18"/35'

TRANSECT LENGTH: 300 ft.
CLUMP TALLEY: B1, C1, E2
DEBRIS POOL: -

COMMENTS: Too deep and swift to cross. BF and AW was taken with a rangefindor. BF depth was an estimate.

CHANNEL TYPE VERIFICATION CARD

DATE: 83/08/02 VCU: 111 SEG: - SITE: 8001 AREA: 03 **********
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-NW *PRELIM CT: C3.1 *
STREAM: ST. JAMES RIVER * FINAL CT: D4 *
ADF&G: 115-10-10460-2005 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/14/384/21 GRADIENT: 2.5 %
UPSTREAM PHOTO: 804-08 DOWNSTREAM PHOTO: 804-09 STREAM PATTERN: SINGLE
WATER: 4.0 C. AIR: 12.0 C. TIME: 3:00 BANK CONTROL: MIXED
SITE DISTURBED: N WEATHER: OVERCAST BANKFULL WIDTH: 70.0 ft.
ACTIVE WIDTH: 65.0 ft.
AVG.POOL DEPTH: 0.0 ft.
POOLS: 0
POOLS: 1 % FISH OBSERVED: N
ASA: 5 % LIFESTAGE: -
ARA: 0 % IDENTITY:-

	ADJACENT LANDFORM & VEGETATION *LEFT BANK*	*RIGHT BANK*
LANDFORM:	62	62
CANOPY:	D2	D2
INCISION:(meters)	1-2	1-2

	PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1:	25-0-10% [50']	810 [200']
PA#2:	810 [150']	
PA#3: -		
PA#4: -		
PA#5: -		

TRAP RESULTS
(30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

SUBSTRATE

BEDROCK:	10 %
SM BOULDER:	50 %
LG RUBBLE:	30 %
SM RUBBLE:	5 %
CRS GRAVEL:	0 %
FINE GRAVEL:	0 %
VFS/SAND:	0 %
ORGANIC/SILT:	5 %

STREAM GEOMETRY
BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft):
BANKFULL DEPTH(ft):
ACTIVE DEPTH(ft): *LEFT* *RIGHT*
THALWAG LOCATION:

TOO FAST FOR GEOMETRY N/A

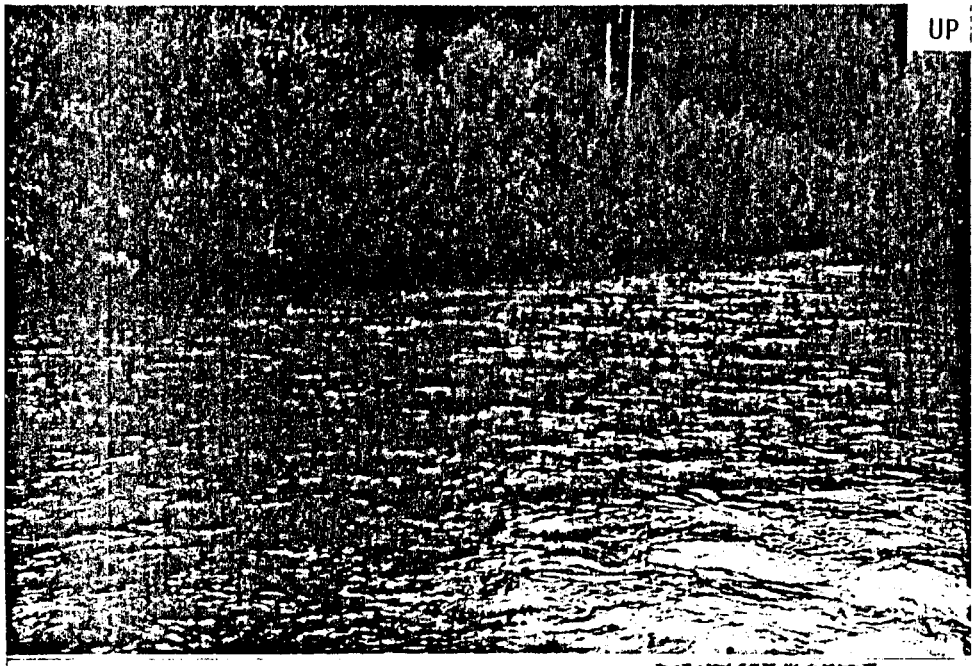
L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft	A-3	C-2	A-2		
10-25	ft		C-2	A-1		
25-50	ft			A-3 C-2	A-1	
50-100	ft			C-1		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
20"/25'

TRANSECT LENGTH: 500 ft.
CLUMP TALLEY:E1
DEBRIS POOLS:-

COMMENTS: Water was too fast to cross.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VOU: 110 SES: - SITE: 8002 AREA: 03 **********
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-04-NW *PRELIM CT: C3.4 *
STREAM: ST.JAMES RIVER * FINAL CT: C3.5 *
ADF&G: 115-10-1046) **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/14/384/20 GRADIENT: 1.0 %
UPSTREAM PHOTO: 804-06 DOWNSTREAM PHOTO: 804-07 STREAM PATTERN: SINGLE
WATER: 7.0 C. AIR: 13.0 C. TIME: 1:00 BANK CONTROL: ALLUVIUM
SITE DISTURBED: N WEATHER: OVERCAST BANKFULL WIDTH: 80.0 ft.
ACTIVE WIDTH: 56.0 ft.
AVG.POOL DEPTH: 1.3 ft.
POOLS: 4
POOLS: 10 % FISH OBSERVED: Y
ASA: 10 % LIFESTAGE: J
ARA: 5 % IDENTITY:DV

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	82	82
INCISION:(meters)	1-2	1-2

PLANT ASSOCIATION/DIST.

	LEFT BANK	*RIGHT BANK*
PA#1:	65-G-10% [-10']	20-O-60%CW-U-20%65-G-10%[25]
PA#2:	25-O-60%20-U-20%65-G-10%[30']	20-O-70%71-U-15%65-G-5%[30']
PA#3:	810[170']	20-O-60% 65&71-G-30%[145']
PA#4:	-	
PA#5:	-	

TRAP RESULTS (30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	0 %
CRS GRAVEL:	30 %
FINE GRAVEL:	45 %
VFS/SAND:	20 %
ORGANIC/SILT:	5 %

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

STREAM GEOMETRY

BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft):
BANKFULL DEPTH(ft):
ACTIVE DEPTH(ft): *LEFT*
THALWAG LOCATION:

TOO DEEP FOR GEOMETRY N/A

RIGHT

L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft			C-1		
10-20	ft	C-1				
20-50	ft			C-1		
50-100	ft			NO L.O.D.		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 400 ft.
CLUMP TALLY:C1
DEBRIS POOLS:-

COMMENTS: Too deep along R.bank to cross. Too deep and fast to set traps. Some juvenile rainbow fry were seen in shallow areas. Compacted substrate with fine cobble predominating.

CHANNEL TYPE VERIFICATION CARD

DATE: 88/03/02 VCU: 106 SEG: - SITE: 7002 AREA: 03 **********
R.D.: 033 MGT AREA: C17 SUB SEG: - 1/4 QUAD: JUN-C4-NW *PRELIM CT: C5 *
STREAM: ST.JAMES BAY * FINAL CT: C5 *
ADF&G: 115-10-10460 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/13/284/184 GRADIENT: 1.0 %
UPSTREAM PHOTO: 703-16 DOWNSTREAM PHOTO: 703-17 STREAM PATTERN: BRAIDED
WATER: 6.0 C. AIR: 15.0 C. TIME: 1:00 BANK CONTROL: ALLUVIUM
SITE DISTURBED: N WEATHER: OVERCAST-RAIN BANKFULL WIDTH: 63.0 ft.
ACTIVE WIDTH: 53.0 ft.
AVG.POOL DEPTH: 2.5 ft.
POOLS: 2
POOLS: 2 % FISH OBSERVED: Y
ASA: 10 % LIFESTAGE: JA
ARA: 10 % IDENTITY:SS,DV,CS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1: 25-U-50% 81-G-30% 4-G-20%[30']	25-U-80% 81-G-10% [50']
PA#2: 810 [170']	810 [150']
PA#3: -	
PA#4: -	
PA#5: -	

TRAP RESULTS
(30 min. set)
T#1 6 DV, 1 SS
T#2 2 SS
T#3 3 SS, 8 DV

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	10 %
CRS GRAVEL:	70 %
FINE GRAVEL:	10 %
VFG/SAND:	5 %
ORGANIC/SILT:	5 %

STREAM GEOMETRY

BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft):
BANKFULL DEPTH(ft):
ACTIVE DEPTH(ft): *LEFT*
THALWAG LOCATION:

TOO DEEP FOR GEOMETRY N/A

RIGHT

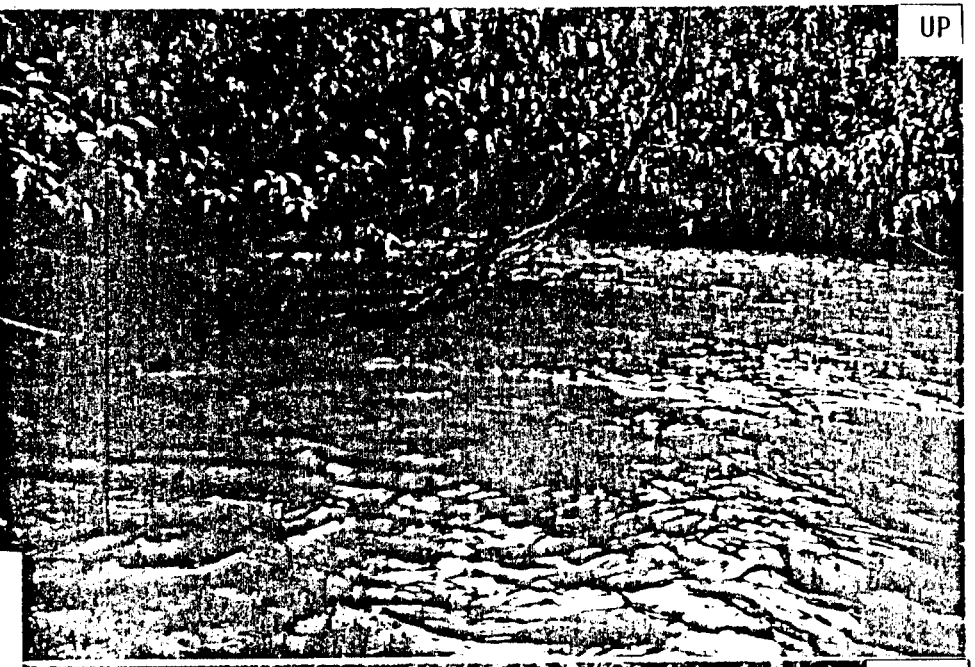
L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft		B-1			
10-25	ft		A-2,B-1			A-1
25-50	ft				A-1,C-2,E-1	
50-100	ft				A-2,B-1	
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
24"/50'

TRANSECT LENGTH: 400 ft.
COMP TALLEY:B3,C2,E1
DEBRIS POOLS:02

COMMENTS: 2 chum salmon were seen in the segment. 492 chum salmon were seen in the [illegible].



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VOU: 106 SEG: - SITE: 9002 AREA: 03
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-NW
STREAM: ST.JAMES RIVER
ADF&G: 115-10-10460-
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/13/284/184
UPSTREAM PHOTO: 902-04 DOWNSTREAM PHOTO: 902-05
WATER: 6.0 C. AIR: 13.0 C. TIME: 12:30
SITE DISTURBED: N WEATHER: OVERCAST

*PRELIM CT: 81.6 *
* FINAL CT: 81.6 *

GRADIENT: 1.0 %
STREAM PATTERN: BRAIDED
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 33.1 ft.
ACTIVE WIDTH: 31.4 ft.
AVG.POOL DEPTH: 1.0 ft.
POOLS: 0
POOLS: 20 % FISH OBSERVED: Y
ASA: 20 % LIFESTAGE: JA
ARA: 20 % IDENTITY:SS,CS,DV,CO

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	02	02
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST. *LEFT BANK* * PLANT ASSOCIATION/DIST. *RIGHT BANK*

PA#1: 25&20-0-80%45&35-U-50%65-G-50%[20.0'] SAME AS LEFT BANK
PA#2: -
PA#3: -
PA#4: -
PA#5: -

TRAP RESULTS
(30 min. set)
T#1 14 DV
T#2 2 DV
T#3 1 DV, 1 CO

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	5 %
CRS GRAVEL:	30 %
FINE GRAVEL:	30 %
VEG/SAND:	15 %
ORGANIC/SILT:	20 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	38.4	38.2	31.3	26.0	17.0	11.0	8.5	6.8	5.3
BANKFULL DEPTH(ft):	1.60	3.90	5.40	5.20	4.60	4.00	3.90	3.30	1.30
ACTIVE DEPTH(ft):	*LEFT*	N/A	2.75	2.75	1.50	0.70	N/A	N/A	*RIGHT*
THALWAG LOCATION:		A.W.	THWG				A.W.		

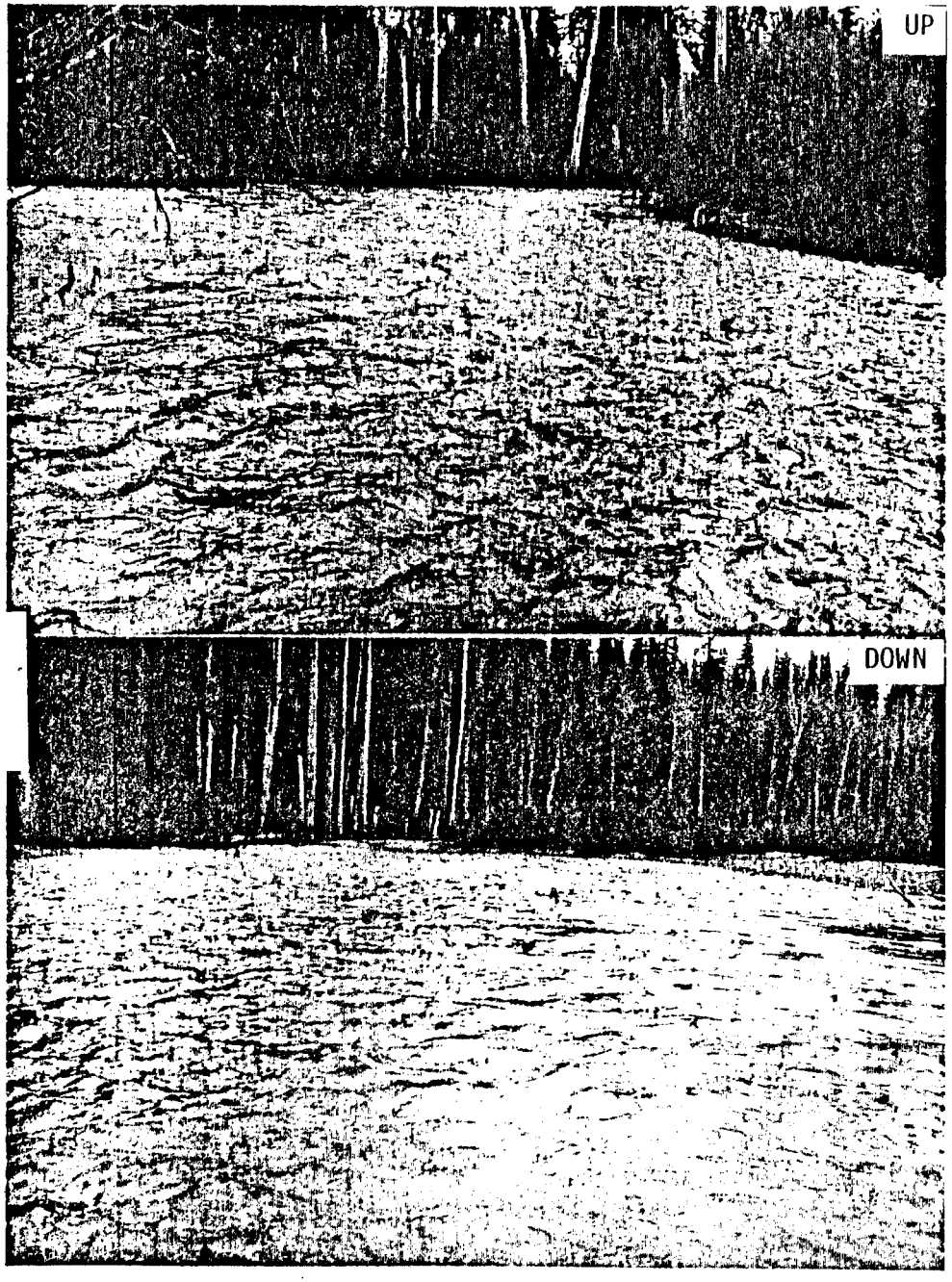
L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft			NO L.O.D.		
10-25	ft			NO L.O.D.		
25-50	ft			NO L.O.D.		
50-100	ft			NO L.O.D.		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 50 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Numerous braided channels with many rearing coho. Side channels had most of the ARA. Chum spawning in swifter parts of the channel. 5 spawning chum saltch were seen and several 6-12" daily varden.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VCU: 106 SEG: - SITE: 9011 AREA: 03 **********
R.D.: 033 MGT AREA: 017 SUB SEC: - 1/4 QUAD: JUN-04-NW *PRELIM CT: C5 *
STREAM: ST.JAMES RIVER * FINAL CT: C5 *
ADF&G: 115-10-10460 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/12/284/113
UPSTREAM PHOTO: 902-02 DOWNSTREAM PHOTO: 902-03
WATER: 5.0 C. AIR: 15.0 C. TIME: 9:40
SITE DISTURBED: N WEATHER: OVERCAST

GRADIENT: 1.0 %
STREAM PATTERN: BRAIDED
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 137. ft.
ACTIVE WIDTH: 115. ft.
AVG.POOL DEPTH: 1.0 ft.
POOLS: 10
POOLS: 10 % FISH OBSERVED: Y
ASA: 10 % LIFESTAGE: J
ARA: 20 % IDENTITY:SS,DV,CS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	S3	S3
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

LEFT BANK	*RIGHT BANK*
PA#1: 25&20-0-10% SP-0-5% 65-3-5%[-50']	810 [200']
PA#2: 810 [200']	
PA#3: -	
PA#4: -	
PA#5: -	

TRAP RESULTS
(30 min. set)
T#1 1 DV
T#2 1 DV,6 SS
T#3 10 SS

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	5 %
SM RUBBLE:	20 %
CRS GRAVEL:	30 %
FINE GRAVEL:	30 %
VEG/SAND:	10 %
ORGANIC/SILT:	5 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	6.4	33.0	60.6	87.0	94.2	114.	120.	141.	143.
BANKFULL DEPTH(ft):	4.60	3.45	4.30	5.00	5.50	7.75	4.15	4.20	3.75
ACTIVE DEPTH(ft):	*LEFT*	N/A	N/A	0.30	1.40	0.70	N/A	N/A	*RIGHT*
THALWAG LOCATION:			A.W.		THWG		A.W.		

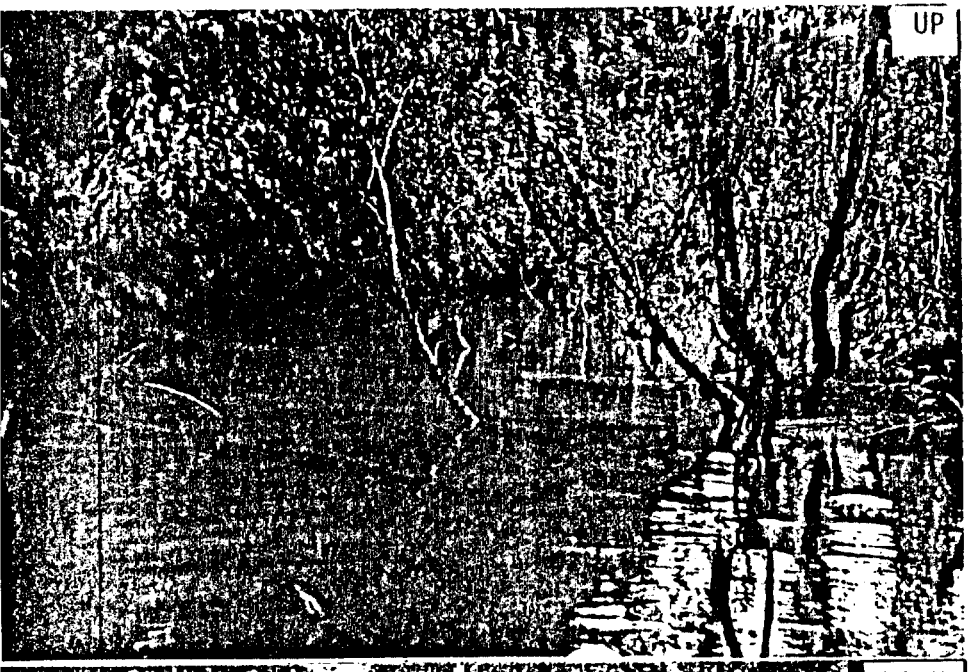
L.O.D. TALLEY (DIAMETER)

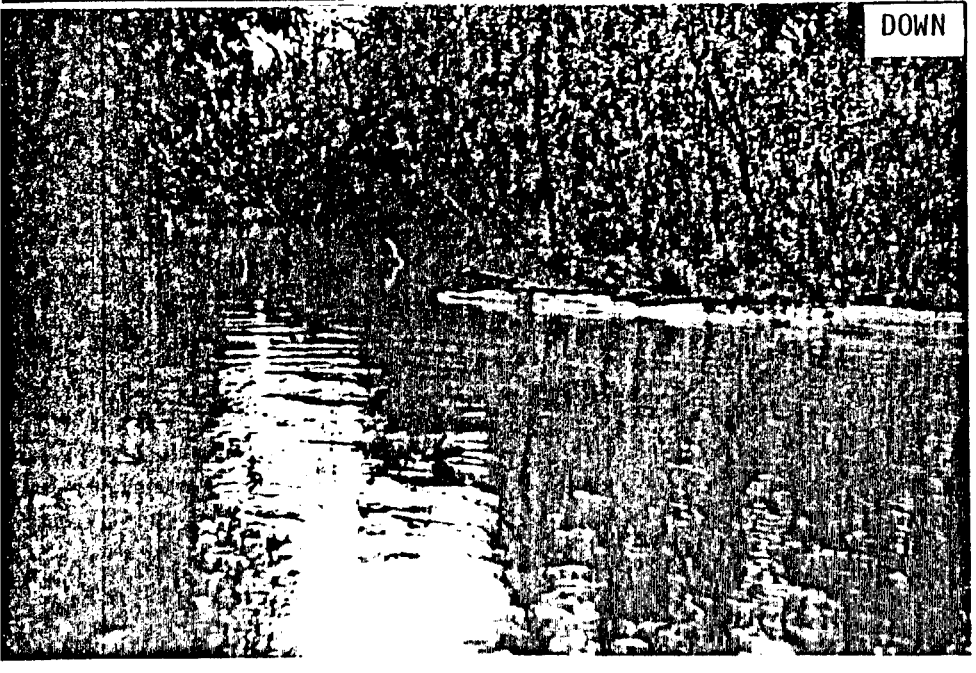
(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft			NO L.O.D.		
10-25	ft	C-6		A-3		
25-50	ft			NO L.O.D.		
50-100	ft			NO L.O.D.		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 200 ft.
CLUMP TALLEY:C5
DEBRIS POOLS:C5

COMMENTS: Lots of small pieces of shale. Bottom armored due to shale. Mounded channel deposits affected BF depth. Many newly emerged coho observed. 9 adult chum salmon were seen. Glacial coloration to the water.





CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VCU: 106 SEG: - SITE: 8011 AREA: 03
R.O.: 033 MGT AREA: K17 SUB SEC: - 1/4 QUAD: JUN-C4-NW
STREAM: ST.JAMES RIVER
ADF&G: 115-10-1046)-
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/12/284/113
UPSTREAM PHOTO: 804-04 DOWNSTREAM PHOTO: 804-05
WATER: 7.5 C. AIR: 13.0 C. TIME: 9:30
SITE DISTURBED: N WEATHER: OVERCAST

****
*PRELIM CT: - *
* FINAL CT: L3 *
****

GRADIENT: 0.5 %
STREAM PATTERN: SINGLE
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 48.0 ft.
ACTIVE WIDTH: 42.0 ft.
AVG.POOL DEPTH: 1.5 ft.
POOLS: 1
POOLS: 90 % FISH OBSERVED: Y
ASA: 0 % LIFESTAGE: J
ARA: 100 % IDENTITY:SS,DV

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	51
CANOPY:	B1	C5
INCISION:(meters)	1-2	2-4

PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	25-0-15% 20-0-5% [-15]	*	351[50']
PA#2:	25-0-70% 20-0-5% 51-0-5% [20']	*	
PA#3:	25-0-70% 35-0-5% 86-0-5% [180']	*	
PA#4:	-	*	
PA#5:	-	*	

TRAP RESULTS
(30 min. set)
T#1 2 DV
T#2 0
T#3 6 SS

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	40/80	160/10			
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	0 %
CRS GRAVEL:	5 %
FINE GRAVEL:	0 %
VFG/SAND:	0 %
ORGANIC/SILT:	95 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):				TOO	DEEP				
BANKFULL DEPTH(ft):					FOR				
ACTIVE DEPTH(ft): *LEFT*					GEOMETRY				*RIGHT*
THALWAG LOCATION:					N/A				

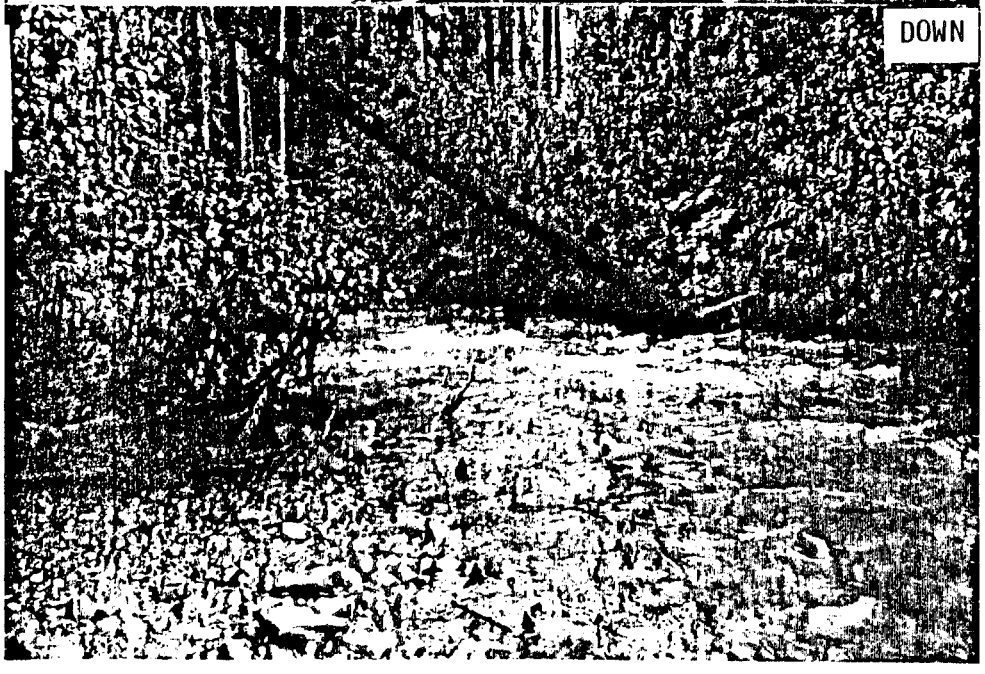
L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			NO L.O.D.		
10-25 ft		A-2		A-1	
25-50 ft			A-1,B-1	A-1	
50-100 ft			B-2	B-1	
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 130 ft.
CLUMP TALLEY:32
DEBRIS POOLS:-

COMMENTS: Series of beaver dams. Numerous dolly varden fry above beaver dams. Cono fry caught below the first beaver dam. Extensive beaver activity along the banks at the site. Water was about three feet deep along the right bank.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VOU: 106 SEG: - SITE: 201 AREA: 03 **********
R.D.: 033 MGT AREA: 017 SUB SEC: - 1/4 QUAD: JUG-C4-NW *PRELIM CT: C1.1 *
STREAM: ST.JAMES BAY * FINAL CT: 63.4 *
ADESS: 115-10-1045 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/12/284/113 GRADIENT: 3.0 %
UPSTREAM PHOTO: 703-14 DOWNSTREAM PHOTO: 703-15 STREAM PATTERN: MULTIPLE
WATER: 5.0 C. AIR: 16.0 C. TIME: 10:30 BANK CONTROL: ALLUVIUM
SITE DISTURBED: N WEATHER: OVERCAST-RAIN BANKFULL WIDTH: 38.0 ft.
ACTIVE WIDTH: 27.3 ft.
AVG.POOL DEPTH: 2.5 ft.
POOLS: 4
POOLS: 10 % FISH OBSERVED: Y
ASA: 35 % LIFESTAGE: JA
ARA: 10 % IDENTITY:SS,DV,CS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	S3	S3
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	840 [200']		810 [200']
PA#2: -			
PA#3: -			
PA#4: -			
PA#5: -			

TRAP RESULTS
(30 min. set)
T#1 2 DV
T#2)
T#3 5 DV

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/3				
L.BANK	200/-3				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	5 %
LG RUBBLE:	45 %
SM RUBBLE:	20 %
CRS GRAVEL:	10 %
FINE GRAVEL:	5 %
VFG/SAND:	15 %
ORGANIC/SILT:	0 %

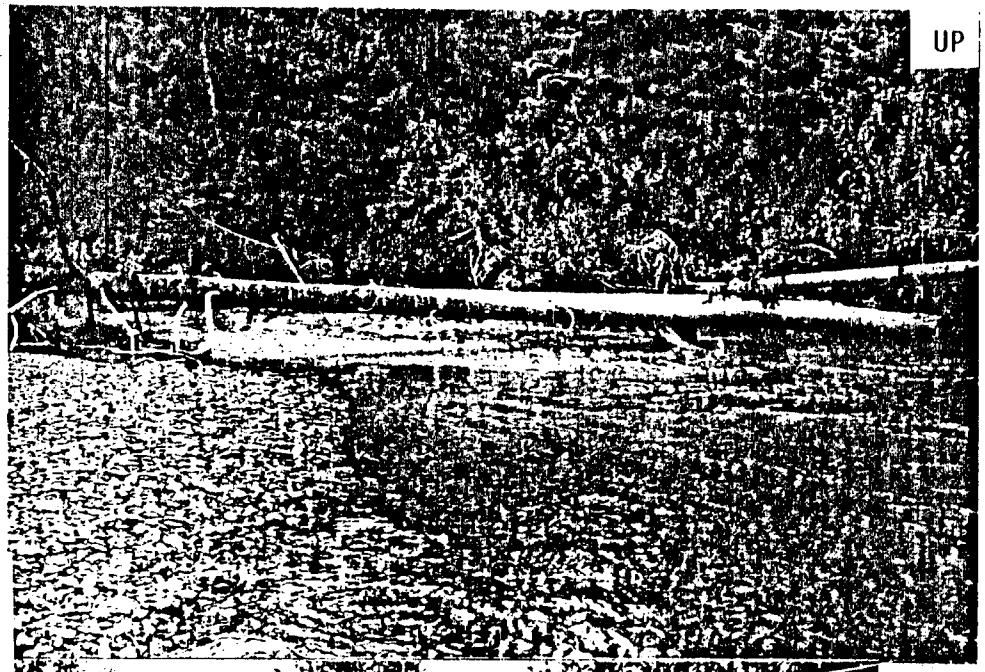
STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	39.5	37.0	34.0	23.0	16.0	10.0	5.0	1.7	0.9
BANKFULL DEPTH(ft):	1.10	1.78	1.91	2.54	3.65	3.15	2.60	2.29	1.16
ACTIVE DEPTH(ft):	*LEFT*	N/A	N/A	1.32	2.28	1.78	1.00	0.58	*RIGHT*
THALWEG LOCATION:					THWG			A.W.	

L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"	AVERAGE KEY PIECE DIAMETER/LENGTH
< 10	ft	A-10	A-5 B-5				24"/30'
10-25	ft	C-4	C-1	C-2	C-2		
25-50	ft		E-2	A-1 E-1		E-1	TRANSECT LENGTH: 300 ft.
50-100	ft		E-2				CLUMP TALLY(A,B,C,D),E?
>100	ft					E-1	DEBRIS POOL: A,E?

COMMENTS: Coho fry were seen but not trapped. 114 chum salmon were seen in the segment.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VOU: 111 SEG: - SITE: 7001 AREA: 03
R.O.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-NW
STREAM: ST.JAMES BAY
ADF&G: 115-10-10420
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/41
UPSTREAM PHOTO: 703-18 DOWNSTREAM PHOTO: 703-19
WATER: 7.0 C. AIR: 17.0 C. TIME: 5:00
SITE DISTURBED: N WEATHER: OVERCAST

****
*PRELIM CT: C1 *
* FINAL CT: C1 *
****

GRADIENT: 1.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 77.6 ft.
ACTIVE WIDTH: 29.4 ft.
AVG.POOL DEPTH: 5.0 ft.
POOLS: 3
POOLS: 20 % FISH OBSERVED: Y
ASA: 60 % LIFESTAGE: JA
ARA: 25 % IDENTITY:SS,CS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	810 [200']	*	810 [200']
PA#2: -		*	
PA#3: -		*	
PA#4: -		*	
PA#5: -		*	

TRAP RESULTS
(3) min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	5 %
SM RUBBLE:	50 %
CRS GRAVEL:	20 %
FINE GRAVEL:	15 %
VEG/SAND:	10 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	81.0	47.0	32.7	27.0	23.0	10.0	13.0	5.3	3.4
BANKFULL DEPTH(ft):	1.70	2.20	2.36	4.24	5.10	5.16	4.26	4.27	2.65
ACTIVE DEPTH(ft):	*LEFT*	N/A	N/A	1.02	1.99	2.00	1.40	0.84	*RIGHT*
THALWAG LOCATION:			A.W.			THWG		A.W.	

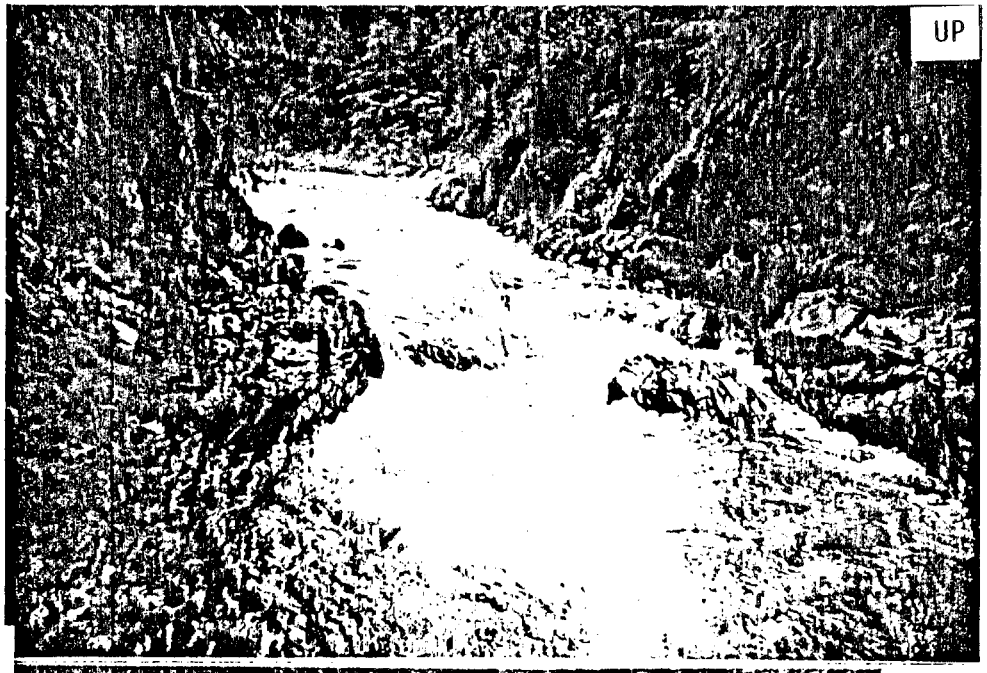
L.O.D. TALLEY (DIAMETER)

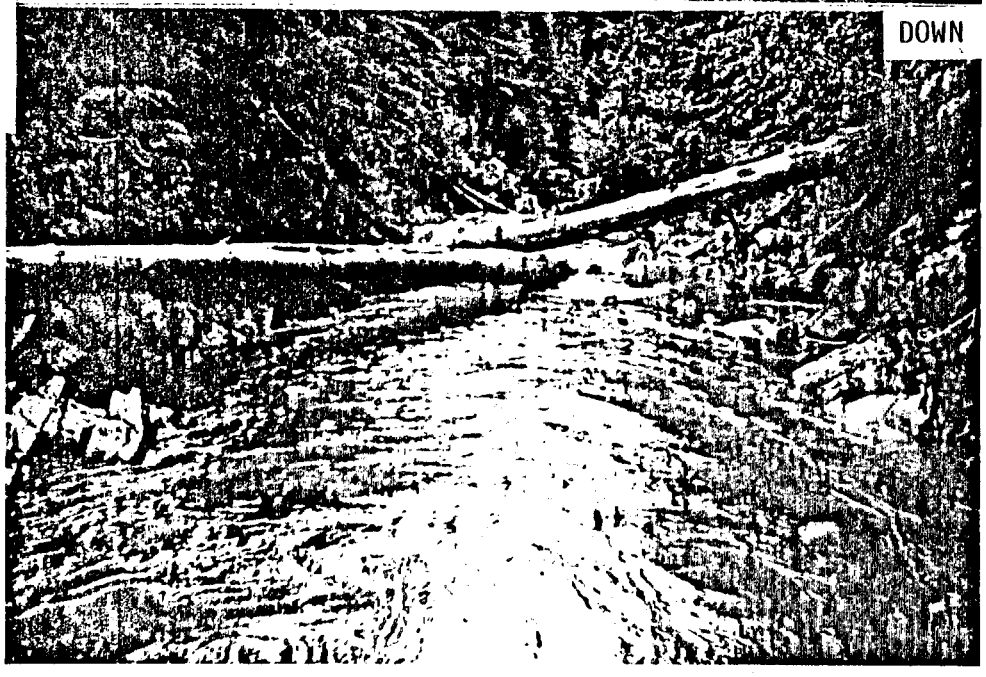
(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft			NO L.O.D.		
10-25	ft	A-1	A-3,B-1,E-1	A-1		
25-50	ft		B-1	A-2,B-1		
50-100	ft				A-1	
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
24"/25'

TRANSECT LENGTH: 200 ft.
CLUMP TALLEY:B2,C1,E1
DEBRIS POOLS:B1,C1,E1

COMMENTS: 1900 Adult chum salmon were seen.





CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VOU: 111 SEG: - SITE: 8002 AREA: 03 **********
R.D.: 035 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-SW *PRELIM CT: B7 *
STREAM: - * FINAL CT: B7 *
ADF&G: 115-10-1042)- **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/584/4)
UPSTREAM PHOTO: 804-10 DOWNSTREAM PHOTO: 804-11
WATER: 6.0 C. AIR: 13.5 C. TIME: 4:00
SITE DISTURBED: N WEATHER: OVERCAST

GRADIENT: 3.5 %
STREAM PATTERN: SINGLE
BANK CONTROL: BEDROCK
BANKFULL WIDTH: 22.0 ft.
ACTIVE WIDTH: 16.0 ft.
AVG.POOL DEPTH: 3.5 ft.
POOLS: 3
POOLS: 5 % FISH OBSERVED: N
ASA: 0 % LIFESTAGE: -
ARA: 0 % IDENTITY:-

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	57	57
CANOPY:	C8	C5
INCISION:(meters)	4-6	4-6

	PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1:	510 [50']	25-0-60% 45-0-10% [20']
PA#2:	430 [150']	410 [180']
PA#3: -		
PA#4: -		
PA#5: -		

TRAP RESULTS (30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	90/140	50/60	60/20		
L.BANK	60/150	50/-15	90/10		

SUBSTRATE

BEDROCK:	70 %
SM BOULDER:	20 %
LG RUBBLE:	10 %
SM RUBBLE:	0 %
CRS GRAVEL:	0 %
FINE GRAVEL:	0 %
VFG/SAND:	0 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):					TOO	FAST			
BANKFULL DEPTH(ft):					FOR				
ACTIVE DEPTH(ft):	*LEFT*				GEOMETRY			*RIGHT*	
THALWAG LOCATION:					N/A				

L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			NO L.O.D.		
10-25 ft			C-1		
25-50 ft			A-1 C-2		
50-100 ft			C-1	C-1	
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE DIAMETER/LENGTH
24"/75'

TRANSECT LENGTH: 300 ft.
CLUMP TALLEY:C2
DEBRIS POOLS:-

COMMENTS: Water was too deep and fast to cross for stream geometry.

CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VCU: 111 SEG: - SITE: 9002 AREA: 03 **********
R.D.: 033 MGT AREA: 017 SUB SEC: - 1/4 QUAD: JUN-C4-SW *PRELIM CT: B7 *
STREAM: ST.JAMES BAY, N.W. * FINAL CT: C2 *
ADF&G: 115-10-1042) **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/40
UPSTREAM PHOTO: 902-08 DOWNSTREAM PHOTO: 902-09
WATER: 6.0 C. AIR: 13.5 C. TIME: 4:00
SITE DISTURBED: N WEATHER: HIGH OVERCAST

GRADIENT: 2.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: BEDROCK
BANKFULL WIDTH: 63.0 ft.
ACTIVE WIDTH: 55.2 ft.
AVG.POOL DEPTH: 1.5 ft.
POOLS: 5
POOLS: 10 % FISH OBSERVED: N
ASA: 0 % LIFESTAGE: -
ARA: 5 % IDENTITY:-

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	61	61
CANOPY:	C8	C8
INCISION:(meters)	1-2	1-2

	PLANT ASSOCIATION/DIST. *LEFT BANK*	PLANT ASSOCIATION/DIST. *RIGHT BANK*
PA#1:	410 [70']	25-0-50%45-U-10%51&71-10%[20']
PA#2:	420 [50']	420 [120']
PA#3:	15-G-100% [30']	410 [60']
PA#4: -		
PA#5: -		

TRAP RESULTS (30 min. set)
T#1 -
T#2 -
T#3 -

SUBSTRATE

BEDROCK:	15 %
SM BOULDER:	30 %
LG RUBBLE:	15 %
SM RUBBLE:	15 %
CRS GRAVEL:	15 %
FINE GRAVEL:	5 %
VFG/SAND:	5 %
ORGANIC/SILT:	0 %

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	20/8	100/30	80/15		
L.BANK	10/65	50/10	50/0	90/5	

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	0.00	0.30	2.30	12.0	24.0	33.3	48.0	62.1	62.5
BANKFULL DEPTH(ft):	2.80	3.95	4.30	5.50	5.70	6.10	5.90	3.90	2.50
ACTIVE DEPTH(ft):	*LEFT* N/A		N/A	0.50	0.80	1.20	0.80	N/A	*RIGHT*
THALWEG LOCATION:			A.W.			THWG			

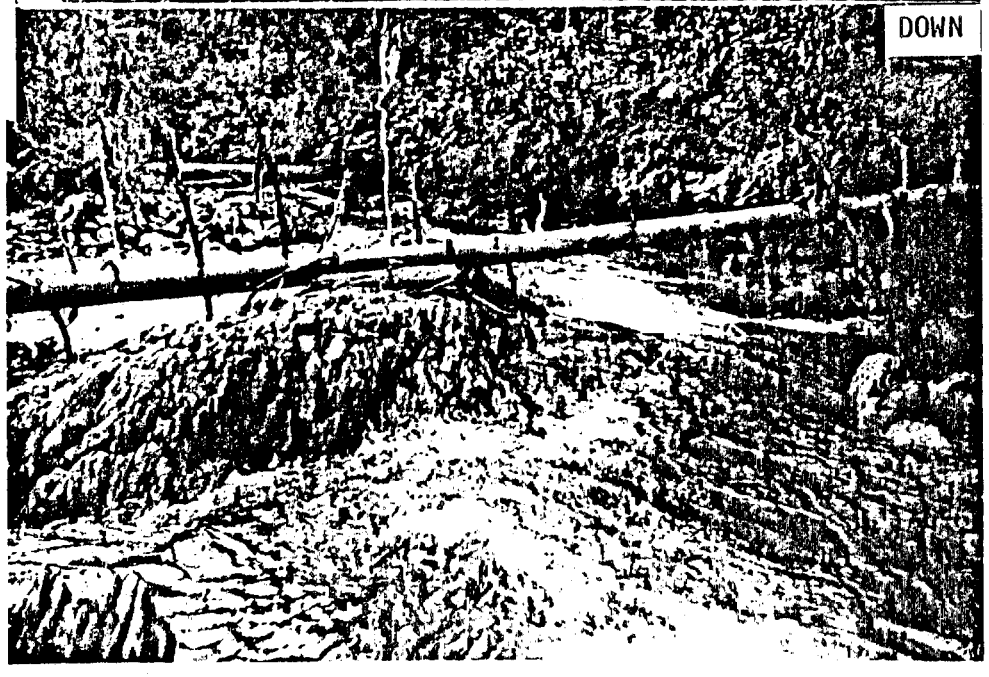
L.O.O. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			A-1		
10-25 ft		A-1			
25-50 ft			A-5		
50-100 ft			NO L.O.O.		
>100 ft			NO L.O.O.		

AVERAGE KEY PIECE DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 260 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Lots of slate and associated armoring.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VOU: 111 SEG: - SITE: 8003 AREA: 03
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-SW
STREAM: -
ADF&G: -

*PRELIM CT: B7 *
* FINAL CT: B7 *

AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/16/384/77
UPSTREAM PHOTO: 804-13 DOWNSTREAM PHOTO: 804-14
WATER: 7.0 C. AIR: 16.0 C. TIME: 9:00
SITE DISTURBED: N WEATHER: OVERCAST

GRADIENT: 8.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: BEDROCK
BANKFULL WIDTH: 25.0 ft.
ACTIVE WIDTH: 23.0 ft.
AVG.POOL DEPTH: 1.5 ft.
POOLS: 3
POOLS: 5 % FISH OBSERVED: Y
ASA: 0 % LIFESTAGE: A
ARA: 0 % IDENTITY:PS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	42	42
CANOPY:	C4	C4
INCISION:(meters)	4-6	2-4

PLANT ASSOCIATION/DIST.

	LEFT BANK	*RIGHT BANK*
PA#1:	410 [60']	420 [50']
PA#2:	420 [140']	410 [150']
PA#3: -		
PA#4: -		
PA#5: -		

TRAP RESULTS
(30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	35/5	165/90			
L.BANK	60/25	140/0			

SUBSTRATE

BEDROCK:	75 %
SM BOULDER:	10 %
LG RUBBLE:	10 %
SM RUBBLE:	5 %
CRS GRAVEL:	0 %
FINE GRAVEL:	0 %
VFG/SAND:	0 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

BF *LB* **** **** **** **** **** *LB* *BF*

DISTANCE(ft):
BANKFULL DEPTH(ft):
ACTIVE DEPTH(ft): *LEFT* *RIGHT*
THALWAG LOCATION:

TOO DEEP FOR GEOMETRY
N/A

L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			A-1	A-1	
10-25 ft			C-1	C-1	
25-50 ft			A-1 C-1		
50-100 ft			A-1		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 300 ft.
CLUMP TALLEY:C1
DEBRIS POOLS:-

COMMENTS: Photo 804-12 was taken of a 25' barrier below the sample site and just up from the intertidal area. At the sample site the bedrock was very heavy with periphyton. There was much more confinement and 54 landform upstream but was inaccessible. PA's fit well. 4 pink salmon were seen below the falls.

CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/02 VCU: 111 SEG: - SITE: 9002 AREA: 03
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-SW
STREAM: ST.JAMES BAY, N.W.
ADF&G: 115-10-10420
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/15/384/40
UPSTREAM PHOTO: 902-08 DOWNSTREAM PHOTO: 902-09
WATER: 6.0 C. AIR: 13.5 C. TIME: 4:00
SITE DISTURBED: N WEATHER: HIGH OVERCAST

****
*PRELIM CT: B7 *
* FINAL CT: C2 *
****

GRADIENT: 2.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: BEDROCK
BANKFULL WIDTH: 63.0 ft.
ACTIVE WIDTH: 55.2 ft.
AVG.POOL DEPTH: 1.5 ft.
POOLS: 5
POOLS: 10 % FISH OBSERVED: N
ASA: 0 % LIFESTAGE: -
ARA: 5 % IDENTITY:-

ADJACENT LANDFORM & VEGETATION	"LEFT BANK"	"RIGHT BANK"
LANDFORM:	61	61
CANOPY:	C8	C8
INCISION:(meters)	1-2	1-2

	PLANT ASSOCIATION/DIST. "LEFT BANK"	PLANT ASSOCIATION/DIST. "RIGHT BANK"
PA#1:	410 [70']	25-0-50%45-0-10%51%71-10%[20']
PA#2:	420 [50']	420 [120']
PA#3:	15-0-100% [30']	410 [50']
PA#4: -		
PA#5: -		

TRAP RESULTS (30 min. set)
T#1 -
T#2 -
T#3 -

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	20/8	100/30	80/15		
L.BANK	10/65	50/10	50/0	90/5	

"SUBSTRATE"

BEDROCK:	15 %
SM BOULDER:	30 %
LG RUBBLE:	15 %
SM RUBBLE:	15 %
CRS GRAVEL:	15 %
FINE GRAVEL:	5 %
VFG/SAND:	5 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	"BF"	"LB"	****	****	****	****	****	"LB"	"BF"
DISTANCE(ft):	0.0	0.30	2.30	12.0	24.0	33.3	48.0	62.1	62.5
BANKFULL DEPTH(ft):	2.30	3.95	4.30	5.50	5.70	6.10	5.90	3.90	2.50
ACTIVE DEPTH(ft):	"LEFT" N/A		N/A	0.50	0.80	1.20	0.80	N/A	"RIGHT"
THALWEG LOCATION:			A.W.			THWG			

L.O.D. TALLEY (DIAMETER)

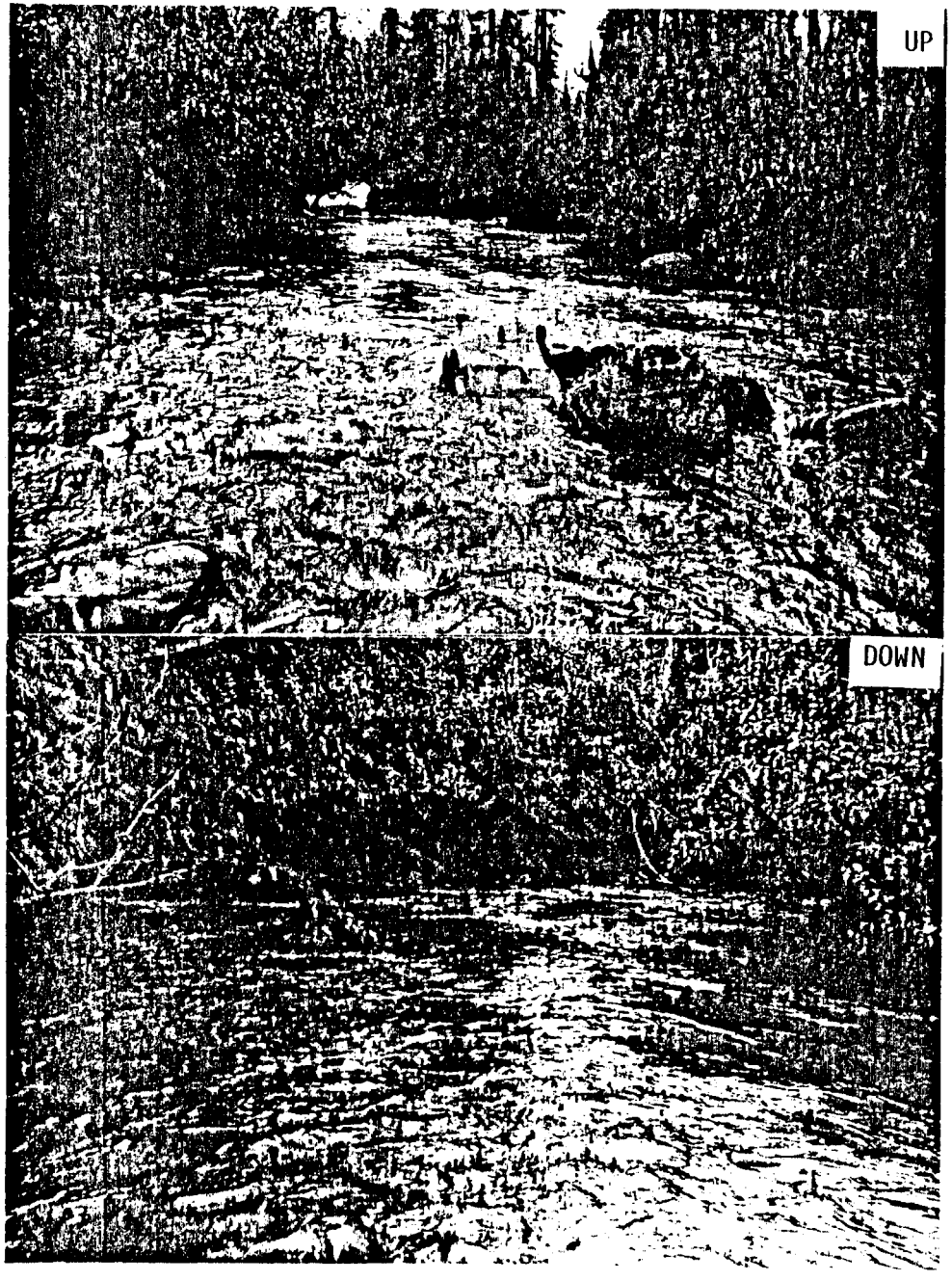
(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			A-1		
10-25 ft		A-1			
25-50 ft			A-5		
50-100 ft			NO L.O.D.		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 250 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Lots of slate and associated bedrock.

Photo 804-12 taken of the 25' barrier falls just above the mouth of this stream. Four pink salmon were seen in the pool below. This stream was nominated to the anadromous catalog. Further reconnaissance and sampling upstream showed little enhancement possibilities and several more possible barriers in the B7 channel above the falls.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VCU: 111 SEG: - SITE: 9003 AREA: 03
R.D.: 033 MGT AREA: C17 SUB SEC: - 1/4 QUAD: JUN-C4-SW
STREAM: ST.JAMES BAY S.W.
ADESS: -
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/16/384/78
UPSTREAM PHOTO: 902-10 DOWNSTREAM PHOTO: 902-11
WATER: 7.0 C. AIR: 16.0 C. TIME: 9:30
SITE DISTURBED: N WEATHER: OVERCAST

*PRELIM CT: B1.5 *
* FINAL CT: C2 *

GRADIENT: 1.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: BEDROCK
BANKFULL WIDTH: 56.0 ft.
ACTIVE WIDTH: 30.5 ft.
AVG.POOL DEPTH: 1.0 ft.
POOLS: 0
POOLS: 5 % FISH OBSERVED: N
ASA: 0 % LIFESTAGE: -
ARA: 0 % IDENTITY:-

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	61	61
CANOPY:	C3	C9
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	410 [200']	*	25-0-30%60-U-60%51-G-60%[80']
PA#2:		*	130 [120']
PA#3: -		*	
PA#4: -		*	
PA#5: -		*	

TRAP RESULTS (30 min. set)
T#1 -
T#2 -
T#3 -

SUBSTRATE

BEDROCK:	20 %
SM BOULDER:	20 %
LG RUBBLE:	20 %
SM RUBBLE:	15 %
CRS GRAVEL:	10 %
FINE GRAVEL:	10 %
VFG/SAND:	5 %
ORGANIC/SILT:	0 %

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	80/15	50/0	10/35	60/5	
L.BANK	50/5	30/45	120/5		

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****-	*LB*	*BF*
DISTANCE(ft):	56.3	51.1	51.0	45.0	33.0	22.0	11.4	5.0	0.1
BANKFULL DEPTH(ft):	2.50	3.80	4.30	5.70	5.20	4.40	4.30	3.60	2.60
ACTIVE DEPTH(ft):	*LEFT*	N/A	N/A	1.60	1.10	0.20	N/A	N/A	*RIGHT*
THALWAG LOCATION:			A.W.	THRU			A.W.		

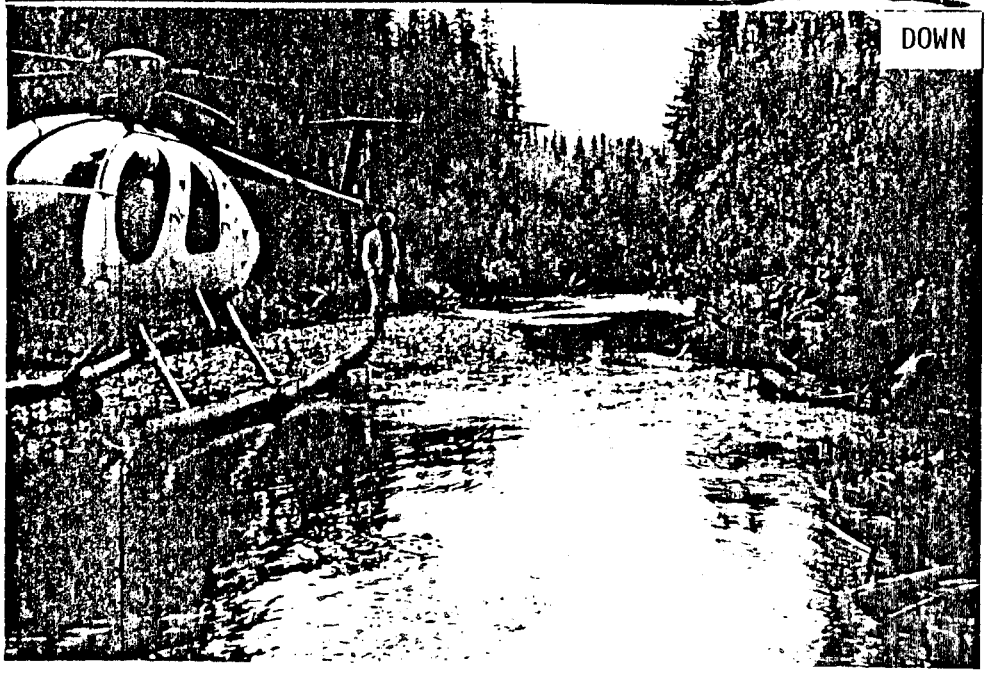
L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft			NO L.O.D.		
10-25 ft			NO L.O.D.		
25-50 ft			NO L.O.D.		
50-100 ft			NO L.O.D.		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE DIAMETER/LENGTH
N/A

TRANSECT LENGTH: 200 ft.
CLUMP TALLEY:-
DEBRIS POOLS:-

COMMENTS: Channel type was changed to C2 based on bedrock control and presence of 75% small rubble to bedrock substrate. It was not possible to hand upstream in more typical B1.5 habitat. Salmonberry and false hellebore were also present in the understory along the right bank for the first 80'.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VOL: 112 SEG: - SITE: 7201 AREA: 03 **********
R.D.: 033 MGT AREA: C16 SUB SEC: - 1/4 QUAD: JUN-C4-SW *PRELIM CT: 61 *
STREAM: CAMP CREEK * FINAL CT: 61 *
ADFG: 115-10-10320 **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/17/384/93 GRADIENT: 0.5 %
UPSTREAM PHOTO: 703-20 DOWNSTREAM PHOTO: 703-21 STREAM PATTERN: SINGLE
WATER: 12.0 C. AIR: 15.0 C. TIME: 9:45 BANK CONTROL: ALLUVIUM
SITE DISTURBED: N WEATHER: OVERCAST-RAIN BANKFULL WIDTH: 30.3 ft.
ACTIVE WIDTH: 24.1 ft.
A/G.POOL DEPTH: 2.4 ft.
POOLS: 5
POOLS: 45 % FISH OBSERVED: Y
ASA: 75 % LIFESTAGE: J
ARA: 45 % IDENTITY:SS,CT,CO

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	MI	C5
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST. * PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	20-0-50% 35-0-50% [20']		310 [20']'
PA#2:	15-0-30% 79-0-20% [16]'		
PA#3: -			
PA#4: -			
PA#5: -			

TRAP RESULTS
(30 min. set)
T#1 1 SS,1 CT,1 CO
T#2 27 SS,1 CT
T#3 43 SS,2 CT, 13 CO

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	75/70	100/10	25/-3		
L.BANK	200/0				

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	1 %
SM RUBBLE:	25 %
CRS GRAVEL:	63 %
FINE GRAVEL:	5 %
VEG/SAND:	4 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	33.5	32.0	24.0	21.0	18.0	11.0	6.0	2.9	2.6
BANKFULL DEPTH(ft):	1.70	2.00	2.39	2.93	3.14	2.74	3.50	3.40	1.20
ACTIVE DEPTH(ft):	*LEFT*	N/A	0.28	0.82	1.10	0.50	0.89	1.10	*RIGHT*
THALWAG LOCATION:					THWG				

L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"	AVERAGE KEY PIECE DIAMETER/LENGTH
< 10 ft			A-1			24"/30'
10-25 ft			NO L.O.D.			
25-50 ft					A-2	TRANSECT LENGTH: 200 ft.
50-100 ft			NO L.O.D.			CLUMP TALLEY:51
>100 ft			NO L.O.D.			DEBRIS POOLS:31

COMMENTS: Small substrate.

CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VCU: 112 SEG: - SITE: 7002 AREA: 03
R.D.: 033 MGT AREA: C18 SUB SEC: - 1/4 QUAD: JUN-C4-SW
STREAM: -
ADF&G: 115-10-10308
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/17/384/92
UPSTREAM PHOTO: 703-22 DOWNSTREAM PHOTO: 703-23
WATER: 13.0 C. AIR: 15.0 C. TIME: 12:00
SITE DISTURBED: N WEATHER: OVERCAST-RAIN

****
*PRELIM CT: B2 *
* FINAL CT: B1 *
****

GRADIENT: 0.5 %
STREAM PATTERN: SINGLE
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 26.0 ft.
ACTIVE WIDTH: 25.0 ft.
AVG.POOL DEPTH: 1.5 ft.
POOLS: 5
POOLS: 30 % FISH OBSERVED: Y
ASA: 20 % LIFESTAGE: J
ARA: 50 % IDENTITY:SS,CT

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	53	53
CANOPY:	D2	D2
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

	LEFT BANK	*	*RIGHT BANK*
PA#1:	81D [200']	*	25-J-50%20-U-50%81-G-60%[200']
PA#2: -		*	
PA#3: -		*	
PA#4: -		*	
PA#5: -		*	

TRAP RESULTS
(30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	0 %
SM RUBBLE:	10 %
CRS GRAVEL:	60 %
FINE GRAVEL:	20 %
VFG/SAND:	10 %
ORGANIC/SILT:	0 %

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	200/0				
L.BANK	200/85				

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):					NO				
BANKFULL DEPTH(ft):					STREAM				
ACTIVE DEPTH(ft):	*LEFT*				GEOMETRY				*RIGHT*
THALWAG LOCATION:					N/A				

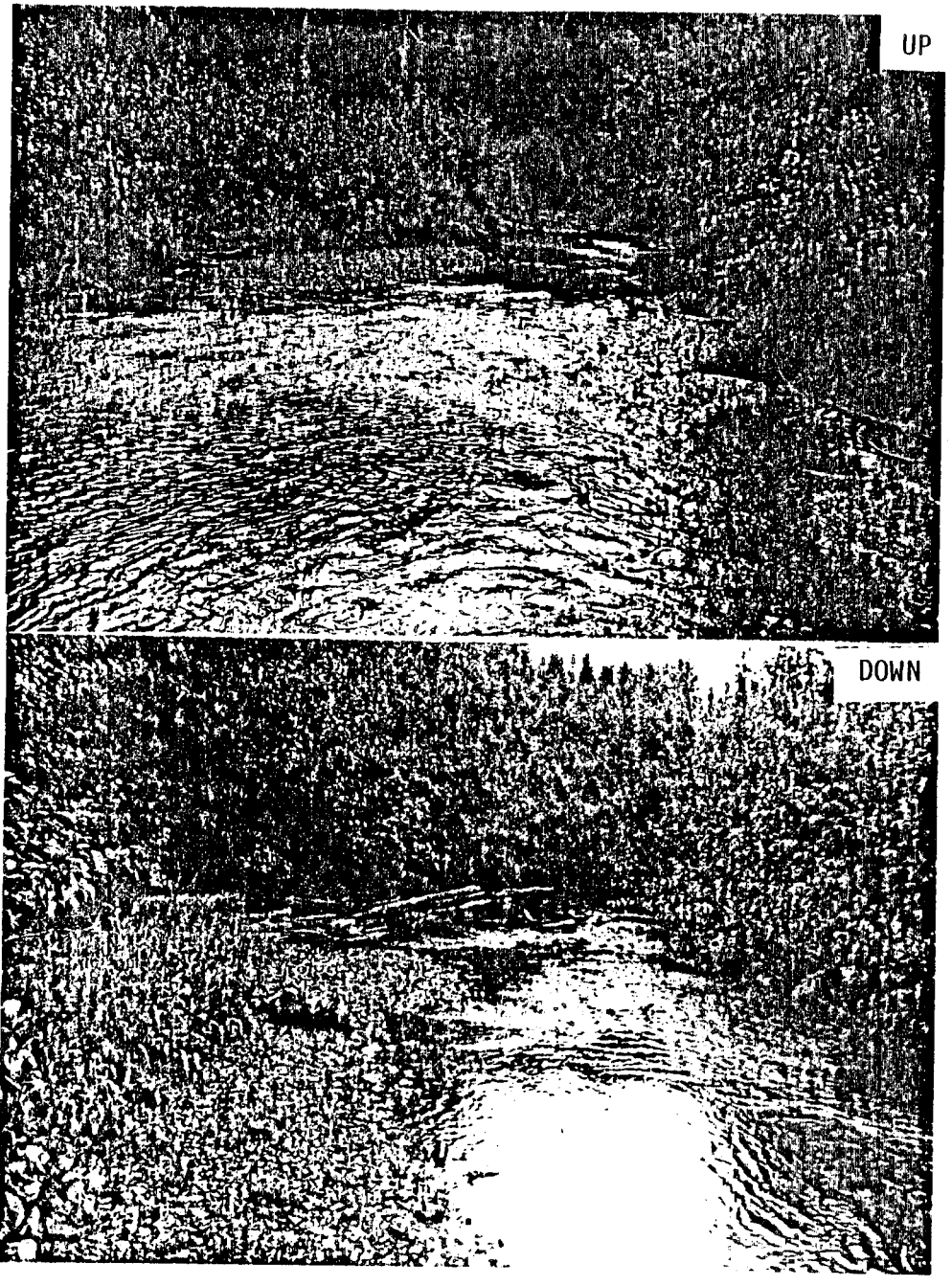
L.O.D. TALLEY (DIAMETER)

(LENGTH)	4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10 ft	A-1 B-3				
10-25 ft	A-1		B-2		
25-50 ft			A-1,C-1,E-1		
50-100 ft			NO L.O.D.		
>100 ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
24"/25'

TRANSECT LENGTH: 100 ft.
CLUMP TALLEY:B5,C1,E1
DEBRIS POOLS:B2,C1,E1

COMMENTS: Beaver dam upstream. 76 adult chum were in side channel of D4 southwest of this B1.



CHANNEL TYPE VERIFICATION CARD

DATE: 88/08/03 VCU: 112 SEG: - SITE: 8001 AREA: 03 **********
R.D.: 033 MGT AREA: C18 SUB SEC: - 1/4 QUAD: JUN-C4-SW *PRELIM CT: B1 *
STREAM: - * FINAL CT: B1 *
ADF&G: 112-15-10300- **********
AEROPHOTO (YR/FLT/ROLL/PHOTO): 84/17/3/91
UPSTREAM PHOTO: 804-15 DOWNSTREAM PHOTO: 804-16
WATER: 10.0 C. AIR: 15.0 C. TIME: 2:00
SITE DISTURBED: N WEATHER: OVERCAST

GRADIENT: 1.0 %
STREAM PATTERN: SINGLE
BANK CONTROL: ALLUVIUM
BANKFULL WIDTH: 42.0 ft.
ACTIVE WIDTH: 19.0 ft.
AVG.POOL DEPTH: 1.0 ft.
POOLS: 7
POOLS: 5 % FISH OBSERVED: Y
ASA: 40 % LIFESTAGE: JA
ARA: 20 % IDENTITY: SS,PS

ADJACENT LANDFORM & VEGETATION

	LEFT BANK	*RIGHT BANK*
LANDFORM:	62	62
CANOPY:	C5	C5
INCISION:(meters)	<1	<1

PLANT ASSOCIATION/DIST.

	LEFT BANK	*RIGHT BANK*
PA#1:	20-0-5%65-G-50%[-20']*	25-0-50%35-U-30%55-G-5%[20']*
PA#2:	25-G-20%20-U-20%55-G-50%[80']*	
PA#3:	410[12]*	
PA#4:	-	
PA#5:	-	

TRAP RESULTS
(30 min. set)
T#1 N/A
T#2 N/A
T#3 N/A

SIDESLOPE LENGTH & ANGLE

	ft/%	ft/%	ft/%	ft/%	ft/%
R.BANK	20/0				
L.BANK	40/10	40/0	20/10	100/30	

SUBSTRATE

BEDROCK:	0 %
SM BOULDER:	0 %
LG RUBBLE:	5 %
SM RUBBLE:	30 %
CRS GRAVEL:	50 %
FINE GRAVEL:	30 %
VFS/SAND:	5 %
ORGANIC/SILT:	0 %

STREAM GEOMETRY

	BF	*LB*	****	****	****	****	****	*LB*	*BF*
DISTANCE(ft):	44.0	42.4	33.7	25.7	17.7	15.0	9.7	2.7	1.7
BANKFULL DEPTH(ft):	3.10	4.52	4.10	4.39	4.76	4.38	4.84	4.08	2.30
ACTIVE DEPTH(ft):	*LEFT*	N/A	N/A	N/A	0.33	0.68	0.59	N/A	*RIGHT*
THALWAG LOCATION:						THWG			

L.O.D. TALLEY (DIAMETER)

(LENGTH)		4 - 6"	6 - 12"	12 - 24"	24 - 36"	>36"
< 10	ft	C-13	A-4,C-4	A-1,C-2		
10-25	ft	A-1,C-6	A-1	B-1,C-2		
25-50	ft			A-1,C-1		
50-100	ft			C-1		
>100	ft			NO L.O.D.		

AVERAGE KEY PIECE
DIAMETER/LENGTH
4"/10'

TRANSECT LENGTH: 300 ft.
CLUMP TALLY: 01,05
DEBRIS POOLS: 05

COMMENTS: 10 pink salmon(5 live, 10 dead) were seen in the stream and about a dozen in the intertidal area. Many juvenile chum fry were seen in the stream.

CONCLUSION

Collectively, the streams of this study area appear to be important natural fish producing systems. A few of the stream's salmon populations appear to be in a growth trend, probably in response to warmer winters and escapement management. Increased escapement monitoring would be helpful in tracking this trend. No further stream clearance is advisable. Recent removal of large woody debris from St. James River (115-10-46) and Beardslee river (110-10-65) may be the cause of mainstem substrate shifting that was noted during the survey.

A directed fishery in or near St. James Bay could have an adverse impact on the fish production of the streams in this study area.

LITERATURE CITED

Crone, Richard Allen. 1968. Behavior and survival of coho salmon, Oncorhynchus kisutch (Walbaum), in Sashin Creek, Southeastern Alaska. Masters of Science thesis, Oregon State University, Corvallis Oregon.

APPENDIX A

CHANNEL TYPE VERIFICATION PROCEDURES

Field verification consists of sampling representative areas of a given channel type segment for the taxonomic unit differentia. The primary purpose of this sampling is to verify that channel type mapping, based on aerial photographic interpretation, is accurate. The secondary purpose of field verification is to characterize key physical features of channel type classification units by field data on representative stream segments. These data will help define class limits for channel type units.

Site selection: All verification sampling is performed using "representative" sites to characterize the physical properties of an entire channel type segment (hereafter referred to as "segment"). The term "site" refers to a short channel area which is a representative subset of the entire segment, and which is used as the sampling unit. The representative sample site is a channel area which has physical features that occur most frequently for the segment being sampled. These features, which are present or absent within the segment as a whole, have the same occurrence frequency in the site. The predominant range in physical dimensions that occurs for key features throughout the segment also occurs in a similar manner within the site. This site also demonstrates the same spatial patterns of features which occur over the entire segment. The site is not necessarily uniform in its physical characteristics. Rather, the variation in these characteristics occurs in an amount and pattern similar to that of the entire segment.

The representativeness of each site is determined before any data collection occurs. Sites which have been extensively disturbed by road construction, mining, recreation, or other developments are not to be sampled. Sites that are to be sampled which occur downstream of such developments should be noted as such on the data card. Site representativeness is first assessed by selecting "potential" sampling sites in the office prior to field work. In the field, each potential site is assessed by conducting a brief ground survey of several hundred meters of the segment to determine how well the potential site represents the segment. Only after site representativeness has been confirmed, does sampling begin.

The length of each sample site is to be the shorter distance of the following: 1) a two pool/riffle sequence; 2) 50 meters long if the channel bankfull width is less than 10 meters; or 3) 100 meters long if the channel bankfull width is greater than 10 meters. Sampling is to only occur at low flow stage, which is one-third or less of the bankfull stage.

Date:	Record as a six digit number using a year-month-day format
VCU:	Record the three digit VCU number
Segment:	Record the three digit number
Site:	Record the four digit number assigned to each sampling site. (7000 series Edgington, 1988) (8000 series Cariello, 1988) (9000 series Derr, 1988)

Area: Record the standard Area number:

Stikine Area - 02
Chatham Area - 03
Ketchikan Area - 05

1988 Amendment:

Ranger District: Record the standard Ranger District number.

Petersburg - 010	Sitka - 010	Craig - 010
Wrangell - 020	Hoonah - 020	Ketchikan - 020
	Juneau - 030	Thorne Bay - 040
	Admiralty NM - 040**	

Management Area: Record the standard three character TLMP Management Area label

Subsection: Record the two digit subsection number (from the watershed field map)

Quarter-Quad: Record the name of the USGS quarter-quadrangle which covers the sample site. The name should be the same as that at the bottom right hand side of the USGS quad.

Stream Name: Record the stream name for the drainage basin containing the sample site.

ADF&G Number: Record the ADF&G number for the stream segment as it appears in the ADF&G Anadromous Waters Catalog.

Aerial Photograph: Record the year, flight line number, roll number, and photo number of the aerial photograph covering the site. The flight year is the last two digits of the year (1984 = 84). The line number is an alphanumeric two character label. The roll and photo numbers are one and three digit numbers, respectively.

Camera Photo: Record the three digit upstream and downstream film roll number. To establish the roll number take one or two pictures of a sheet of paper with the roll identification number printed on it. The roll identification number is increased sequentially for each new roll of film.

Record the two digit number of the upstream and downstream sample site photographs taken in the appropriate space. The number is taken from the camera counter.

Preliminary Channel Type: Record the channel type assigned during premapping to the segment being sampled (taken from the aerial photo).

Final Channel Type: Record the final channel type (determined after field verification and final correlation).

Water Temperature: Record the water temperature in degrees celsius.

Air Temperature: Record the air temperature in degrees celsius.

Weather: Identify the weather conditions during the verification (for example, rain, sun).

Time: Record the time of day the sample was taken.

Adjacent Landform: Record the predominant landform for both the left and right banks over a minimum of 10 acres (except as noted below). If more than one distinct landform occurs along the site bank, record the landform occupying the greatest length of the site. Landforms are delineated using the R-10 Landform Legend. In the office, they are determined from the aerial photograph with the mapping box containing the site. To determining the 10 acre size on an aerial photo, consider an area contained within an imaginary rectangle in which the channel is one of the short sides and one of the long sides extends away from the channel a distance sufficient to contain 10 acres (0.25 inch by 1.0 inch area on 1:15.840 aerial photos). Landforms are verified in the field by observing landform slope, relief, dissection, and landscape position characteristics.

The only exception to the 10 acre minimum size rule is when an alluvial floodplain or river terrace occurs directly adjacent to the channel. If the floodplain or river terrace averages greater that 30 feet (10 meters) in width, and is continuous along the bank, then record the respective landform as a floodplain. If the floodplain or river terrace is discontinuous, or averages less than 30 feet in width along the bank, note its presence in the "Comments," but ignore its presence for landform identification and consider the 10 acre area extending above the floodplain or river terrace.

Canopy Type: Record the predominant canopy type for both the left and right banks over a minimum of 5 acres. If more than one distinct canopy type occurs along a site, record the canopy type occupying the greatest length of the site. Canopy types are identified using the Tongass National Forest - Chatham Area Canopy Type Legend. The canopy type is determined in the office from the aerial photograph having the effective area containing the site. It is verified in the field by observing canopy crown closure, species composition, and site productivity characteristics.

Plant Associations and Vegetation: Record the predominant Plant Association (PA) or vegetation species occurring on the left and right banks, respectively. These classifications or identifications are made while doing the sideslope angle. Record the

numeric code (see below), the percent of coverage each code provides, and the distance that community extends. The vegetative transect length is the same as that for side slope, 200'.

If the vegetation community is not an identified plant association, then record the predominant overstory, understory, and groundcover vegetation species using the appropriate numeric codes (see "Vegetation Codes for Nonforest Plant Associations"). For each species, record the following:

Specie: record the specie code.

Cover: record the canopy coverage in percent.

The subsequent columns are used to record any additional vegetation community breaks in the same fashion along the 200 foot transect. Record the distance from the channel where the breaks occur. If the vegetative community does not change between the stream and 200 feet of it, then record 200 feet as the distance under PA #1

Site Disturbed: Record whether the site has been disturbed by management activities or catastrophic natural processes. "YES" is circled if a site has one or more of the following characteristics:

a. Any obvious tree falling (selection cutting or clearcutting) has occurred within 100 feet on at least one side of the channel either immediately adjacent to or immediately upstream of the site.

b. More than 25 percent of the upstream basin area is covered by second growth vegetation less than 30 years old.

c. Blowdown or mass erosion affects more than 30 percent of the entire segment. Upper bank sliding and debris torrents in headwater or tributary channels also qualify as site disturbance and should be noted.

If "YES" is circled, note in the COMMENTS what type of disturbance occurs.

Sideslope Length and Angle: Record the adjacent sideslope distances and angles for each stream bank, RIGHT and LEFT, along a 200 foot transect laid out perpendicular to the channel banks. Slope distances and angles are recorded along the transect at each significant change in slope. Slope distances are recorded opposite RIGHT and LEFT DISTANCE

and slope angles opposite "ANGLE." Slopes may be recorded as either positive or negative, no sign will be assumed to be plus, an upward slope.

Trap Results: Minnow traps, baited with fish eggs, are set for a minimum of 30 minutes. When the site sample is completed, the fish are enumerated by species, and recorded by catch per trap.

Stream Gradient: Record the stream gradient. Gradient is measured over at least two pool/riffle (or glide/riffle) sequences.

The sampler stands at the water's edge and flags their eye height on a piece of overhanging vegetation. They then walk as far down the site as possible, keeping the flagging visible, and stand at the water's edge. The gradient is determined by sighting on the flagging with the clinometer while standing straight. This number is recorded to the nearest 0.5 percent.

Incision Depth: Record the appropriate incision depth class separately for each bank. The incision depth is the distance between the channel bottom and the top of the upper bank. In entranched channels, the streambank and the valley wall may coincide. Estimate a representative section of each bank using a range finder.

Substrate: Record the percentages of the substrate size classes opposite their respective names. Percentages should be totaled to check for possible calculation errors.

Channel Pattern: Record the relative proportion of channel patterns occurring over the entire sampling site length.

a. Single: Channels having one single channelway with a single thalweg that generally parallels the banks. Side channels or overflow areas cover less than 10 percent of the site bankfull width.

b. Multiple: Channels having more than one channelway or flow path occurring within the bankfull area which cover greater than 10 percent of the site bankfull width. These channels still have a single thalweg over most of their length, but the thalweg often has shorter meander wavelengths than the bankfull channel meander wavelength.

c. Braided: Channels having numerous flowpaths, discontinuous thalweg, and extensive bar and riffle development.

Bank Control: Choose a streambank composition which best typifies the entire segment. These are:

a. Bedrock: channels contained within rock walls or with extensive outcropping along the banks and bed (greater than 15 percent of the channel length).

b. Mixed: Channels contained within a mixture of colluvial, alluvial, and bedrock materials with consistent, but not extensive, bedrock occurrence within the banks or bed (2-15 percent of the channel length).

c. Alluvium: Channels cut into alluvium with only very infrequent bedrock occurrence in the banks and bed (less than two percent of the channel length).

Stream Geometry: Stream geometry measurements are taken along a cross-section that is located at a straight section of the site and that is representative of the widths and depths occurring within the site. Locate it away from local constrictions such as large woody debris accumulations, bedrock constrictions, or large boulder accumulations. If the above mentioned conditions cannot be located, notes to that effect should be recorded in the comment section.

Distinctive high water marks such as consistent exposures or raw bank material, significant breaks in slope on the banks and change from presence to absence of hydrophytic or disturbance vegetation are used to distinguish the mean annual high water level.

Bankfull Width and Depth. Record the bankfull width and depth. Bankfull width and depths are measured using a 100 ft. tape measure and a stadia rod.

Active Width: Active width is the width of the channel which contains water at the time of sampling.

Available Spawning Area (ASA): Record the percent of the active surface area which is ASA. This is a visual estimate that is made to the nearest 5%. Only "good" quality or better ASA is included in this estimate (do not include marginal habitat).

ASA is that area of the stream bottom used by the fish to spawn. A hard and fast definition of gravel sizes or water velocities that go together to qualify as spawning gravel is not possible. Depending on what a stream has to offer, different gravel sizes and water velocities may be used as spawning gravels.

Size and Shape - Ideally, gravels should be well rounded and approximately 1.0 to 6.0 inches in diameter. However, the size of fish using the gravels must be considered. Small resident trout may prefer to spawn in gravels less than 1.0 inch in diameter, while large king salmon can successfully work gravels 8.0 to 10.0 inches in diameter. If the gravels are open enough, the eggs may settle into them without necessity of the fish moving the gravel.

Fine Sediment Content - Spawning gravels should contain little fine materials (less than 2.0 mm in size). When gravels with low fine content are dug into, the water passing over the site clears rapidly if it has been discolored by the digging. Gravels containing much fine material discolor the water when they are moved by a foot or shovel. In these areas, the water often takes several seconds to clear to its normal state, even in rapidly flowing areas.

Compaction - Spawning gravels are easily moved when field personnel walk on them. Gravels may be compacted due to shape (angular, flat, not rounded) or sedimentation (fines fill in interstices and form "solid" mass). Gravels that move very little when walked on and are hard to dig by hand are obviously difficult for salmonids to construct redds in, and often do not allow sufficient water to pass through the gravel interstices to permit good egg and alevin survival.

Water Flow - Intragravel water flows are only guessed at by field personnel looking at surface water flows, gravel fine content, and gravel compaction. Compacted gravels with large amounts of fines probably have very poor intragravel water flows, likewise gravels located at the bottom of a large deep pool. Conversely, areas with loose, easily worked gravel with little fine material in fast flowing sections of a stream probably have excellent intragravel water flows.

Available Rearing Area ARA:

Record the percent of the active surface area which is ARA. This is a visual estimate that is made to the nearest 5%.

Rearing area is that portion of the active stream channel that contains adequate food and cover for sustaining juvenile salmonids. Good rearing area is most often identified by the presence of low flow velocities and significant amounts of cover such as undercut banks and large stable organic debris, and deepwater areas that juvenile salmonids can overwinter in. Proximity to riffle areas generally assumed to be food producing areas

should also be considered. A shallow water, gravel bottom riffle with little instream cover (remember: depth is cover) exemplifies poor rearing habitat if it is not associated with areas that provide cover.

Record the percent of the active surface area which is pools. This is a visual estimate that is made to the nearest 5%.

A pool is a portion of the active stream channel with water deeper than that within the surrounding areas, and often with reduced current velocity, which is frequently usable by fish for resting and cover. Generally, the water surface gradient is lower (i.e. flatter) over the pool than that of the surrounding water area. The channel bottom at the downstream end of the pool is marked by a negative (i.e. upslope) gradient (Wester Division, American Fisheries Society,. 1985, Bayha and Gabreirsen, 1979).

Mean Pool Depth (P. Depth): Record the mean depth for all pools in the sample site. Use the same measurement units (i.e., feet or meters) used for STREAM GEOMETRY. Record this value to the nearest 0.1 m or 0.1 ft, as appropriate. This measurement is made by determining the mean depth for all pools in the sample site, and then determining the overall mean from these separate means.

Transect Distance: Record the length of the sample site in feet.

Average Key Piece Diameter: Record the modal diameter of the LOD key piece in inches. This size is determined by noting the diameter size class in the LOD Tally which has the greatest number of circled tally marks (see below for explanation).

Average Key Piece Length: Record the modal length of the LOD key piece in feet. This size is determined by noting the length size class in the LOD Tally which has the greatest number for circled tally marks (see below for explanation)

The LOD tally is a transect count of all large organic debris within the bankfull width of the channel. The transect is conducted over the entire site. The LOD is tallied by average diameter and total length of each piece. Minimum size tallied is 4 inches by 10 feet in length unless it has a root wad attached. Clump association types are defined as follows:

"A": Single piece of LOD

"B": Loose association of debris, independent of the

number of pieces, in which the pieces are not colinear in orientation or tightly packed and cemented together by smaller debris.

"C": Debris jam consisting of multiple pieces, generally colinear in orientation, which are usually cemented together by small debris.

"E": Any piece with a root wad attached in which the root wad is acting to anchor or stabilize the debris piece in the channel. If the root wad is not effective in stabilizing the piece, it is not considered an "E" type.

COMMENTS: Record any significant conditions or factors which may affect the data collected, or its interpretation. Observations to be noted include: high rainfall, rising water stage, extensive sedimentation or erosion, extensive blowdown or mass erosion, presence of anadromous fish, presence of possible fish passage barriers, land use conditions other than undisturbed, glacial till exposed in banks or bed, marine sediments exposed in banks or bed, beaver activity.

FOREST PLANT ASSOCIATIONS

100	TSHE Series	Tsuga heterophylla	Western hemlock
110	TSHE/VACCI	/Vaccinium spp.	/blueberry
120	TSHE/VACCI/DRAU	/Vaccinium spp.	/blueberry
		/Dryopteris austriaca	/spinulose shield-fern
130	TSHE/VACCI/LYAM	/Vaccinium spp.	/blueberry
		/Lysichitum americanum	/skunk cabbage
140	TSHE/VACCI-OPHO (HP)	/Vaccinium spp.	/blueberry
		/Oplopanax horridium	/devil's club
150	TSHE/VACCI-OPHO (MP)	/Vaccinium spp.	/blueberry
		/Oplopanax horridium	/devil's club
160	TSHE/OPHO	/Oplopanax horridium	/devil's club
170	TSHE/OPHO/LYAM	/Oplopanax horridium	/devil's club
		/Lysichitum americanum	/skunk cabbage
180	TSHE/OPHO/POMU	Oplopanax horridum/	/devil's club
		Polystichum munitum	sword fern
190	TSHE/VACCI/POMU	Vaccinium spp.	blueberry
		Polystichum munitum	sword fern
200	TSHE-CHNO Series	Tsuga heterophylla	Western hemlock
		-Chamecyparis nootkatensis	-Alaska cedar
210	TSHE-CHNO/VACCI	/Vaccinium spp.	/blueberry
220	TSHE-CHNO/VACCI/LYAM	/Vaccinium spp.	/blueberry
		/Lysichitum americanum	/skunk cabbage
250	TSHE-CHNO/VACC-OPHO	/Vaccinium spp	/blueberry
		/Oplopanax horridum	/devilsclub
300	PISI Series	Picea sitchensis	Sitka spruce
305	PISI/MYGA/CAREX	/Myrica gale/Carex	/sweet gale/ sedge
310	PISI/VACCI	/Vaccinium spp.	/blueberry
315	PISI/SALIX	/Salix	/willow
320	PISI/VACCI-OPHO	/Vaccinium spp.	/blueberry
		/Oplopanax horridium	-devil's club
325	PISI/VACCI-SALIX	/Vaccinium spp.	/blueberry
		-Salix spp.	-willow
330	PISI/OPHO	/Oplopanax	/devil's club
340	PISI/OPHO/LYAM	/Oplopanax horridium	/devil's club
		/Lysichitum americanum	/skunk cabbage
350	PISI/ALNUS	/Alnus spp.	/alder
360	PISI/CANU	/Calamagrostis nutkaensis	/Pacific reedgrass
370	PISI/VACCI/LYAM	/Vaccinium/	/blueberry
		Lysichitum americanum	/skunk cabbage
380	PISI/RUSP	Rubus spectabilis	/salmonberry
390	PISI/MOSS	Moss spp.	moss

400	MIXED CONIFER Series	Mixed Conifer	Mixed Conifer
410	MXD CON/VACCI	/Vaccinium spp.	/blueberry
420	MXD CON/VACCI/LYAM	/Vaccinium spp.	/blueberry
		/Lysichitum americanum	/skunk cabbage
430	MXD CON/VACCI/FACR	/Vaccinium spp.	/blueberry
		/Fauria crista-galli	/deer cabbage
440	MXD CON/LYAM-ATFI	/Lysichitum americanum	/skunk cabbage
		-Athyrium filix-femina	-lady fern
450	MXD CON/GASH/FACR	/Gaultheria shallon	/salal
		/Fauria crista-galli	/deer cabbage
460	MXD CON/VACCI-GASH	/Vaccinium spp	/blueberry
		/Gaultheria shallon	/salal
470	MXD CON/GASH/LYAM	/Gaultheria shallon	/salal
		/Lysichitum americanum	/skunk cabbage
480	MXD CON/GASH	/Gaultheria shallon	/salal
500	TSME Series	Tsuga heterophylla	Mountain hemlock
510	TSME/VACCI	/Vaccinium spp.	/blueberry
520	TSME/VACCI-CLPY	/Vaccinium spp.	/blueberry
		-Cladothamnus pyrolaeflorus	-copper bush
530	TSME/VACCI-CAME	/Vaccinium spp.	/blueberry
		-Cassiope mertensiana	-Mertens cassiope
540	TSME/VACCI/VEVI	/Vaccinium spp.	/blueberry
		/Veratrum viride	/false hellebore
600	PICO Series	Pinus contorta	Shore Pine
610	PICO/EMNI	/Empetrum nigrum	/crowberry
700	TSHE-THPL Series	Tsuga heterophylla-Thuja plicata	
710	TSHE-THPL/VACCI	/Vaccinium spp	/blueberry
720	TSHE-THPL/POMU	/Polystichum munitum	/swordfern
730	TSHE-THPL/VACCI/LYAM	/Vaccinium spp	/blueberry
		/Lysichitum americanum	/skunk cabbage
740	TSHE-THPL/OPHO/POMU	/Oplopanax horridum	/devilsclub
		/Polystichum munitum	/swordfern
750	TSHE-THPL/VACCI-OPHO	/Vaccinium spp	/blueberry
		/Oplopanax horridum	/devilsclub
760	TSHE-THPL/VACCI-GASH	/Vaccinium spp	/blueberry
		/Gaultheria shallon	/salal
770	TSHE-THPL/GASH-LYAM	/Gaultheria shallon	/salal
		/Lysichitum americanum	/skunk cabbage
780	TSHE-THPL/GASH	/Gaultheria shallon	/salal
790	TSHE-THPL/OPHO/LYAM	/Oplopanax horridum	/devilsclub
		/Lysichitum americanum	/skunk cabbage
800	PISI-POTR Series	Picea sitchensis-Populus trichocarpa	
810	PISI-POTR/ALNUS	/Alnus spp.	/alder
820	PISI-POTR/SALIX	/Salix spp.	/willow
830	PISI-POTR/OPHO	/Oplopanax horridum	/devil's club
840	PISI-POTR/ALNUS/OPHO	/Alnus spp.	/alder
		/Oplopanax horridum	/devil's club
850	PISI-POTR/VACCI-OPHO	/Vaccinium spp.	/blueberry
		-Oplopanax horridum	-devil's club

VEGETATION CODES FOR NONFOREST PLANT ASSOCIATIONS

ABBRE-VIATION	CODE	GENUS AND SPECIES	COMMON NAME
		OVERSTORY	
ALRU	01	ALNUS RUBRA	RED ALDER
		UNDERSTORY	
ALSI	25	ALNUS SINUATA	SITKA ALDER
CLPY	40	CLADOTHAMNUS PYROLAEFLORUS	COPPERBUSH
COST	05	CORNUS STOLONIFERA	RED OSIER DOGWOOD
LUPE	10	LUETKEA PECTINATA	LUETKEA
MEFE	55	MENZIESIA FERRUGINEA	RUSTY MENZIESIA
OPHO	45	OPLOPANAX HORRIDUM	DEVIL'S CLUB
RI	60	RIBES _____	CURRANT/GOOSEBERRY
RUPA	03	RUBUS PARVIFLORUS	THIMBLE BERRY
RUSP	35	RUBUS SPECTABILIS	SALMONBERRY
SALIX	20	SALIX SPP.	WILLOW
SARA	07	SAMBUCUS RACEMOSA	RED ELDERBERRY
VACCI	50	VACCINIUM OVAL./ALASKEN.	BLUEBERRY
VAPA	02	VACCINIUM PARVIFOLIUM	RED HUCKLEBERRY
VIED	04	VIBURNUM EDULE	HIGH BUSH CRANBERRY
		GRASS/FORB LAYER	
ATFI	51	ATHYRIUM FILIX-FEMINA	LADY FERN
ARNIC	52	ARNICA SPP.	ARNICA
CABI	53	CALTHA BIFLORA	MARSH MARIGOLD
CIAL	54	CIRCAEA ALPINA	ENCHANTER'S NIGHTSHADE
CLUN	93	CLINTONIA UNIFLORA	BLUE-BEAD
COTR2	56	COPTIS TRIFOLIA	TRIFOLIATE GOLDTHREAD
COCA	57	CORNUS CANADENSIS	BUNCHBERRY DOGWOOD
DODEC	58	DODECATHEON SPP.	SHOOTING STAR
EP	59	EPILOBIUM	FIREWEED
EQUIS	65	EQUISETUM SPP.	HORSETAIL
FACR	61	FAURIA CRISTA-GALLI	DEER CABBAGE
GA	62	GALIUM_____	BEDSTRAW
GEDO	63	GENTIANA DOUGLASIANA	SWAMP GENTIAN
GEPL	64	GENTIANA PLATYPETALA	BLUE GENTIAN
GECA4	66	GEUM CALTHIFOLIUM	CALTHA-LEAF AVENS
HELA	67	HERACLEUM LANATUM	COW PARSNIP
HIMO	68	HIPPURIS MONTANA	MOUNTAIN MARESTAIL
LI	69	LISTERA _____	TWAYBLADE
LYAM	71	LYSICHITUM AMERICANUM	YELLOW SKUNK CABBAGE
MADI2	72	MAIANTHEMUM DIALATATUM	DEERBERRY
MOUN	73	MONESES UNIFLORA	SINGLE DELIGHT
OS	74	OSMORHIZA _____	SWEET CICELY

ABBRE-VIATION	CODE	GENUS AND SPECIES	COMMON NAME
PAFI	76	PARNASSIA FIMBRIATA	GRASS OF PARNASSUS
PIVU	77	PINGUICULA VULGARIS	COMMON BUTTERWORT
PRAL	78	PRENANTHES ALATA	RATTLESNAKE ROOT
PTAQ	79	PTERIDIUM AQUILINUM	WESTERN BRACKEN FERN
PYAS	81	PYROLA ASARIFOLICE	WINTERGREEN
RA	82	RANUNCULUS	BUTTERCUP
RUPE	83	RUBUS PEDATUS	FIVE-LEAF BRAMBLE
SA	84	SANGUISORBA	BURNET
SA	85	SAXIFRAGA	SAXIFRAGE
STAM	86	STREPTOPUS AMPLEXIFOLIUS	CLASPING TWISTED-STALK
STRO	87	STREPTOPUS ROSEUS	ROSY TWISTED-STALK
TITR	88	TIARELLA TRIFOLIATA	TRIFOLIATE FOAMFLOWER
VASI	89	VALERIANA SITCHENSIS	SITKA VALERIAN
VEVI	90	VERATRUM VIRIDE	FALSE HELLEBORE
VIGL	91	VIOLA GLABELLA	STREAM VIOLET
VILA	92	VIOLA LANGSDORFFII	ALASKA VIOLET

ESTUARINE

E1	11	SPARSELY VEGETATED MUDFLAT
E2	12	ESTUARINE SEDGE MARSHLAND
E3	13	MIXED FORB GRASSLAND

ALPINE

A1	21	ALPINE MEADOW

MUSKEG

M1	15	SEDGE AND SPHAGNUM
M2	30	MYRICA GALE
M3	31	SCOURING RUSH

OTHER

	70	BARE ROCK
	75	BARE ALLUVIUM
	80	CLEARCUT

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