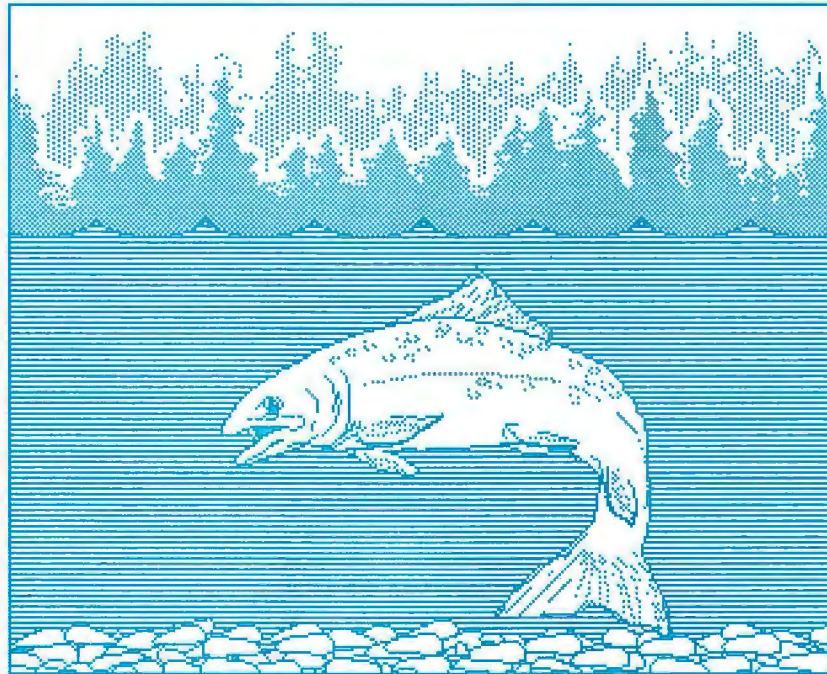


# Fish Habitat Inventory & Information Program

## STREAM SUMMARY CATALOGUE

SUBDISTRICT # 17  
NANAIMO



CATNO  
110226

# **Fish Habitat Inventory & Information Program**

**STREAM SUMMARY  
CATALOGUE  
SUBDISTRICT # 17  
NANAIMO**

**South Coast Division  
Fisheries Branch  
Department of Fisheries & Oceans**

**July 1988**

## PREFACE

This catalogue contains a summary of information on fish and fish habitat for 42 streams in DFO Subdistrict #17, Nanaimo. The catalogue is organized as follows:

- 1.0 Map Indices;
- 2.0 User Guides;
- 3.0 Stream Summaries;
- 4.0 Bibliography; and
- 5.0 Stream Information Summary maps.

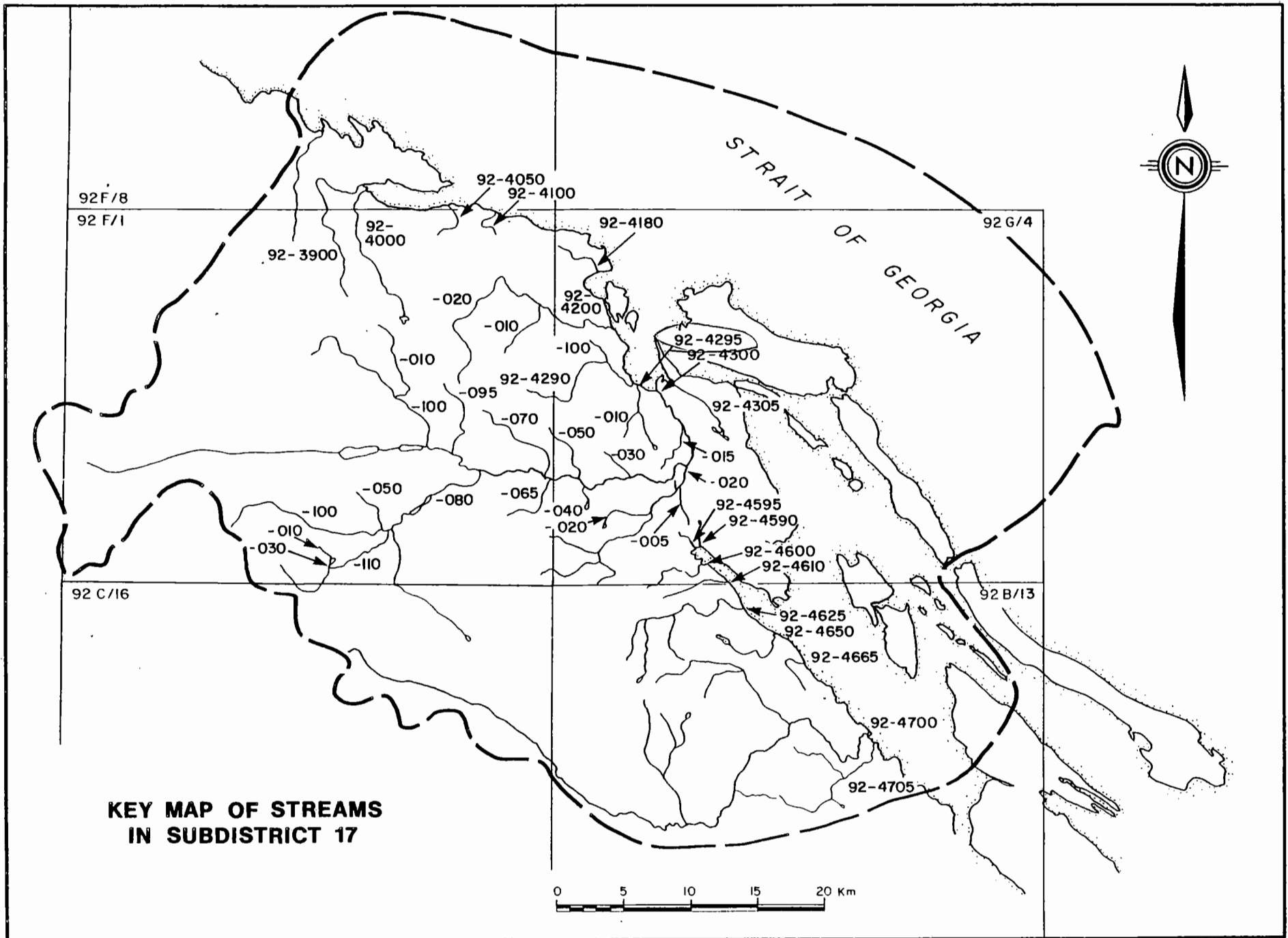
Stream Information Summaries and escapement records are arranged by watershed code. Cross indices of watershed codes and stream names are included in section 1.0 of this catalogue.

## ACKNOWLEDGEMENTS

This catalogue was prepared by G. Kapahi under a contract managed by B. D. Tutty, South Coast Division. Catalogue production was coordinated by J.S. Mathers, Habitat Management Division. The assistance of Fishery Officers C. Harlow, D. Housego and R. Brahniuk in providing & verifying much of the information is greatly appreciated. Stream Information Summaries were produced by K. Pontus, Habitat Management Division, using the Stream Information Summary System (SISS). Escapement graphics were developed by G. Serbic and data were compiled by L. Lapi, M. Holmes and G. Hudson, Pacific Biological Station, Nanaimo, using the Salmon Escapement Data System (SEDS).

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**KEY MAP OF STREAMS  
IN SUBDISTRICT 17**

WATERSHED CODE LISTING OF STREAM NAMES - SUBDISTRICT # 17

---

WATERSHED CODE	GAZETTED NAME	LOCAL NAME
92-3900	NANOOSE C	
92-4000	BONELL C	BRUNEL C
		BRUNNEL C
92-4050	KNARSTON C	BENWALDEN C
		BENWALDON C
92-4100	BLOODS C	
92-4180	DEPARTURE C	KEIGHLEY C
92-4200	MILLSTONE R	MILLSTREAM R
92-4200-010	UNNAMED C	DIVER LAKE C
		JINGLE C
92-4200-020	BENSON C	
92-4290	CHASE R	
92-4290-100	UNNAMED C	CAT STREAM C
92-4295	BECK C	HONG KONG C
92-4295-010	RICHARDS LAKE C	
92-4300	NANAIMO R	
92-4300-015	THATCHER C	
92-4300-020	HASLAM C	
92-4300-020-005	NAPOLEON C	STINKY C
92-4300-020-020	NORTH HASLAM C	
92-4300-030	STARK LAKE C	
92-4300-040	MCKAY LAKE C	
92-4300-050	BERKLEY C	
92-4300-065	UNNAMED C	
92-4300-070	BOULDER C	
92-4300-070-010	MANSON C	
92-4300-080	SOUTH FORK NANAIMO R	
92-4300-080-100	DUNSMUIR C	
92-4300-080-100-050	UNNAMED C	
92-4300-080-110	JUMP C	
92-4300-080-110-030	UNNAMED C	4TH FORK JUMP C
92-4300-080-110-030-010	UNNAMED C	JENKINS C
92-4300-095	WOLF C	
92-4300-100	NORTH NANAIMO R	DEADWOOD C
92-4300-100-010	BLACKJACK C	
92-4305	UNNAMED C	HOLDEN C; HOLDEN LAKE C
92-4590	UNNAMED C	THOMAS C
92-4595	UNNAMED C	WALKERS C; PERRY C
92-4600	BUSH C	
92-4610	UNNAMED C	ROCKEY C; ROCKY C
92-4625	HOLLAND C	103RD C
92-4650	STOCKING C	DAVIS LAGOON C; JACKMAN C
92-4665	UNNAMED C	PORTER C; PORTER'S C;
		PORTERS C
92-4700	CHEMAINUS R	
92-4705	BONSALL C	

ALPHABETICAL LISTING OF STREAM NAMES AND WATERSHED CODES - SUBDISTRICT # 17

WATERSHED CODE	GAZETTED NAME	LOCAL NAME
92-4295	BECK C	HONG KONG C
92-4200-020	BENSON C	
92-4300-050	BERKLEY C	
92-4300-100-010	BLACKJACK C	
92-4100	BLOODS C	
92-4000	BONELL C	BRUNEL C BRUNNEL C
92-4705	BONSALL C	
92-4300-070	BÖULDER C	
92-4600	BUSH C	
92-4290	CHASE R	
92-4700	CHEMAINUS R	
92-4180	DEPARTURE C	KEIGHLEY C
92-4300-080-100	DUNSMUIR C	
92-4300-020	HASLAM C	
92-4625	HOLLAND C	103RD C
92-4300-080-110	JUMP C	
92-4050	KNARSTON C	BENWALDEN C BENWALDON C
92-4300-070-010	MANSON C	
92-4300-040	MCKAY LAKE C	
92-4200	MILLSTONE R	MILLSTREAM R
92-4300	NANAIMO R	
92-3900	NANOOSE C	
92-4300-020-005	NAPOLEON C	STINKY C
92-4300-020-020	NORTH HASLAM C	
92-4300-100	NORTH NANAIMO R	DEADWOOD C
92-4295-010	RICHARDS LAKE C	
92-4300-080	SOUTH FORK NANAIMO R	
92-4300-030	STARK LAKE C	
92-4650	STOCKING C	DAVIS LAGOON C; JACKMAN C
92-4300-015	THATCHER C	
92-4200-010	UNNAMED C	DIVER LAKE C JINGLE C CAT STREAM C
92-4290-100	UNNAMED C	
92-4300-065	UNNAMED C	
92-4300-080-100-050	UNNAMED C	
92-4300-080-110-030	UNNAMED C	4TH FORK JUMP C
92-4300-080-110-030-010	UNNAMED C	JENKINS C
92-4305	UNNAMED C	HOLDEN C; HOLDEN LAKE C
92-4590	UNNAMED C	THOMAS C
92-4595	UNNAMED C	WALKERS C; PERRY C
92-4610	UNNAMED C	ROCKEY C; ROCKY C
92-4665	UNNAMED C	PORTER C; PORTER'S C; PORTERS C
92-4300-095	WOLF C	

DISTRICT/  
Subdistrict

Address

DISTRICT #1

- Kamloops  
202 - 317 Seymour St., Kamloops, V2C 2E9  
Salmon Arm (29K) Box 1160, Salmon Arm, VOE 2T0  
Prince George (29I) 2392 Ospika Blvd., Prince George, V2N 3N5  
Clearwater (29J) Box 610, Clearwater, VOE 1N0  
Lillooet (29F) Box 315, Lillooet, V0K 1V0  
Quesnel (29H) 1205 North Highway 97, Quesnel, V2J 2Y3  
Williams Lake (29G) 260D N. Broadway, Williams Lake, V2G 2X9

DISTRICT #2

- New Westminster  
301 - 80 6th St., New Westminster, V3L 5B3  
Vancouver (28A) 301 - 80 6th St., New Westminster, V3L 5B3  
Surrey (29B) 301 - 80 6th St., New Westminster, V3L 5B3  
Coquitlam (29C) 301 - 80 6th St., New Westminster, V3L 5B3  
Steveston (29A) 12551 No. 1 Road, Richmond, V7E 1T7  
Squamish (28B) Box 85, Squamish, V0N 3G0  
Mission (29D) Box 3308, Mission, V2V 4J5  
Chilliwack (29E) 45742A Yale Rd. West, Chilliwack, V2P 2N4

DISTRICT #3

- Nanaimo  
305 - 60 Front St., Nanaimo, V9R 5H7  
Nanaimo/Ladysmith(17) 305 - 60 Front St., Nanaimo, V9R 5H7  
Qualicum Beach (14S) Box 1270, Qualicum Beach, V0R 2T0  
Comox (14N) 148 Port Augusta St., Comox, V9N 7Z4  
Duncan (18) Box 241, Duncan, V9L 3X3  
Powell River (15) 4488 Marine Ave., Powell River, V8A 2K2  
Pender Harbour (16) Box 10, Madeira Park, V0N 2H0

DISTRICT #4

- Port Alberni  
3019 Fourth Ave., Port Alberni, V9Y 2B8  
Port Alberni (23) 3019 Fourth Ave., Port Alberni, V9Y 2B8  
Nitinat (22) 3019 Fourth Ave., Port Alberni, V9Y 2B8  
Quatsino Sound (27) Box 10, Port Hardy, V0N 2P0  
Kyuquot (26) Box 549, Tahsis, V0P 1X0  
Tahsis (25) Box 549, Tahsis, V0P 1X0  
Tofino (24) Box 48, Tofino, V0R 2Z0

DISTRICT/  
Subdistrict

Address

DISTRICT #5

- Campbell River  
215 - 950 Alder St., Campbell River, V9W 2P8  
Campbell River (13) 215 - 950 Alder St., Campbell River, V9W 2P8  
Port Hardy (11) Box 10, Port Hardy, V0N 2P0  
Alert Bay (12) Box 9, Alert Bay, V0N 1A0

DISTRICT #6

- Victoria  
423 - 1230 Government St., Victoria, V8W 1Y3  
Victoria/Saanich (19) 423 - 1230 Government St., Victoria, V8W 1Y3  
Sooke (20) Box 460, Sooke, V0S 1N0

DISTRICT #7

- Central Coast  
222 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Kitimat (6) 315 - 450 Federal Building, Kitimat, V8C 1T6  
Butedale (6) 222 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Bella Bella (7) Box 38, Bella Bella, V0T 1B0  
Bella Coola (8) Box 130, Bella Coola, V0T 1C0  
Rivers Inlet (9) Dawsons Landing P.O., Rivers Inlet, V0N 1M0  
Smith Inlet (10) Dawsons Landing P.O., Rivers Inlet, V0N 1M0

DISTRICT #8

- Prince Rupert  
109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Waterfront 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Lower Skeena (4A) 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Grenville Prince(5) 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Lower Nass (3A) 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8  
Upper Nass (3B) Box 29, Nass Camp, V0J 3J0  
Hazelton (4C) Box 490, New Hazelton, V0J 2J0  
Smithers (4D) Box 578, Smithers, V0J 2N0  
Terrace (4B) 4721-B Lazelle Ave., Terrace, V8G 1R6

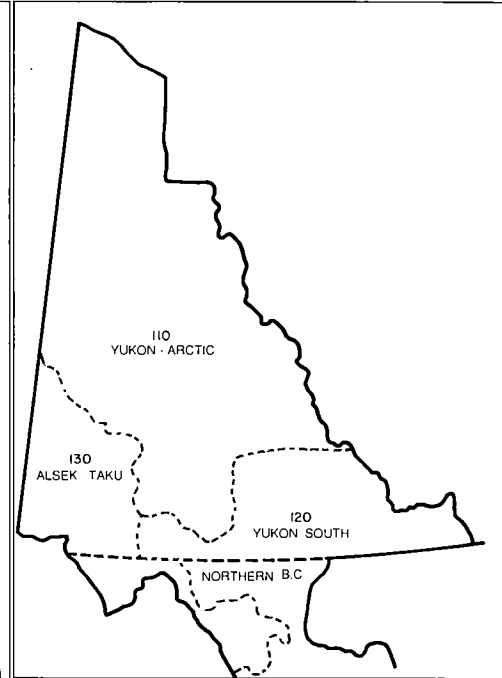
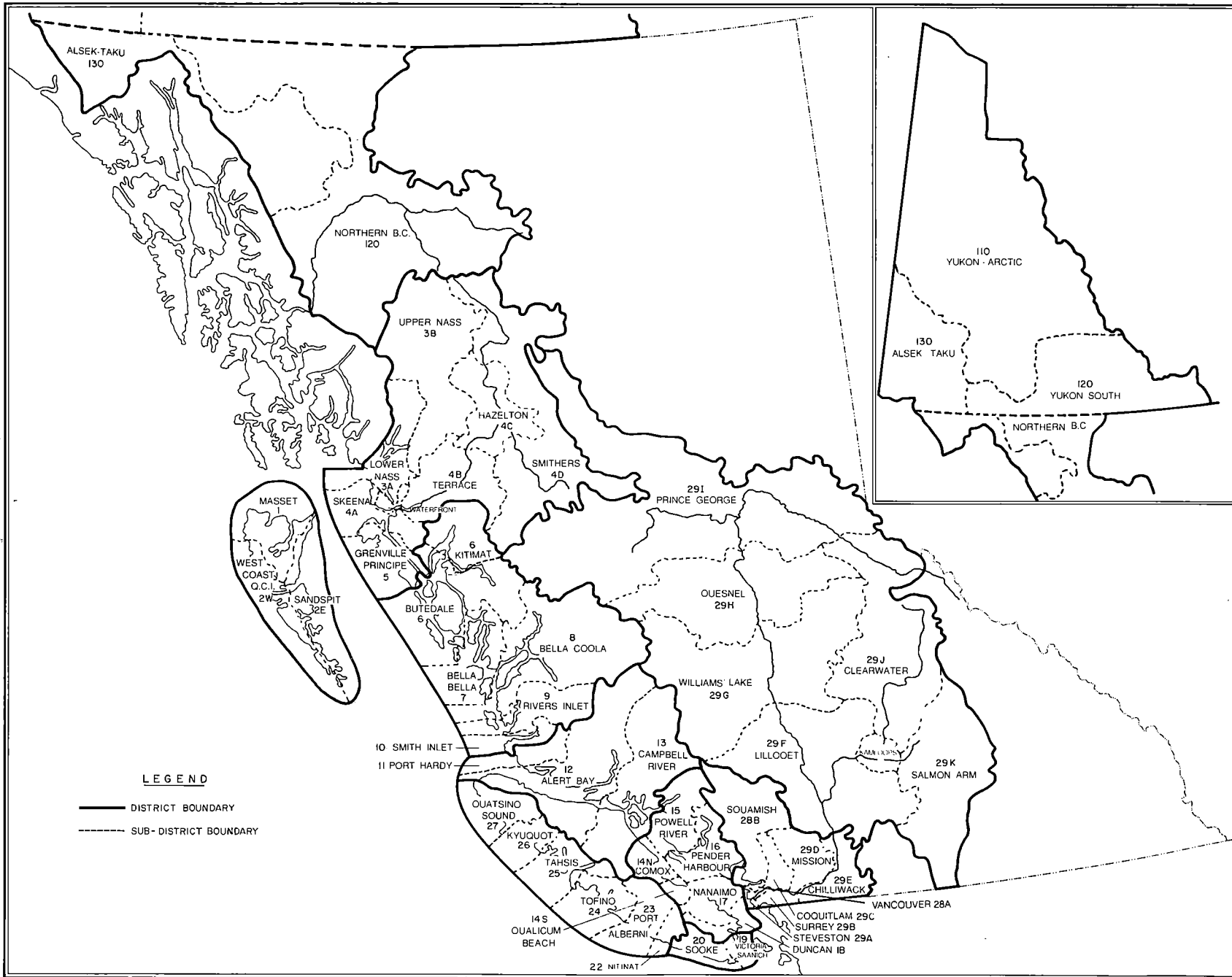
DISTRICT #9

- Queen Charlotte Islands  
Box 99, Queen Charlotte City, V0T 1S0  
West Coast Q.C.I. (2W) Box 99, Queen Charlotte City, V0T 1S0  
Masset (1) Box 99, Masset, V0T 1M0  
Sandspit (2E) Box 222, Sandspit, V0T 1T0

DISTRICT #10

- Whitehorse  
122 Industrial Rd., Whitehorse, Y.T., Y1A 2T9  
Yukon-North B.C. (120) 122 Industrial Rd., Whitehorse, Y.T., Y1A 2T9  
Yukon-Arctic (110) 122 Industrial Rd., Whitehorse, Y.T., Y1A 2T9  
Aisek-Taku (130) Box 5341, Haines Junction, Y.T., Y0B 1L0





- DISTRICT #1 — KAMLOOPS**
  - Subdist 29F - Lillooet
  - Subdist 29G - Williams Lake
  - Subdist 29H - Quesnel
  - Subdist 29I - Prince George
  - Subdist 29J - Clearwater
  - Subdist 29K - Salmon Arm
- DISTRICT #2 — NEW WESTMINSTER**
  - Subdist 28A - Vancouver
  - Subdist 28B - Squamish
  - Subdist 29A - Steveston
  - Subdist 29B - Surrey
  - Subdist 29C - Coquitlam
  - Subdist 29D - Mission
  - Subdist 29E - Chilliwack
- DISTRICT #3 — NANAIMO**
  - Subdist 14S - Qualicum Beach
  - Subdist 14N - Comox
  - Subdist 15 - Powell River
  - Subdist 16 - Pender Harbour
  - Subdist 17 - Nanaimo/Ladysmith
  - Subdist 18 - Duncan
- DISTRICT #4 — PORT ALBERNI**
  - Subdist 22 - Nitinat
  - Subdist 23 - Port Alberni
  - Subdist 24 - Tofino
  - Subdist 25 - Tahsis
  - Subdist 26 - Kyuquot
  - Subdist 27 - Quatsino Sound
- DISTRICT #5 — CAMPBELL RIVER**
  - Subdist 11 - Port Hardy
  - Subdist 12 - Alert Bay
  - Subdist 13 - Campbell River
- DISTRICT #6 — VICTORIA**
  - Subdist 19 - Victoria/Saanich
  - Subdist 20 - Sooke
- DISTRICT #7 — CENTRAL COAST**
  - Subdist 6 - Kitimat/Butedale
  - Subdist 7 - Bella Bella
  - Subdist 8 - Bella Coola
  - Subdist 9 - Rivers Inlet
  - Subdist 10 - Smith Inlet
- DISTRICT #8 — PRINCE RUPERT**
  - Subdist 3A - Lower Nass
  - Subdist 3B - Upper Nass
  - Subdist 4A - Lower Skeena
  - Subdist 4B - Terrace
  - Subdist 4C - Hazelton
  - Subdist 4D - Smithers
  - Subdist 5 - Grenville Principe
- DISTRICT #9 — QUEEN CHARLOTTE ISLANDS**
  - Subdist 1 - Masset
  - Subdist 2W - West Coast Q.C.I.
  - Subdist 2E - Sandspit
- DISTRICT #10 — WHITEHORSE**
  - Subdist 110 - Yukon Arctic
  - Subdist 120 - Yukon — North B.C.
  - Subdist 130 - Alsek — Taku

MINISTRY OF ENVIRONMENT & PARKS

Region 1: VANCOUVER ISLAND

Regional Headquarters: Nanaimo  
2569 Kenworth Rd.,  
Nanaimo, B.C.  
V9T 4P7

Region 2: LOWER MAINLAND

Regional Headquarters: Surrey  
10334-152A St.,  
Surrey, B.C.  
V3R 7P8

Region 3: SOUTHERN INTERIOR

Regional Headquarters: Kamloops  
1259 Dalhousie Dr.,  
Kamloops, B.C.  
V2C 5Z5

Sub-Regional Office: Penticton  
3547 Skaha Lake Rd.,  
Penticton, B.C.  
V2A 7K2

Sub-Regional Office: Williams Lake  
540 Borland St.,  
Williams Lake, B.C.  
V2G 1R8

Region 4: KOOTENAY

Regional Headquarters: Nelson  
310 Ward St.,  
Nelson, B.C.  
V1L 5S4

Cranbrook Office  
106-5<sup>th</sup> Ave. S.,  
Cranbrook, B.C.  
V1C 2G2

Region 5: NORTHERN

Regional Headquarters: Prince George  
1011-4<sup>th</sup> Ave.,  
Prince George, B.C.  
V2L 3H9

Sub-Regional Office: Smithers  
3726 Alfred Ave.,  
Bag 5000  
Smithers, B.C.  
V0J 2N0

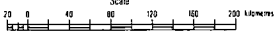
Fort St. John Office  
10142-101<sup>st</sup> Ave.,  
Fort St. John, B.C.  
V1J 2B3



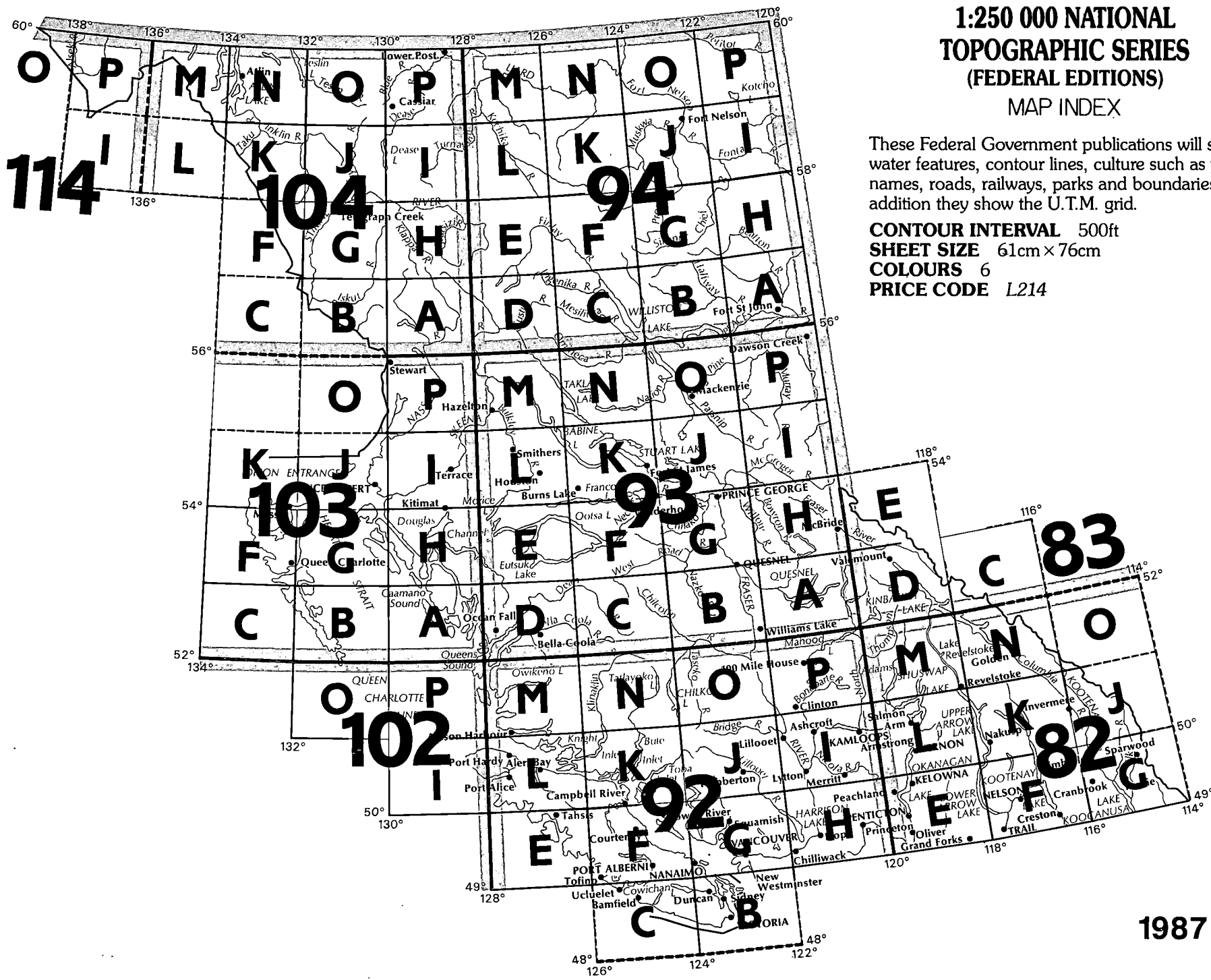
Province of British Columbia

REGIONAL BOUNDARIES  
FOR THE  
MINISTRY OF ENVIRONMENT AND PARKS  
August, 1984

- Regional Boundary and Number — 3
- Regional Centre ..... ●
- Sub Regional Centre ..... ○



Drawn and Produced by Mapping Section, Surveys and Mapping Branch, Ministry of Environment, Victoria, British Columbia.



**1:250 000 NATIONAL  
TOPOGRAPHIC SERIES  
(FEDERAL EDITIONS)**

**MAP INDEX**

These Federal Government publications will show water features, contour lines, culture such as place names, roads, railways, parks and boundaries. In addition they show the U.T.M. grid.

**CONTOUR INTERVAL** 500ft  
**SHEET SIZE** 61cm x 76cm  
**COLOURS** 6  
**PRICE CODE** L214

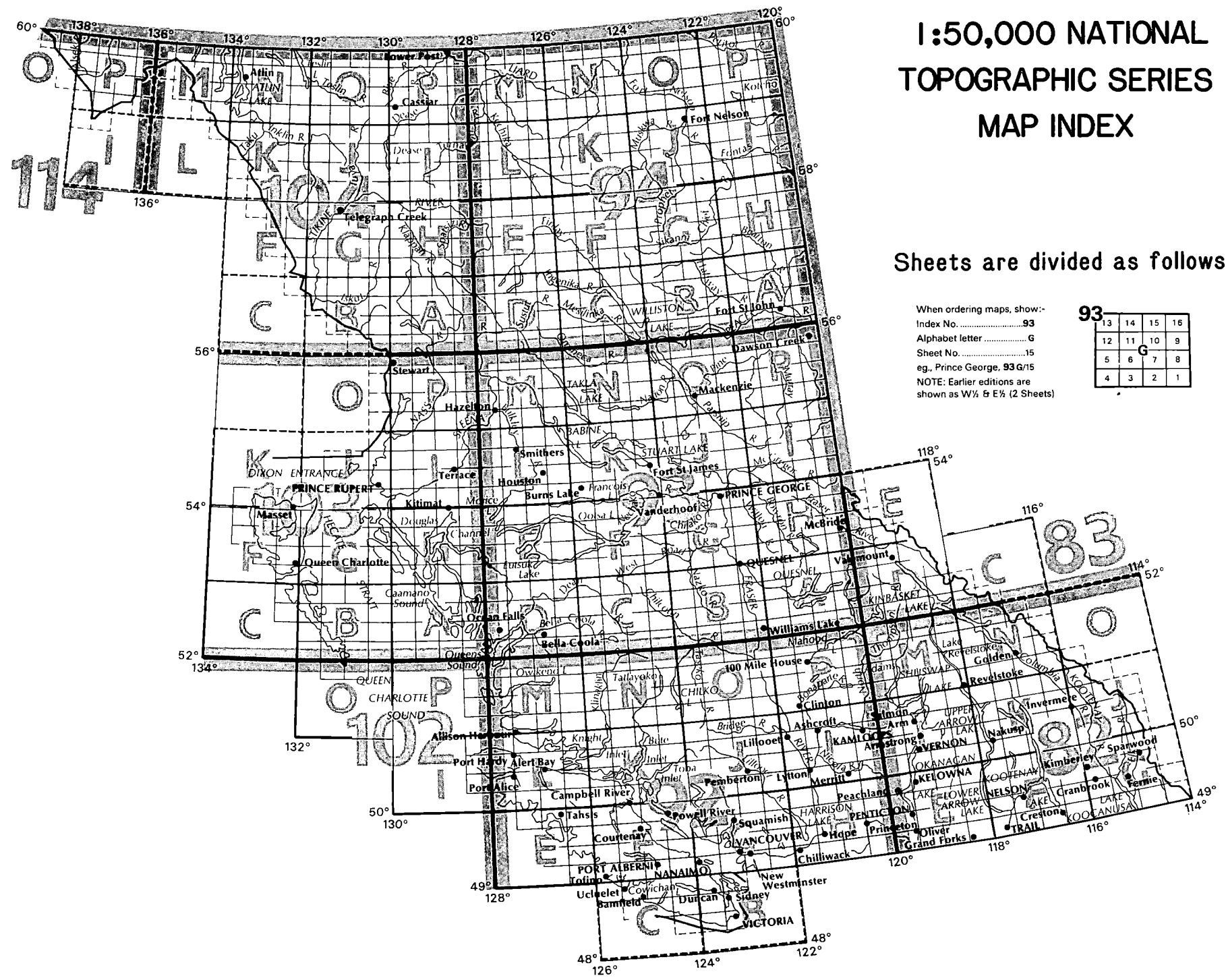
# 1:50,000 NATIONAL TOPOGRAPHIC SERIES MAP INDEX

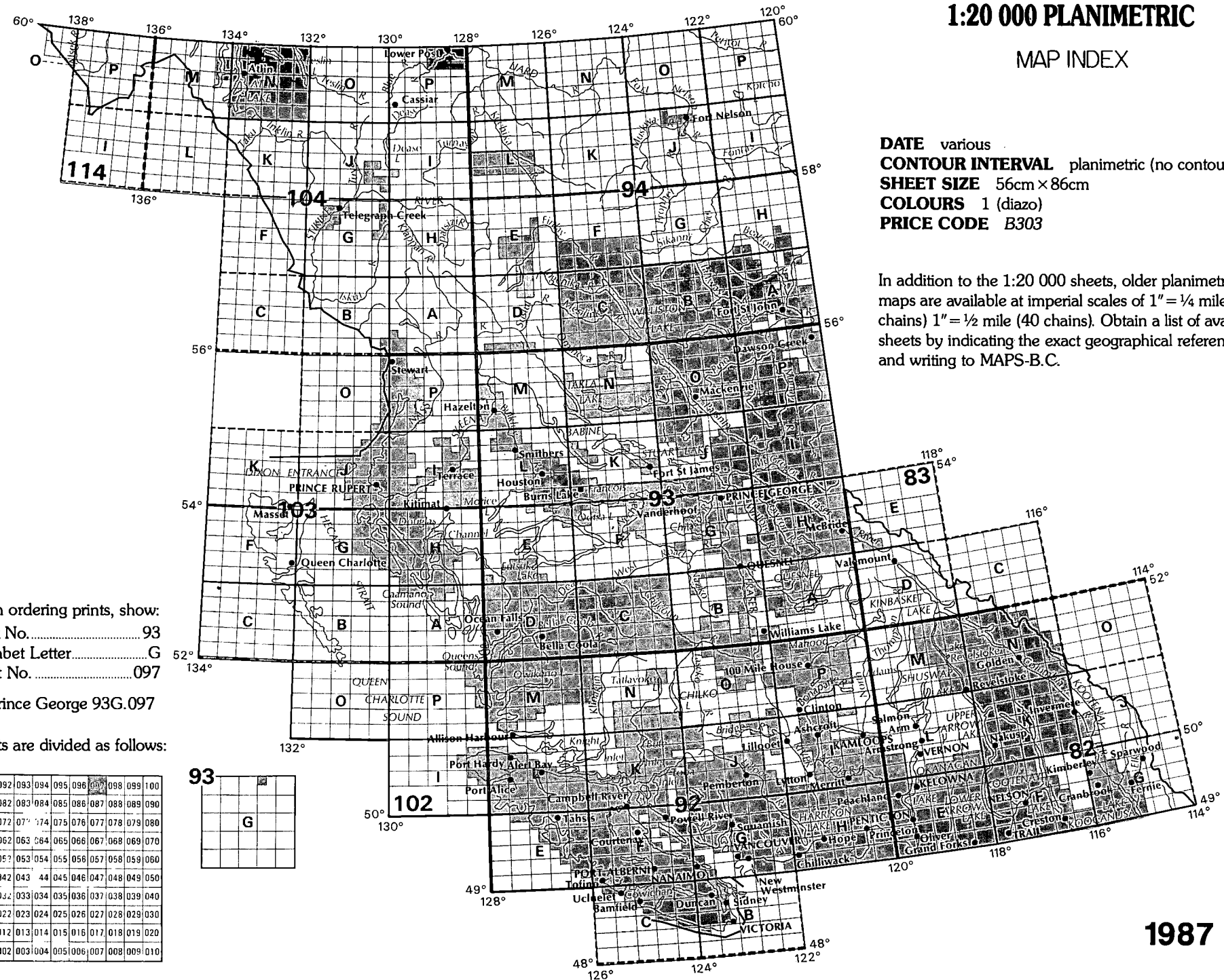
Sheets are divided as follows:

When ordering maps, show:-  
 Index No. .... 93  
 Alphabet letter ..... G  
 Sheet No. .... 15  
 eg., Prince George, 93 G/15  
 NOTE: Earlier editions are shown as W½ & E½ (2 Sheets)

93

13	14	15	16
12	11	10	9
5	6	G	8
4	3	2	1





# 1:20 000 PLANIMETRIC

## MAP INDEX

**DATE** various  
**CONTOUR INTERVAL** planimetric (no contours)  
**SHEET SIZE** 56cm x 86cm  
**COLOURS** 1 (diaz)  
**PRICE CODE** B303

In addition to the 1:20 000 sheets, older planimetric maps are available at imperial scales of 1" = 1/4 mile (20 chains) 1" = 1/2 mile (40 chains). Obtain a list of available sheets by indicating the exact geographical reference and writing to MAPS-B.C.

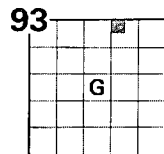
When ordering prints, show:

Index No. .... 93  
 Alphabet Letter ..... G  
 Sheet No. .... 097

eg. Prince George 93G.097

Sheets are divided as follows:

091	092	093	094	095	096	097	098	099	100
081	082	083	084	085	086	087	088	089	090
071	072	073	074	075	076	077	078	079	080
061	062	063	064	065	066	067	068	069	070
051	052	053	054	055	056	057	058	059	060
041	042	043	044	045	046	047	048	049	050
031	032	033	034	035	036	037	038	039	040
021	022	023	024	025	026	027	028	029	030
011	012	013	014	015	016	017	018	019	020
001	002	003	004	005	006	007	008	009	010



## 2.0 USER GUIDES

## 2.1 STREAM INFORMATION SUMMARY (SIS)

The Stream Information Summary (SIS) form, designed by the Fish Habitat Inventory & Information Program, has been used by Departmental staff and contractors to compile existing information on a stream by stream basis. A companion computer database, the Stream Information Summary System (SISS), is designed for the input, storage and output of SIS information. The SISS "User's Manual" provides details on coding SIS forms and operation of the computer system. A number of codes are used during data entry to SISS. In all cases the equivalent of the code is printed on the SISS output. Notwithstanding, a complete list of codes is provided in Tables 1 and 2. Most information on the SIS form is linked to a reference number. The source of the information can, therefore, be determined from the reference list at the back of each SIS printout. Although the preparation of Stream Information Summaries has been thorough, the focus has been on collecting key information rather than all information. The phrase "no information available" appears on the SIS printout when no information on that subject is contained in the database. The summaries will be updated using SISS as more information becomes available or as more detailed literature searches are undertaken.

Stream Information Summaries, arranged by watershed code, are included in Section 3.0 of the catalogue. The following describes the content of each section in the SIS form and printout (Fig. 2.1).

## A. DESCRIPTION

## A.1 Stream Name:

The official stream name listed in the "Gazetteer of Canada" is displayed here.

## A.2 Local Name

Any local name(s) are listed.

## A.3 Watershed Code:

The watershed code is a unique number which identifies a stream and the watershed that it is in. The hierarchical nature of the watershed coding system allows features associated with basins or channels to be aggregated or separated to the desired level of detail. A dictionary of watershed codes is available from the Water Management Branch, Ministry of Environment and Parks, Victoria.

## A.4 Tributaries:

A list of tributaries to the stream is provided. The "code" when added to the stream's watershed code gives the tributary watershed code. Example:

Cowichan River watershed code	= 92-4800
Koksilah River code	= 020
Koksilah River watershed code	= 92-4800-020

A.5 DFO Division, District, Subdistrict & Statistical Subarea:

The DFO management areas in which the stream mouth is located are listed.

A.6 MOEP Region, Management Unit:

The MOEP management areas in which the stream mouth is located are listed.

A.7 Topographic (1:50K) Map, BCGS (1:20K) Map:

Codes of the National Topographic Series (NTS) map sheet and the British Columbia Geographic System (BCGS) map sheet that show the stream mouth are listed here.

A.8 U.T.M. Mouth:

The Universal Transverse Mercator (UTM) coordinates of the stream mouth are listed. UTM is a metric grid reference system displayed on most 1:50,000 scale NTS maps.

A.9 Lat./Long. Mouth:

The latitude and longitude (degrees, minutes and seconds) of the stream mouth are listed.

A.10 Mainstream Length:

The total mainstream length is provided in kilometres.

A.11 Watershed Area:

The area of the stream's watershed is given in square kilometers.

A.12 Location:

The general location of the stream is listed.

A.13 Gradient:

Location(s) given as a range of kilometers upstream from the mouth are provided for five gradient classes: 0-0.5%, 0.5-2%, 2-5%, 5-10%, 10+%. Any comments on gradient are also listed in this field.

B. OBSTRUCTIONS TO MIGRATION

This section lists barrier type, the height of the barrier (m) as appropriate, the barrier location in kilometers upstream from mouth, the species that are obstructed and any additional comments.

C. FLOW

This section indicates if there is flow control on the system (Y or N), if there is a Water Survey of Canada (WSC) Flow Gauge (Y or N), the station nos. and any comments on flow (eg. low flows, floods).



D. DISTRIBUTION SUMMARY

Species and watershed distribution including spawning, rearing, overwintering, holding, and migration areas are listed.

E. ESCAPEMENT SUMMARY

This section lists the species, mean escapement for a specified period of record, maximum recorded escapement for the same period, management target escapement and any comments on escapement.

F. LIFE HISTORY TIMING

Life history timing is provided by species for each one-half month period by the following activities: migration, spawning, incubation and rearing. The timing of these activities is indicated by an X and the peak by a P.

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Listed in this section are the type of activity, the species affected by the activity, location of the facility in kilometers upstream of the mouth, comments and period of operation.

H. LAND USE/WATER USE/WATER QUALITY

This section lists the type of activity and description of land use; water use or activities affecting water quality.

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

This section may provide comments on fish production potential including habitat potential, constraints to production, opportunities for restoration or enhancement, watershed sensitivity, quality of information to assess the above and the need for inventory data collection.

J. FISHERY OFFICER NARRATIVE

This section indicates the date and person who may have prepared a Fishery Officer Narrative on the stream.

K. SIS COMPLETED BY:

The name of the person(s) completing, checking or updating the information and date (year/month/day) are listed. "Updated by" indicates that some sections of the Stream Information Summary have been revised. These sections are indicated in the database.



G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

--

J. FISHERY OFFICER NARRATIVE

Date Prepared:    /    /	Prepared By:
--------------------------	--------------

K. SIS COMPLETED BY

Completed by:	Date:
---------------	-------

TABLE 1. LIST OF CODES

Stream Name

R River  
 C Creek  
 S Slough  
 B Brook  
 G Gulch

Barrier Type

R Rock  
 X Log Jam  
 D Dam  
 BD Beaver Dam  
 CV Culvert  
 C Cascade, Chute  
 F Falls (type unknown)

Enhancement Activities

BX Incubation box  
 CH Spawning channel  
 CO Colonization from  
 existing hatchery  
 EI Estuary improvement  
 FC Flow control  
 FP Multiple fish production  
 strategies  
 FT Lake fertilization  
 FW Fishway  
 HC Combination channel/  
 hatchery  
 HX Multiple combination  
 hatchery, channel, flow  
 control  
 HY Conventional hatchery  
 JH Hatchery, primarily Japanese  
 style technique  
 LJ Log jam removal  
 OR Obstruction removal  
 SC Side channel  
 SI Stream improvement  
 TR Transplant  
 TT Trap/truck over obstruction

Management Activities

MR Mark Recovery  
 CC Creel Census  
 CF Counting Fence  
 FS Fish Sampling

Land Use/Water Use/Water Quality

FO Forestry  
 UD Urban Development  
 MI Mining  
 DA Dams  
 LD Linear Development  
 IP Industrial Processing  
 AG Agriculture  
 WW Water Withdrawal  
 PR Parks  
 RE Reserves  
 WQ Water Quality (ie. activities  
 adversely affecting water  
 quality)

TABLE 2. FISH SPECIES CODES

AGB	BROWN TROUT (ANAD)	GR	GRAYLING ARCTIC
AC	ARCTIC CHAR	GSG	GREEN STURGEON
ACT	CUTTHROAT TROUT (ANAD)	HW	HUMPBACKED WHITFISH
ADV	DOLLY VARDEN (ANAD)	IN	INCONNU
ACB	BROOK TROUT (ANAD)	KO	KOKANEE
AF	ALL FISH	L	LAMPREYS (GENERAL)
AL	ARCTIC LAMPREY	LDC	LEOPARD DACE
AO	ALL <u>ONCORHYNCHUS</u>	LKC	LAKE CHUB
AS	ATLANTIC SALMON	LMB	LARGEMOUTH BASS
ASM	ARCTIC SMELT	LNC	LONGNOSE DACE
BB	BURBOT	LSM	LONGFIN SMELT
BCB	BLACK CRAPPIE	LSU	LONGNOSE SUCKER
BH	CATFISH NERAL	LT	LAKE TROUT
BKH	BLACK BULLHEAD	LW	LAKE WHITEFISH
BL	WESTERN BROOK LAMPREY	MSU	NORTHERN MOUNTAIN SUCKER
BMC	BRASSY MINNOW	MW	ROCKY MOUNTAIN WHITEFISH
BNH	BROWN BULLHEAD	NP	NORTHERN PIKE
BS	BASS/SUNFISH (GENERAL)	NSC	NORTHERN SQUAWFISH
BSB	BROOK STICKLEBACK	P	PERCH (GENERAL)
BSU	BRIDGELIP SUCKER	PCC	PEAMOUTH CHUB
BW	BROAD WHITEFISH	PDC	NORTHERN PEARL DACE
C	MINNOWS (GENERAL)	PK	PINK SALMON
CA	ARCTIC CISCO	PL	PACIFIC LAMBREY
CAL	ALEUTIAN SCULPIN	PMB	PUMPKINSEED
CAS	PRICKLY SCULPIN	PW	PIGMY WHITEFISH
CBA	MOTTLED SCULPIN	RB	RAINBOW TROUT
CBC	CHUB (GENERAL)	RDC	NORTHERN REDBELLY DACE
CC	SCULPINS (GENERAL)	RL	RIVER LAMPREY
CCG	SLIMY SCULPIN	RSC	REDSIDED SHINER
CCN	SHORTHEAD SCULPIN	RW	ROUND WHITEFISH
CH	CHINOOK SALMON	SA	SALMON (GENERAL)
CL	LAKE HERRING/CISCO/TULIBEE	SB	STICKLEBACKS (GENERAL)
CLA	STAGHORN SCULPIN	SDC	SPECKLED DACE
CM	CHUM SALMON	SFL	STARRY FLOUNDER
CMC	CHISELMOUTH CHUB	SG	STURGEONS (GENERAL)
CO	COHO SALMON	SH	AMERICAN SHAD
CP	CARP	SK	SOCKEYE SALMON
CRH	TORRENT SCULPIN	SM	SMELTS (GENERAL)
CRI	SPOONHEAD SCULPIN	SMB	SMALLMOUTH BASS
CS	LEAST CISCO	ST	STEELHEAD
CSU	LARGESCALE SUCKER	STC	SPOTTAIL SHINER
CT	CUTTHROAT TROUT	SU	SUCKERS (GENERAL)
DC	DACE	TC	TENCH
DV	DOLLY VARDEN	TP	TROUTPERCH
EB	BROOK TROUT	TR	TROUT (GENERAL)
ESC	EMERALD SHINER	TSB	THREESPINE STICKLEBACK
EU	EULACHON	WF	WHITEFISH (GENERAL)
FDC	FINESCALE DACE	WP	WALLEYE
FHC	FLATHEAD CHUB	WSG	WHITE STURGEON
GAM	MOSQUITOFISH	WSU	WHITE SUCKER
GB	BROWN TROUT	YCT	YELLOWSTONE CUTTHROAT
GC	GOLDFISH	YP	YELLOWPERCH
GE	GOLDEYE		

## 2.2 ESCAPEMENT

The last feature of a Stream Information Summary is the Escapement Profile (Fig. 2.2). Briefly this Escapement profile contains the following:

- Page A: The first page is a tabular summary of annual escapement by species from 1953 to the most current data year.
- Pages B & C: When five or more years of data are available, graphs and tables of species escapement and spawn timing are displayed.
- Page D: Two diagrams portray average watershed escapement by species, and escapement as a percentage of the Department of Fisheries and Oceans management units - Subdistrict / District / Division.

A detailed description of each page follows.

### Escapement Profile: Detailed Description.

#### Page A:

The first page is a tabular summary of annual escapement by species from 1953 to the most current data year.

#### Pages B & C:

Pages B & C contain three rows of panels for the five species of salmon plus steelhead. When data are not available, the panel appears blank. The species are always arrayed from left to right in the following order:

sockeye, coho, pink, chum, chinook, steelhead.

The upper row of six panels contain the annual escapement by species for the past twenty years. The middle row of six panels display spawn timing for the same species and period. The vertical bar indicates the annual start and end of spawning, while the lateral connecting line indicates each years peak of spawning. The lower row of six panels contain the annual escapement and spawn timing data presented in the upper and middle row of panels.

#### Page D:

This page contains two diagrams:

- The upper pie chart diagram portrays by species the ten year average watershed escapement and proportional species percentage.
- The lower histogram illustrates the watershed's escapement as a proportion of the Department of Fisheries and Oceans management units (SUB=Subdistrict / DIS=District / DIV=Division).

The escapement information displayed in pages A,B&C,D of the Escapement Profile was compiled from the DFO Annual Report of Salmon Streams and Spawning Populations (BC 16) completed by each subdistrict fishery officer/patrolman following annual stream inspections. In limited cases,

subdistrict data have been revised where more accurate information is available (eg. mark/recapture studies). These data form part of an information database (Salmon Escapement Data System - SEDS) managed by the Pacific Biological Station, Nanaimo, for the Department of Fisheries and Oceans. The design and layout of the Escapement Profile was cooperatively developed by the SIS Working Group and SEDS managers.

### 2.3 BIBLIOGRAPHY

Section 4.0 contains a bibliography of all references used in preparing the Stream Information Summaries. References are arranged alphabetically by author. Each citation contains a reference number, author, description including title, date and publisher, location where the reference can be obtained and keywords describing the reference.

### 2.4 STREAM INFORMATION SUMMARY MAP

During the preparation of Stream Information Summary (SIS) forms, maps of fish distribution, major spawning areas, obstructions to migration and enhancement facilities were drafted on 1:50,000 National Topographic Series bases. Reduced (11" x 15") black and white copies of 1:50,000 topographic maps are contained in Section 5.0 of this catalogue.

ESCAPEMENT : EXAMPLE RIVER

WATERSHED-CODE: 93-1000

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
53	0	1,500	0	750	400	400
54	0	3,500	1,500	1,500	400	400
55	0	3,500	0	400	200	750
56	0	7,500	1,500	200	25	750
57	0	7,500	N/O	750	200	750
58	0	15,000	750	1,500	200	750
59	0	7,500	N/O	750	200	750
60	75	15,000	400	1,500	1,500	400
61	75	35,000	N/O	400	400	750
62	75	15,000	400	1,500	400	0
63	25	7,500	0	400	400	750
64	25	75,000	25	1,500	1,500	0
65	1,500	15,000	0	1,500	750	0
66	1,500	15,000	0	400	1,500	0
67	1,500	35,000	750	750	400	0
68	1,500	15,000	0	3,500	750	0
69	200	15,000	0	200	400	400
70	3,500	75,000	0	7,500	7,500	0
71	25	7,500	0	N/O	400	0
72	1,500	15,000	0	3,500	3,500	0
73	N/O	15,000	0	200	3,500	N/O
74	75	7,500	75	N/O	750	0
75	75	1,500	N/O	200	200	N/O
76	75	750	75	N/O	75	0
77	200	400	0	25	75	0
78	200	2,850	0	25	50	150
79	0	3,500	25	25	400	0
80	0	3,000	200	100	500	0
81	N/O	3,500	75	200	750	0
82	400	8,400	200	225	775	0
83	400	7,500	200	200	775	0
84	0	9,000	200	500	1,200	0
85	N/O	500	N/O	300	150	0
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED, OR NOT INSPECTED FOR SPECIES INDICATED, OR SPECIES PRESENT  
BUT NO ESTIMATE MADE.

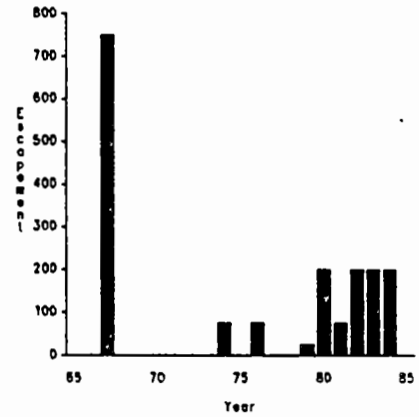
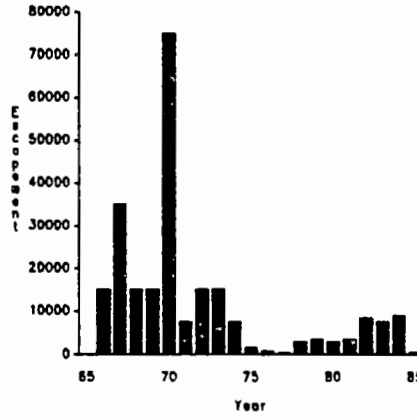
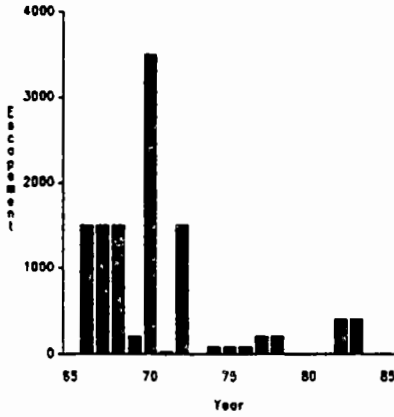


EXAMPLE RIVER (93-1000)  
Escapement & Run Timing

Sockeye (SK)

Coho (CO)

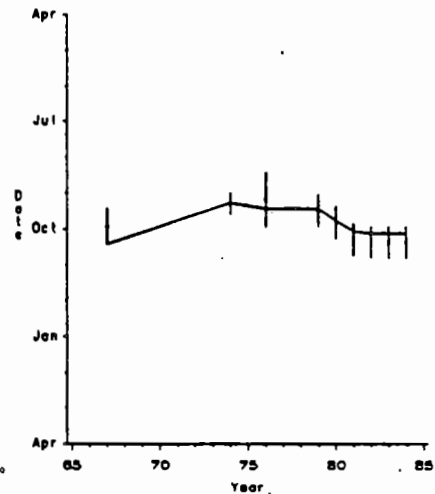
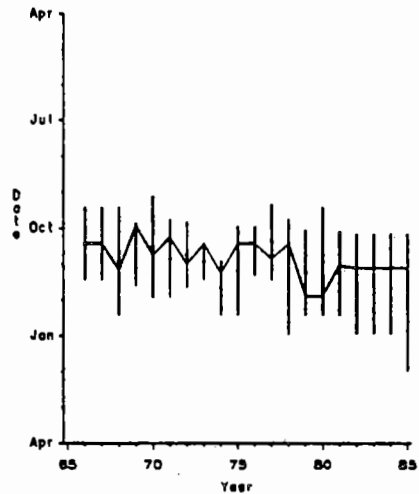
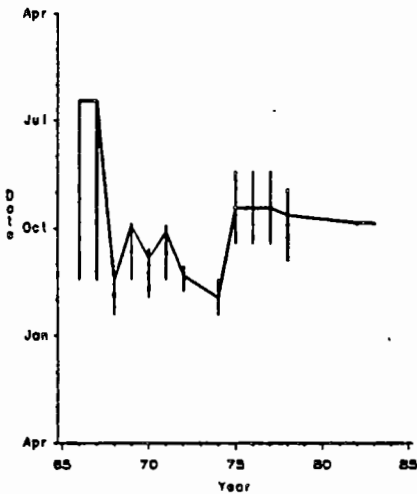
Pink (PK)



Sockeye

Coho

Pink



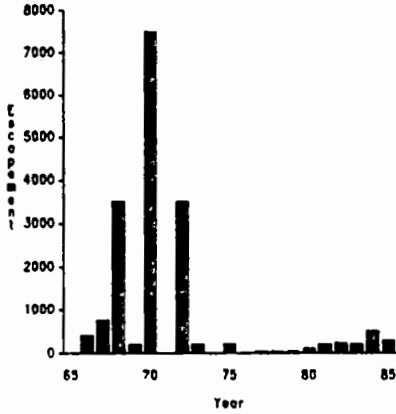
Sockeye				
Year	Escapement	Start	Peak	End
1966	1,300	15 JUN	15 JUN	15 NOV
1967	1,500	15 JUN	15 JUN	15 NOV
1968	1,500	12 NOV	18 NOV	15 DEC
1969	200	28 SEP	30 SEP	15 NOV
1970	3,500	20 OCT	28 OCT	30 NOV
1971	23	30 SEP	05 OCT	15 NOV
1972	1,500	04 NOV	12 NOV	25 NOV
1973	0	-	-	-
1974	75	15 NOV	01 DEC	15 DEC
1975	75	15 AUG	15 SEP	15 OCT
1976	75	15 AUG	15 SEP	15 OCT
1977	200	15 AUG	15 SEP	15 OCT
1978	200	20 AUG	21 SEP	30 OCT
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	400	28 SEP	28 SEP	29 SEP
1983	400	28 SEP	28 SEP	29 SEP
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	15,000	15 SEP	15 OCT	15 NOV
1967	35,000	15 SEP	15 OCT	15 NOV
1968	15,000	15 SEP	07 NOV	15 DEC
1969	15,000	28 SEP	30 SEP	20 NOV
1970	75,000	05 SEP	25 OCT	30 NOV
1971	7,500	25 SEP	10 OCT	30 NOV
1972	15,000	27 SEP	02 NOV	25 NOV
1973	15,000	15 OCT	15 OCT	15 NOV
1974	7,500	30 OCT	10 NOV	15 DEC
1975	1,500	01 OCT	15 OCT	15 DEC
1976	750	01 OCT	15 OCT	11 NOV
1977	400	12 SEP	28 OCT	15 NOV
1978	2,850	25 SEP	15 OCT	31 DEC
1979	3,500	04 OCT	29 NOV	15 DEC
1980	3,000	15 SEP	29 NOV	15 DEC
1981	3,500	05 OCT	03 NOV	15 DEC
1982	8,400	07 OCT	05 NOV	31 DEC
1983	7,500	07 OCT	05 NOV	31 DEC
1984	8,000	07 OCT	05 NOV	31 DEC
1985	500	07 OCT	05 NOV	31 JAN

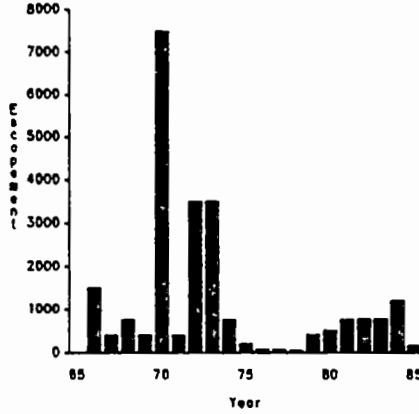
Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	750	15 SEP	15 OCT	15 OCT
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	75	01 SEP	10 SEP	20 SEP
1975	0	-	-	-
1976	75	15 AUG	15 SEP	30 SEP
1977	0	-	-	-
1978	0	-	-	-
1979	25	03 SEP	15 SEP	30 SEP
1980	200	13 SEP	25 SEP	10 OCT
1981	75	28 SEP	04 OCT	25 OCT
1982	200	30 SEP	04 OCT	27 OCT
1983	200	30 SEP	04 OCT	27 OCT
1984	200	30 SEP	04 OCT	27 OCT
1985	0	-	-	-

EXAMPLE RIVER (93-1000)  
Escapement & Run Timing

Chum (CM)



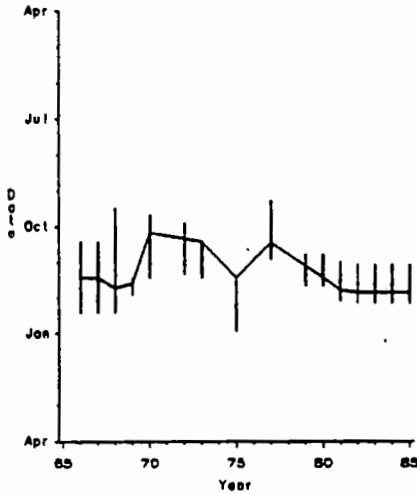
Chinook (CH)



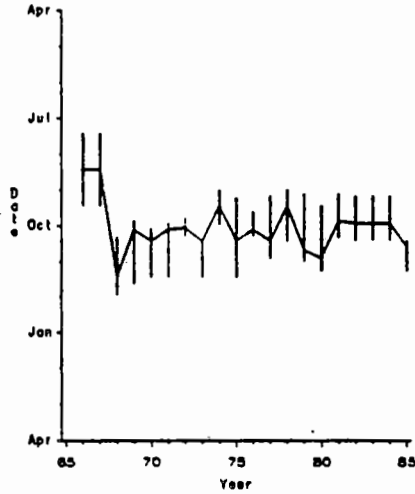
Steelhead (ST)



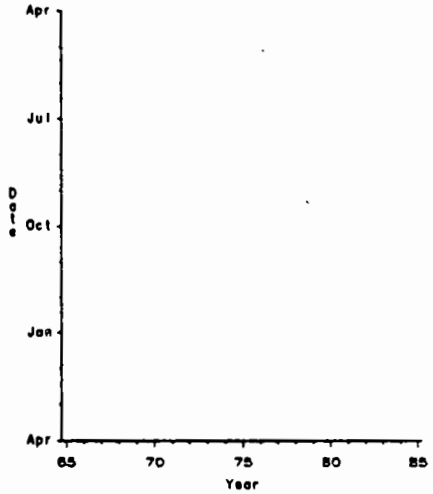
Chum



Chinook



Steelhead

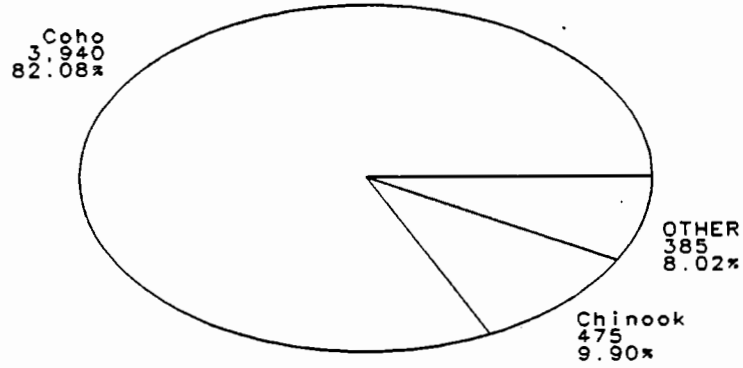


Year	Escapement	Start	Peak	End
1966	400	15OCT	15NOV	15DEC
1967	750	15OCT	15NOV	15DEC
1968	3,300	18SEP	24NOV	15DEC
1969	200	15NOV	20NOV	30NOV
1970	7,500	22SEP	07OCT	15NOV
1971	0	-	-	-
1972	3,500	29SEP	-	12NOV
1973	200	19OCT	15OCT	15NOV
1974	0	-	-	-
1975	200	17NOV	15NOV	31DEC
1976	0	-	-	-
1977	25	10SEP	18OCT	30OCT
1978	25	-	-	-
1979	25	24OCT	05NOV	22NOV
1980	100	24OCT	15NOV	22NOV
1981	200	02NOV	24NOV	05DEC
1982	225	04NOV	28NOV	07DEC
1983	200	04NOV	28NOV	07DEC
1984	500	04NOV	28NOV	07DEC
1985	300	04NOV	28NOV	07DEC

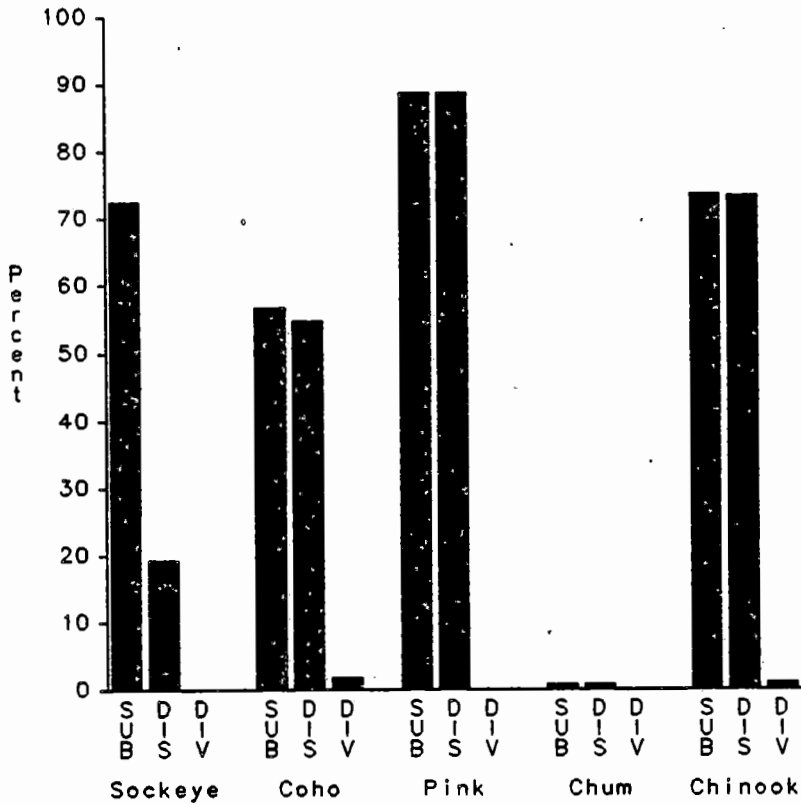
Year	Escapement	Start	Peak	End
1966	1,500	15-JUL	15-AUG	15-SEP
1967	400	15-JUL	15-AUG	15-SEP
1968	750	12-OCT	15-NOV	30-NOV
1969	400	28-SEP	05-OCT	21-NOV
1970	7,500	05-OCT	15-OCT	15-NOV
1971	400	30-SEP	09-OCT	15-NOV
1972	3,500	28-SEP	04-OCT	18-OCT
1973	3,500	15-OCT	15-OCT	15-NOV
1974	750	01-SEP	15-SEP	01-OCT
1975	200	08-SEP	15-OCT	15-NOV
1976	75	20-SEP	06-OCT	10-OCT
1977	75	07-SEP	19-OCT	30-OCT
1978	50	01-SEP	15-SEP	15-OCT
1979	400	05-SEP	23-OCT	01-NOV
1980	500	15-SEP	30-OCT	10-NOV
1981	750	05-SEP	28-SEP	12-OCT
1982	775	07-SEP	30-SEP	14-OCT
1983	775	07-SEP	30-SEP	14-OCT
1984	1,200	07-SEP	30-SEP	14-OCT
1985	150	15-OCT	20-OCT	10-NOV

Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**EXAMPLE RIVER (93-1000)**  
 10-yr Mean Escapement  
 (1976-1985)



**EXAMPLE RIVER : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



### 3.0 STREAM SUMMARY

This section of the catalogue contains Stream Information Summaries and Escapement Profiles arranged in ascending order of watershed code. An index of watershed codes and stream names is found in Section 1.0.

**A. DESCRIPTION**

Stream Name: <b>NANOOSE CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-3900</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-20</b>
	M.D.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/8</b>
		B.C.G.S. (1:20k) Map: <b>029</b>
		U.T.M. Mouth: <b>10.4135.54576</b>
		Lat./Long. Mouth: <b>49 DG. 15' 54'' 124 DG. 12' 13''</b>
		Mainstem Length: <b>4.8 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>FLows N &amp; E INTO NANOOSE HARBOUR, NANOOSE DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>BD BEAVER DAM</b>				<b>ARE A NUISANCE AT COMMENCEMENT OF SALMON MIGRATIONS. (REF. 17-1, REF. 17-5)</b>
<b>X LOG JAMS</b>				<b>SEVERAL SMALL LOG JAMS IN LOWER SECTION OF THE STREAM. NO PROBLEMS AT HIGH WATER. (REF. 17-8, REF. 17-67)</b>
<b>F FALLS</b>	<b>2.0</b>	<b>2.5</b>		<b>(REF. 17-5)</b>
<b>F FALLS</b>		<b>4.8</b>	<b>CM CHUM SALMON CO COHO SALMON</b>	<b>SEVERAL SMALL LOG JAMS IN LOWER SECTION OF THE STREAM. NO PROBLEMS AT HIGH WATER. (REF. 17-8, REF. 17-67)</b>
<b>F FALLS</b>		<b>5.6</b>		<b>PASSABLE UNDER IDEAL FLOWS. NOT RECOMMENDED FOR REMOVAL. (REF. 17-5)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge: <b>Y</b>
W.S.C. Station No. 1: <b>08H8039</b>	No. 2:    No. 3:    No. 4:
Comments: <b>GAUGE LOCATED AT THE MOUTH. MAXIMUM DISCHARGE 1.9CMS; MINIMUM 0.00812CMS. (REF. 17-1)</b>	
<b>LOW WATER LEVELS JUNE TO AUGUST, NORMAL LEVELS SEPTEMBER TO OCTOBER, HIGH LEVELS NOVEMBER TO DECEMBER. (REF. 17-5, REF. 17-65)</b>	
<b>DISCHARGE APRIL - SEPT. 1970: 68.1CFS MAX; 0.29CFS MIN; 2.8CFS MEAN. LOW WATER TO OCT. 8. (REF. 17-67)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>SPAWN IN UPPER REACHES, FROM 0.8KM - 5.6KM. THIS STREAM IS A VALUABLE PRODUCER OF COHO. COHO ARE ABLE TO GO OVER THE 1ST FALLS AT IDEAL WATER LEVELS &amp; SPAWN UPSTREAM. THIS TOP SECTION IS HIGHER GRADIENT &amp; IS FILLED WITH BOULDERS &amp; VERY COARSE GRAVEL. (REF. 17-5, REF. 17-6, REF. 17-8)</b>
<b>CM CHUM SALMON</b>	<b>SPAWN FROM THE ESTUARY TO 4KM UPSTREAM. THIS STREAM IS A VALUABLE PRODUCER OF THIS SPECIES. THE TOP SECTION WITH HIGHER GRADIENT IS FILLED WITH BOULDERS AND VERY COARSE GRAVEL AND IS UNSUITABLE FOR CHUM SPAWNING. (REF. 17-5, REF. 17-6)</b>

D. DISTRIBUTION SUMMARY CONTINUED

Species	Watershed Distribution
ST STEELHEAD	OBSERVED UP TO 4KM FROM THE MOUTH. (REF. 17-7)
CT CUTTHROAT TROUT	THIS STREAM IS A VALUABLE PRODUCER OF THIS SPECIES. (REF. 17-6)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	575	1976 - 1985	28A-18	2600	28A-18		
CM CHUM SALMON	4752	1976 - 1985	28A-18	13500	28A-18		
Comments: 1974 HAD THE BEST COHO RETURN ON RECORD. (REF. 17-5)							

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing	X									X	X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
HY HATCHERY	CO COHO SALMON	0.0	1987-88 MEASURE PRODUCTION FROM A BEAVER POND. WILL VENTRAL CLIP 10K COHO RELEASED AT 0.5G WITH 10K COHO RELEASED AT 1.5 - 2.0G. (REF. 17-18)	1985/
EN ENHANCEMENT ACTS		0.0	TRIED TO BYPASS FALLS (REF. 17-67)	1983/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	FORESTRY ACTIVITY 6.4KM UPSTREAM OF THE MOUTH, AND THE DEVELOPMENT OF A 61HA SUBDIVISION AT 4.0KM MAY BE DETRIMENTAL TO THE STREAM. (REF. 17-5)
UD URBAN DEVELOPMENT	CONSTRUCTION OF NEW HIGHWAY BRIDGE (1981) CAUSED NOTICEABLE SILTATION IN DOWNSTREAM REACHES. (REF. 17-5)
WW WATER WITHDRAWAL	IF WELL DRILLING IS CONTINUED, WE MAY LOSE THE CREEK. (REF. 17-67)
AG AGRICULTURE	LIVESTOCK HAVE ACCESS 0.5KM DOWNSTREAM OF HIGHWAY BRIDGE. (REF. 17-67)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

EXCELLENT COVER THROUGHOUT THE WHOLE STREAM FOR ADULT SPAWNERS; CONTINUED WATER SURPLUS THROUGHOUT THE YEAR MAKES FOR IDEAL INCUBATION PERIOD. (REF. 17-1, REF. 17-5)
SMALL DEBRIS AND WINDFALLS PROVIDE PROTECTION AND TEND TO HOLD WATER FOR FRY PROTECTION IN SUMMER MONTHS. (REF. 17-5)

<b>I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS CONTINUED</b> STREAM WORK IN SUMMER OF 1973; AN EXCELLENT CHUM SEEDING. (REF. 17-5)
COHO COLONIZATION POTENTIAL IN ABOVE BARRIER HABITAT ALONG UPPER REACHES OF CREEK. (REF. 17-2, REF. 17-67)
THIS WINDING STREAM MEANDERS IN A NORTH-EASTERLY DIRECTION INTO THE HEAD OF MANOOSE BAY JUST NORTH OF BONELL CREEK. WELL KNOWN FOR ITS FLASH FLOODS TWENTY YEARS AGO, MANOOSE CREEK IS NOW STABILIZING WITH THE ESTABLISHMENT OF SECONDARY GROWTH TIMBER ON THE WATERSHED. (REF. 17-8)
THE STREAM SURVEY CONDUCTED IN JUNE 1970 WAS CARRIED OUT FROM THE FALLS DOWNSTREAM TO THE MOUTH; CHUM SPAWNING AREA DIMENSIONS - LENGTH - 4,364M; WIDTH - 9M; WETTED AREA - 39,126 SQ.M; SPAWNING AREA - 16,017 SQ. M; CAPACITY @ 1.1SQ.M PER FISH - 14,561; SPAWNING AS % OF WETTED AREA - 41%. (REF. 17-8)
COHO FRY SALVAGE REGULARLY DUE TO LOW WATER LEVELS (REF. 17-65)
WATER TABLE APPEARS TO BE DECREASING. ALL WATER LICENCES OTHER THAN DOMESTIC ARE BEING REJECTED BY OFO. (REF. 17-67)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     : / /	Prepared By:
--------------------------	--------------

**K. SIS COMPLETED BY**

Completed by:     GITA KAPAH	Date:   1987/06/05
Checked by:     DON HOUSEGO	Date:   1987/06/05
Last updated by: MURRAY WILLIAMS	Date:   1988/06/17

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 2

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 5

AUTHOR: HOUSEGO, D.M.  
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS NANOSE CREEK. 1963-1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING S SPAWNING

REFERENCE NO: 17- 6

AUTHOR: JANZ, S.M.  
DESCRIPTION: LETTER FROM S.M. JANZ TO N.P. VANDERMOLEN RE: PROPOSED SUBDIVISION OF PART OF BLK. 668, NANOSE DISTRICT; FILE #5903-M45. OCT. 30, 1980 (NANOSE HARBOUR FILE)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: UD URBAN DEVELOPMENT

REFERENCE NO: 17- 7

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS, 1971. 92F/8 EAST AND WEST  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 8

AUTHOR: FRASER, F.J., D.T. LIGHTLY, D.D. BAILEY  
DESCRIPTION: AN INVENTORY OF EAST COAST VANCOUVER ISLAND STREAMS IMPORTANT TO CHUM SALMON. PAC/T-74-21  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: AF ALL SPECIES CM CHUM PY PHYSICAL HABITAT

REFERENCE NO: 17- 18

AUTHOR: HURST, B., B. BLACKMAN  
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT, NOV. 30, 1985. G. LOGAN'S OFFICE.  
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 65

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE



ESCAPEMENT: NANOOSE CREEK

WATERSHED-CODE: 92-3900

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	400	0	1,500	0	75
1954	0	750	0	750	0	75
1955	0	25	0	25	0	25
1956	0	200	0	200	0	25
1957	0	750	0	3,500	0	75
1958	0	750	0	3,500	0	25
1959	0	200	0	3,500	0	N/O
1960	0	200	0	750	0	N/O
1961	0	200	0	200	0	25
1962	0	200	0	400	0	25
1963	0	400	0	750	0	N/O
1964	0	400	0	750	0	25
1965	0	200	0	200	0	25
1966	0	400	0	1,500	0	25
1967	0	175	0	250	0	10
1968	0	50	0	2,000	0	0
1969	0	25	0	3,230	0	10
1970	0	90	0	2,800	0	10
1971	0	90	0	2,800	0	N/O
1972	0	75	0	11,600	0	N/O
1973	0	450	0	13,000	0	N/O
1974	0	1,350	0	6,500	0	N/O
1975	0	150	0	900	0	0
1976	0	250	0	1,700	0	0
1977	0	2,600	0	13,500	0	N/O
1978	0	1,250	0	5,000	0	0
1979	0	295	0	2,500	0	0
1980	0	525	0	3,000	0	0
1981	0	131	0	2,323	0	0
1982	0	170	0	1,700	0	0
1983	0	10	0	6,000	0	0
1984	N/O	350	N/O	7,000	N/O	N/O
1985	N/O	170	N/O	4,800	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

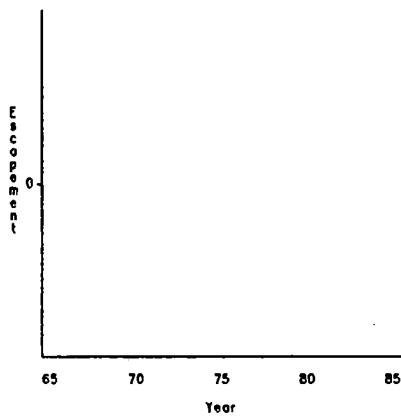
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

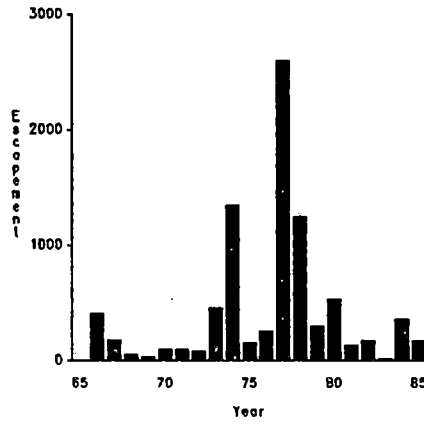
# NANOOSE CREEK (92-3900)

## Escapement & Run Timing

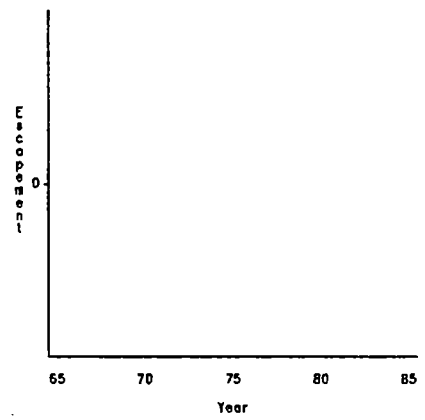
**Sockeye (SK)**



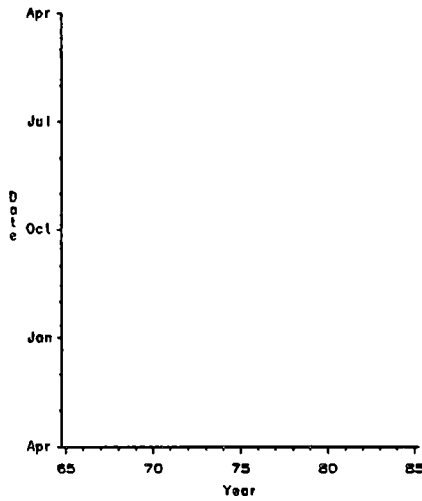
**Coho (CO)**



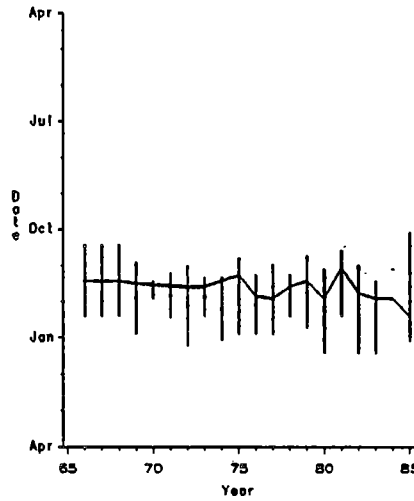
**Pink (PK)**



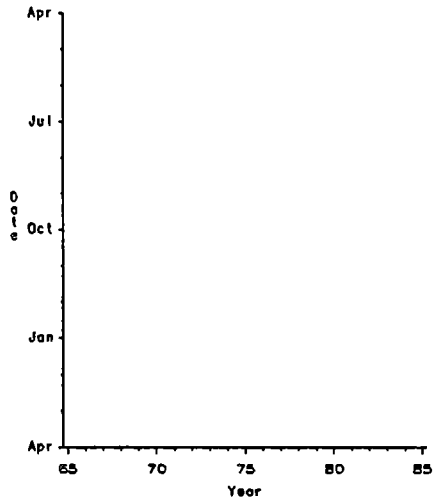
**Sockeye**



**Coho**



**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	400	15OCT	15NOV	15DEC
1967	175	15OCT	15NOV	15DEC
1968	90	15OCT	15NOV	15DEC
1969	25	30OCT	17NOV	30DEC
1970	90	15NOV	-	30NOV
1971	90	08NOV	-	16DEC
1972	75	02NOV	20NOV	09JAN
1973	450	12NOV	20NOV	15DEC
1974	1,350	12NOV	15NOV	04JAN
1975	150	26OCT	10NOV	30DEC
1976	250	10NOV	28NOV	30DEC
1977	2,600	01NOV	30NOV	30DEC
1978	1,250	10NOV	20NOV	15DEC
1979	295	25OCT	15NOV	25DEC
1980	525	05NOV	30NOV	14JAN
1981	131	20OCT	04NOV	15DEC
1982	170	02NOV	25NOV	15JAN
1983	10	15NOV	30NOV	15JAN
1984	350	03NOV	30NOV	-
1985	170	05OCT	15DEC	05JAN

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

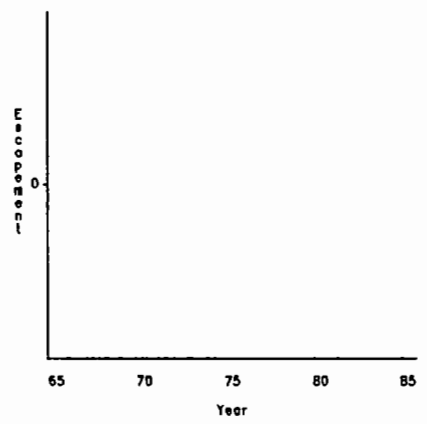
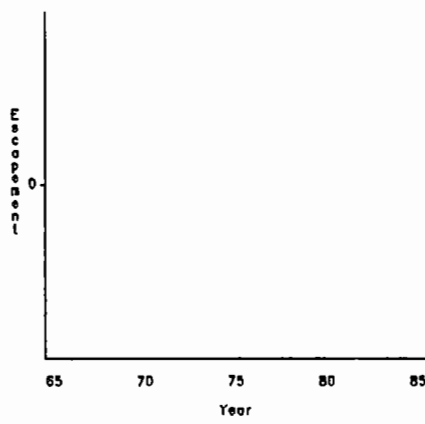
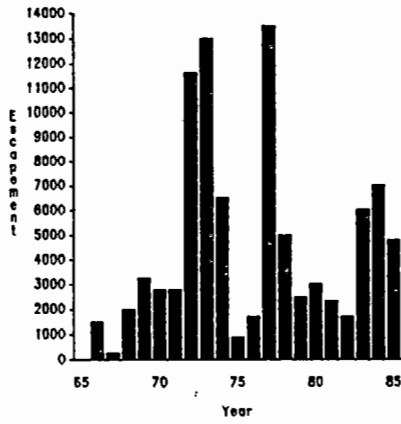
# NANOOSE CREEK (92-3900)

## Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

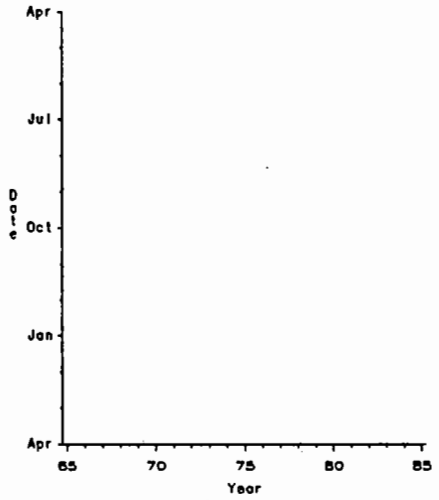
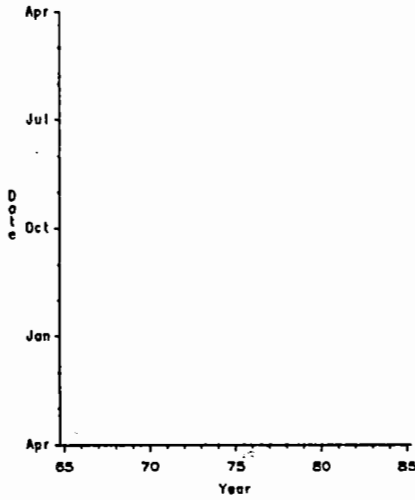
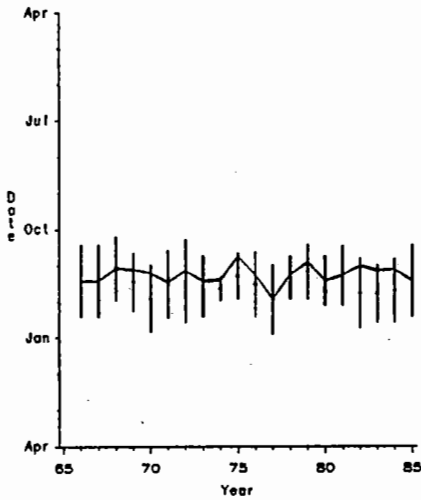
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**

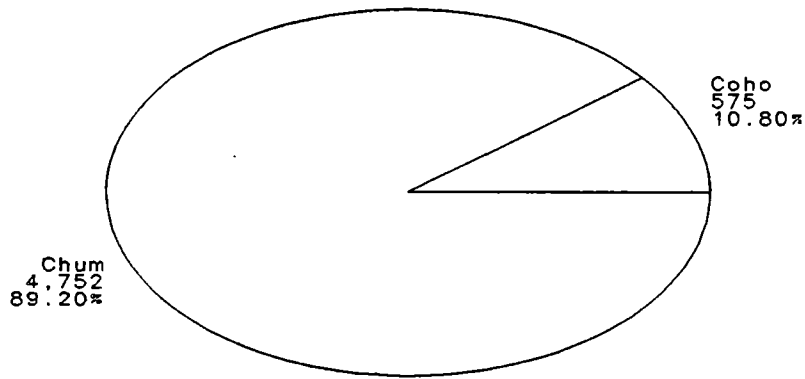


Chum				
Year	Escapement	Start	Peak	End
1966	1,500	15OCT	15NOV	15DEC
1967	250	15OCT	15NOV	15DEC
1968	2,000	08OCT	04NOV	01DEC
1969	3,230	22OCT	05NOV	10DEC
1970	2,800	01NOV	08NOV	28DEC
1971	2,800	20OCT	18NOV	16DEC
1972	11,600	11OCT	08NOV	20DEC
1973	13,000	24OCT	15NOV	15DEC
1974	6,500	12NOV	14NOV	01DEC
1975	900	22OCT	25OCT	30NOV
1976	1,700	21OCT	10NOV	15DEC
1977	13,500	01NOV	30NOV	30DEC
1978	5,000	25OCT	10NOV	30NOV
1979	2,500	15OCT	30OCT	30NOV
1980	3,000	25OCT	15NOV	05DEC
1981	2,323	16OCT	10NOV	05DEC
1982	1,700	26OCT	02NOV	25DEC
1983	6,000	01NOV	08NOV	20DEC
1984	7,000	27OCT	05NOV	20DEC
1985	4,800	15OCT	15NOV	15DEC

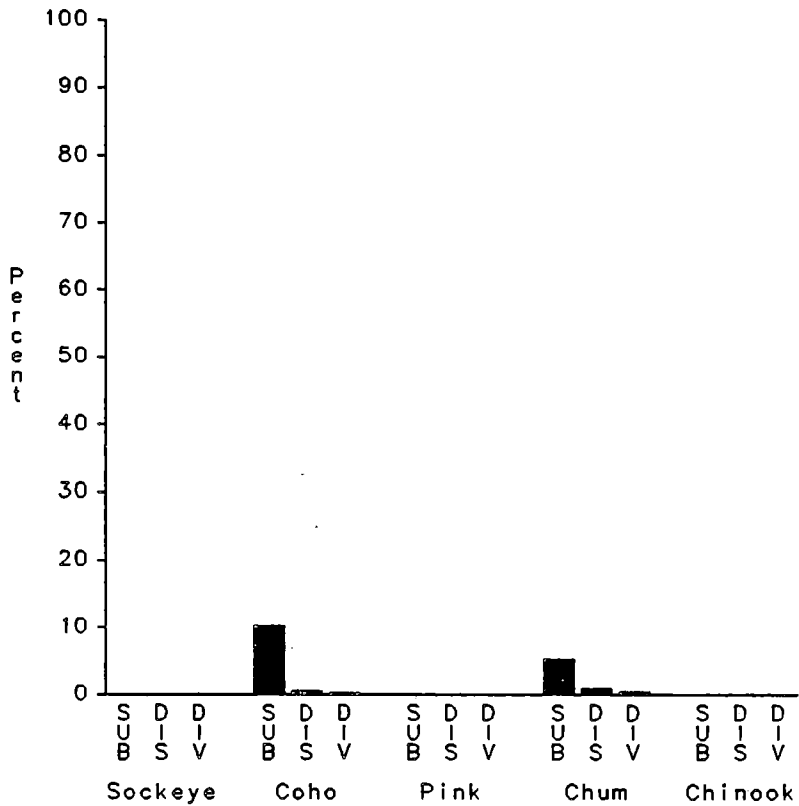
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

NANOOSE CREEK (92-3900)  
 10-yr Mean Escapement  
 (1976-1985)



NANOOSE CREEK : Escapement (1976-1985)  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: <b>BONELL CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>BRUNEL CREEK, BRUNNEL CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4000</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-20</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/8</b>
		B.C.G.S. (1:20k) Map: <b>029</b>
		U.T.M. Mouth: <b>10.4137.54574</b>
		Lat./Long. Mouth: <b>49 DG. 16' 02'' 124 DG. 11' 10''</b>
		Mainstem Length: <b>4.8 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>FLWS N.E. INTO HEAD OF MANOOSE HARBOUR - MANOOSE DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	3.7	4.8	AO ALL SALMON	(REF. 17-1, REF. 17-2)
F FALLS	24.4	4.8	AO ALL SALMON	A TOTAL IMPASSE IS FORMED BY THIS WATERFALL 4.8 KM FROM TIDEWATER. (REF. 17-8)

**C. FLOW**

Flow Control: <b>M</b>	Water Survey of Canada (WSC) Flow Gauge: <b>M</b>
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: <b>EXTREMELY LOW WATER LEVELS DURING AUG. TO OCT. (REF. 17-1)</b>	
<b>THIS STREAM NEARLY ALWAYS DRIES UP IN THE LOWER PORTION EACH YEAR, NECESSITATING A FRY SALVAGE OPERATION. COHO PRODUCTION HAS PROBABLY SUFFERED DUE TO THIS. (REF. 17-1, REF. 17-65)</b>	
<b>DRIES UP ANNUALLY. FISH TRANSPORTED TO MANOOSE CREEK. (REF. 17-67)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CO COHO SALMON	<b>1.6KM TO 4.8KM (REF. 17-1, REF. 17-67)</b>
CN CHUM SALMON	<b>UP TO 4KM (REF. 17-1, REF. 17-67)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	137	1976 - 1985	28A-18	280	28A-18		
CN CHUM SALMON	5093	1976 - 1985	28A-18	18870	28A-18		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	X
Comments: CHUM ENTER CREEK IMMEDIATELY WHEN FLOWS RESUME IN THE FALL. (REF. 17-67)													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
TR TRANSPLANT	CO COHO SALMON	0.0	ANNUAL FRY SALVAGE IS REQUIRED (REF. 17-67)	1982/
EN ENHANCEMENT ACTS		0.0	LOG JAM REMOVAL. (REF. 17-67)	1984/1984

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
FO FORESTRY	HISTORICAL LOGGING ACTIVITIES. (REF. 17-67)
AG AGRICULTURE	LIVESTOCK ACCESS 200M ABOVE HIGHWAY (HORSES) (REF. 17-67)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

MOEP MAP SHOWS POTENTIAL HABITAT IN UPPER REACHES AND LOWER REACHES OF STREAM (REF. 17-2)
IMPROVEMENT WORK HAS BEEN CARRIED OUT REGULARLY ON THE LOWER PORTION AND TIDAL AREA OF THIS STREAM TO ALLEVIATE THE GRAVEL BUILDUP THAT NORMALLY OCCURS WITH EACH YEAR'S FRESHETS. THIS ASSISTS CHUM SPAWNERS TO GAIN ACCESS TO THE STREAM (REF. 17-1)
BONELL C FLOWS FROM A SMALL LAKE AND SWAMP LANDS THROUGH SECOND GROWTH TIMBER. IT HAS A HIGHLY VARIABLE FLOW PATTERN. THE UPPER SECTION WHICH CONTAINS COARSE GRAVEL & BOULDERS IS UNSUITABLE FOR SPAWNING. THE LOWER MILE IS GRAVEL BARS. HIGH WINTER WATER REARRANGE THESE BARS & ACCUMULATE GRAVEL AT TIDEWATER SO THAT CHANNEL CHANGES TAKE PLACE EACH YEAR. IN DRY SUMMERS, LOWER REACHES OF THIS SYSTEM DRY. THESE FACTORS MAY CONTRIBUTE TO THE GREATER THAN NORMAL INTERTIDAL SPAWNING IN THIS SYSTEM. (REF. 17-8)
AN ADDITIONAL 3,567 SQ. YD. OF POTENTIALLY USABLE CHUM SPAWNING AREA IS PRESENT ABOVE THE AREA NOW UTILIZED. (REF. 17-8)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAHI	Date: 1987/06/02
Checked by: DON HOUSEGO	Date: 1987/06/02
Last updated by: MURRAY WILLIAMS	Date: 1988/07/04

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 2

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 8

AUTHOR: FRASER, F.J., D.T. LIGHTLY, D.D. BAILEY  
DESCRIPTION: AN INVENTORY OF EAST COAST VANCOUVER ISLAND STREAMS IMPORTANT TO CHUM SALMON. PAC/T-74-21  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: AF ALL SPECIES CM CHUM PY PHYSICAL HABITAT

REFERENCE NO: 17- 65

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: BONELL CREEK

WATERSHED-CODE: 92-4000

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	400	0	7,500	0	25
1954	0	200	0	7,500	0	25
1955	0	N/O	0	750	0	25
1956	0	200	0	1,500	0	N/O
1957	0	200	0	7,500	0	N/O
1958	0	400	0	7,500	0	25
1959	0	75	0	7,500	0	N/O
1960	0	75	0	200	0	N/O
1961	0	200	0	750	0	0
1962	0	75	0	3,500	0	0
1963	0	200	0	750	0	0
1964	0	25	0	400	0	0
1965	0	200	0	3,500	0	0
1966	0	200	0	1,500	0	0
1967	0	125	0	500	0	UNK
1968	0	40	0	4,150	0	UNK
1969	0	20	0	6,750	0	0
1970	0	40	0	2,350	0	N/O
1971	0	75	0	2,350	0	N/O
1972	0	40	0	3,000	0	N/O
1973	0	115	0	8,500	0	0
1974	0	90	0	950	0	0
1975	0	300	0	1,500	0	0
1976	0	15	0	115	0	0
1977	0	280	0	4,250	0	0
1978	0	200	0	4,200	0	0
1979	0	70	0	1,450	0	0
1980	0	250	0	2,500	0	0
1981	0	69	0	5,050	0	0
1982	0	200	0	4,340	0	0
1983	0	N/O	0	1,550	0	0
1984	N/O	UNK	N/O	8,600	N/O	N/O
1985	N/O	150	N/O	18,870	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE



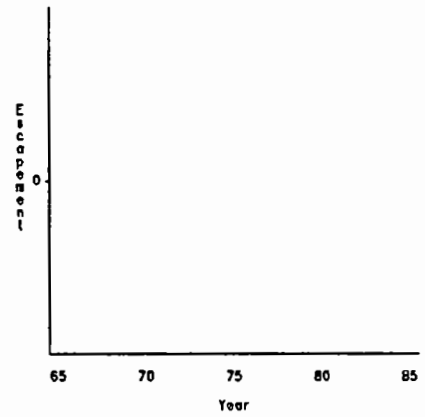
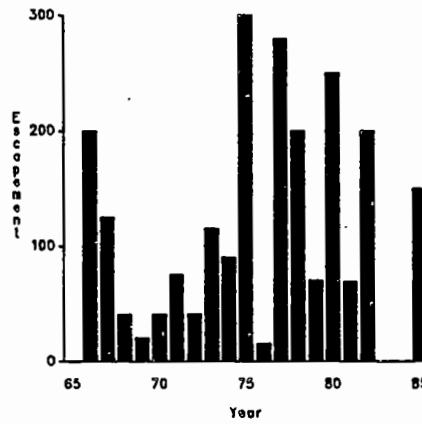
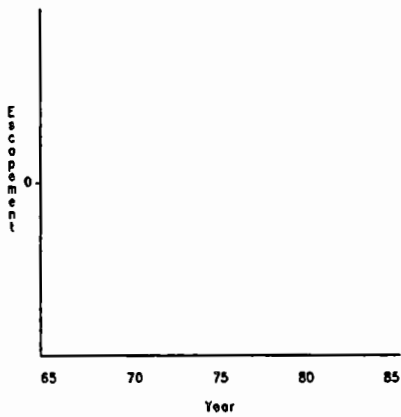
# BONELL CREEK (92-4000)

## Escapement & Run Timing

**Sockeye (SK)**

**Coho (CO)**

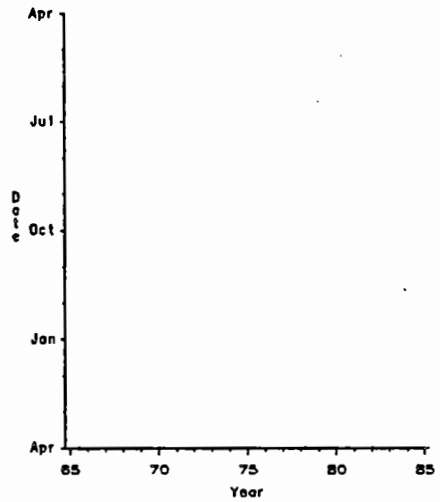
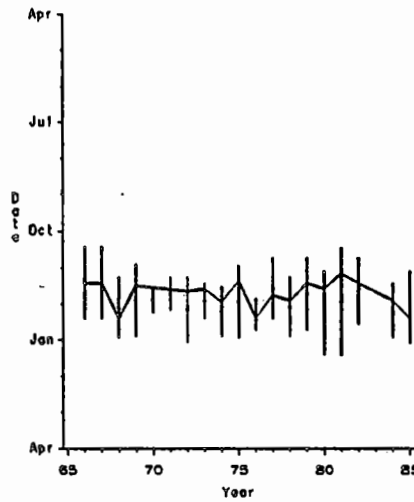
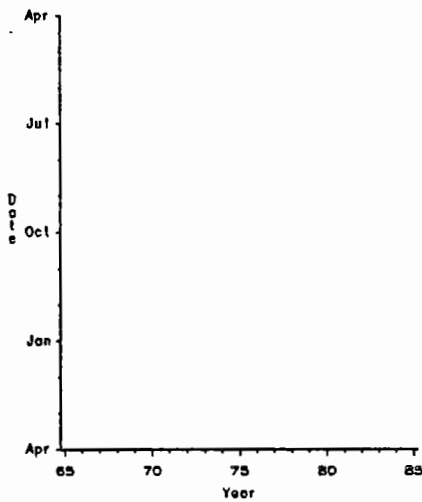
**Pink (PK)**



**Sockeye**

**Coho**

**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	200	15OCT	15NOV	15DEC
1967	125	15OCT	15NOV	15DEC
1968	40	10NOV	15DEC	31DEC
1969	20	30OCT	17NOV	30DEC
1970	40	15NOV	-	10DEC
1971	75	10NOV	-	05DEC
1972	40	10NOV	22NOV	04JAN
1973	115	15NOV	20NOV	15DEC
1974	90	15NOV	01DEC	30DEC
1975	300	31OCT	13NOV	31DEC
1976	15	28NOV	15DEC	25DEC
1977	280	25OCT	25NOV	15DEC
1978	200	10NOV	30NOV	30DEC
1979	70	25OCT	15NOV	25DEC
1980	250	05NOV	20NOV	14JAN
1981	69	18OCT	07NOV	15JAN
1982	200	25OCT	15NOV	20DEC
1983	0	-	-	-
1984	-	15NOV	30NOV	31DEC
1985	150	05NOV	15DEC	05JAN

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

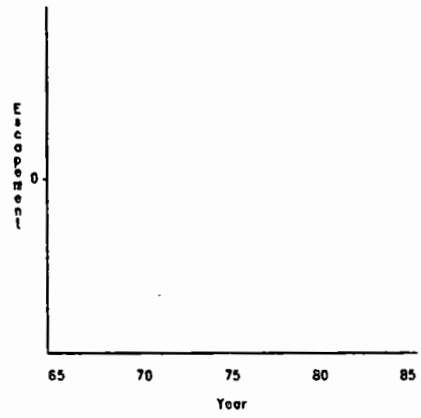
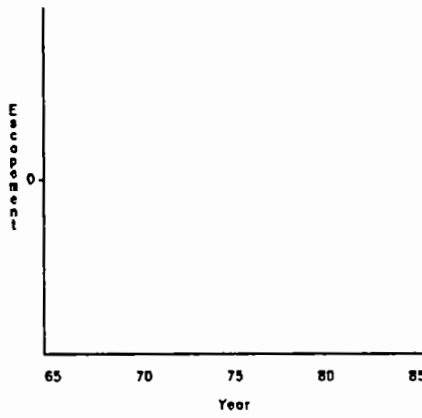
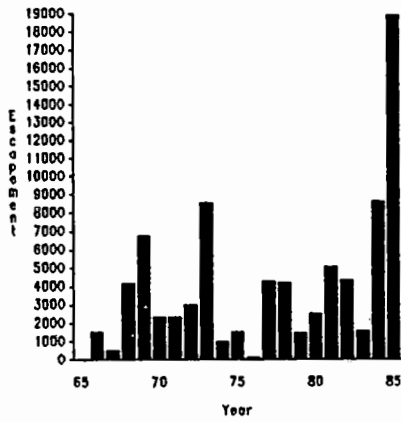
# BONELL CREEK (92-4000)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

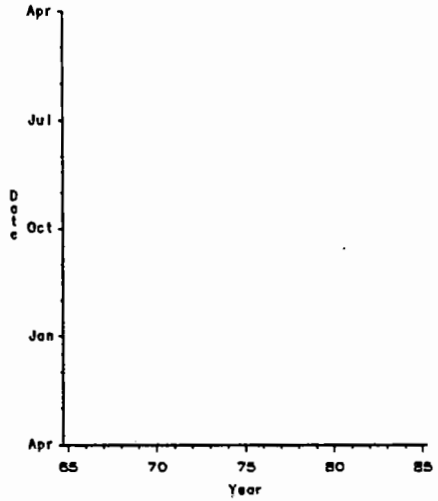
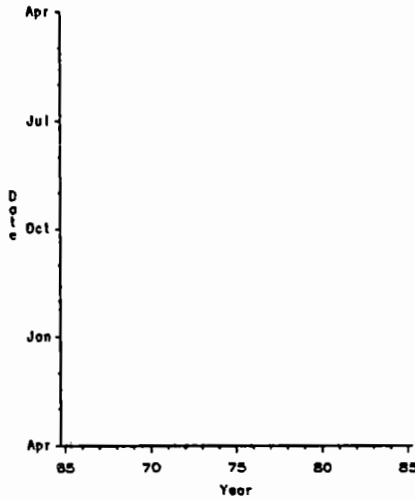
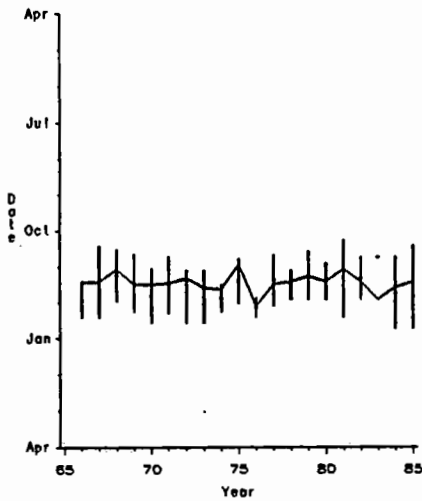
Steelhead (ST)



Chum

Chinook

Steelhead

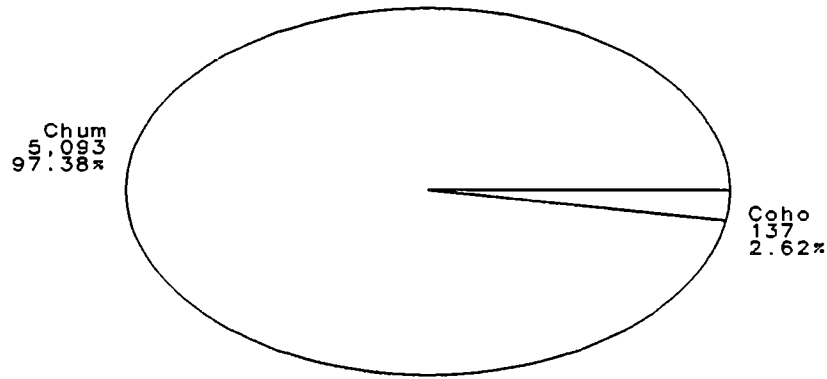


Chum				
Year	Escapement	Start	Peak	End
1966	1,500	15NOV	15NOV	15DEC
1967	500	15OCT	15NOV	15DEC
1968	4,150	18OCT	04NOV	01DEC
1969	6,750	22OCT	17NOV	10DEC
1970	2,350	03NOV	17NOV	20DEC
1971	2,350	24OCT	16NOV	12DEC
1972	3,000	05NOV	12NOV	20DEC
1973	8,500	05NOV	20NOV	20DEC
1974	950	17NOV	21NOV	10DEC
1975	1,500	26OCT	31OCT	03DEC
1976	115	28NOV	05DEC	15DEC
1977	4,250	23OCT	17NOV	05DEC
1978	4,200	05NOV	15NOV	30NOV
1979	1,450	20OCT	10NOV	30NOV
1980	2,500	30OCT	15NOV	30NOV
1981	5,050	10OCT	04NOV	15DEC
1982	4,340	25OCT	15NOV	30NOV
1983	1,350	25OCT	30NOV	-
1984	8,600	25OCT	20NOV	25DEC
1985	18,870	15OCT	15NOV	25DEC

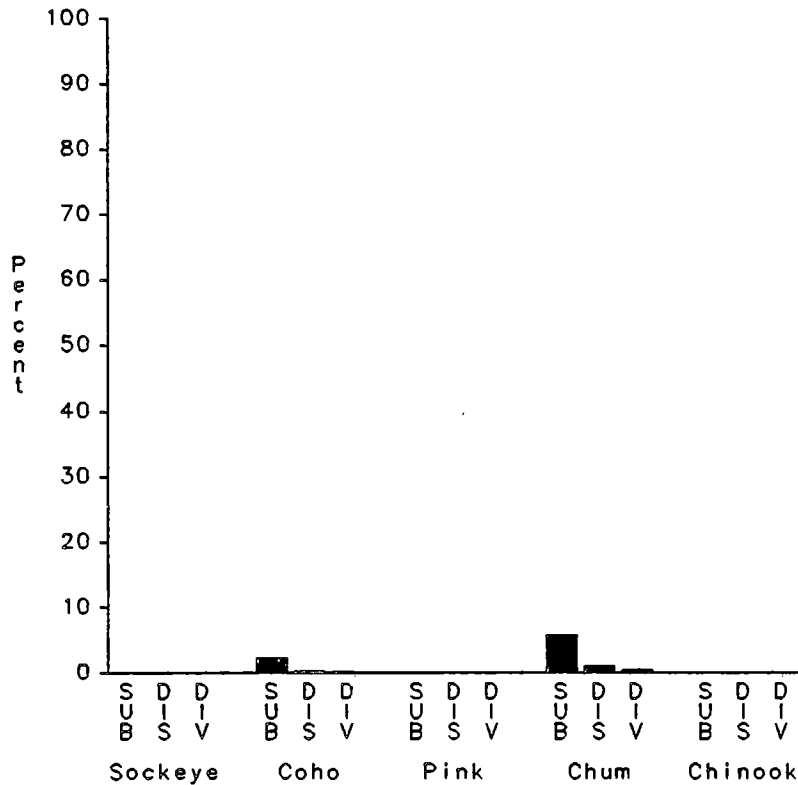
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**BONELL CREEK (92-4000)**  
 10-yr Mean Escapement  
 (1976-1985)



**BONELL CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





**F. LIFE HISTORY TIMING CONTINUED**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	
Comments: COHO ACCESS OVER BEACH BERM; HIGH TIDE AND LOW FLOW. (REF. 17-68)													
CM ACCESS ALSO BY BEACH BERM , HIGH TIDE AND HIGH FLOW. (REF. 17-68)													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
CO COLONIZATION	CO COHO SALMON	0.0	ONGOING FRY SALVAGE/COLONIZATION. (REF. 17-68)	1978/
CO COLONIZATION	CO COHO SALMON	0.0	FRY SALVAGE (NRSEP) (REF. 17-67)	1983/

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

2KM OF IDEAL COHO STREAM ABOVE FALLS. BEST STRATEGY WOULD BE COLONIZATION BY HAND. FISHWAY NOT FEASIBLE. INCUBATION BOX OPERATING ABOVE THE BARRIER WOULD BE IDEAL. (REF. 17-68)
HIGHWAY IMPROVEMENT OF SUPERIOR ROAD 1986-1987. (REF. 17-67)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/05
Checked by: DON HOUSEGO	Date: 1987/06/05
Last updated by: MURRAY WILLIAMS	Date: 1988/07/11

hab314102670  
REFERENCE LIST  
1988/07/18

Watershed Code: 92-4050  
Stream Name: KNARSTON CREEK  
Page: 1

-----  
REFERENCE NO: 17- 1  
-----

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 67  
-----

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68  
-----

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 28A- 1B  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINDOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: KNARSTON CREEK

WATERSHED-CODE: 92-4050

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	25	0	0	0	0
1954	0	200	0	N/O	0	0
1955	0	N/O	0	N/O	0	0
1956	0	25	0	N/O	0	0
1957	0	200	0	N/O	0	0
1958	0	N/O	0	N/O	0	0
1959	0	200	0	N/O	0	0
1960	0	75	0	0	0	0
1961	0	25	0	0	0	0
1962	0	75	0	0	0	0
1963	0	25	0	0	0	0
1964	0	25	0	0	0	0
1965	0	75	0	25	0	0
1966	0	25	0	25	0	0
1967	0	75	0	N/O	0	0
1968	0	50	0	N/O	0	0
1969	0	20	0	N/O	0	0
1970	0	40	0	N/O	0	0
1971	0	25	0	0	0	0
1972	0	10	0	2	0	0
1973	0	20	0	N/O	0	0
1974	0	70	0	N/O	0	0
1975	0	40	0	N/O	0	0
1976	0	N/O	0	0	0	0
1977	0	85	0	0	0	0
1978	0	35	0	0	0	0
1979	0	15	0	0	0	0
1980	0	100	0	0	0	0
1981	0	102	0	2	0	0
1982	UNK	N/O	UNK	UNK	UNK	0
1983	0	N/O	0	0	0	0
1984	N/O	10	N/O	N/O	N/O	N/O
1985	N/O	25	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

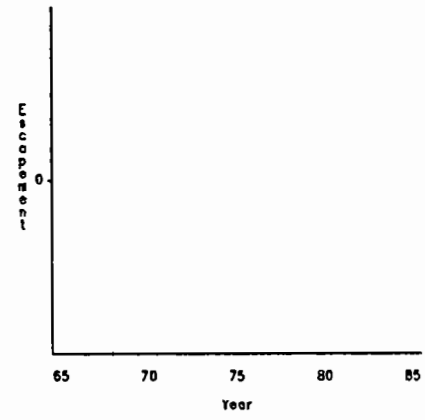
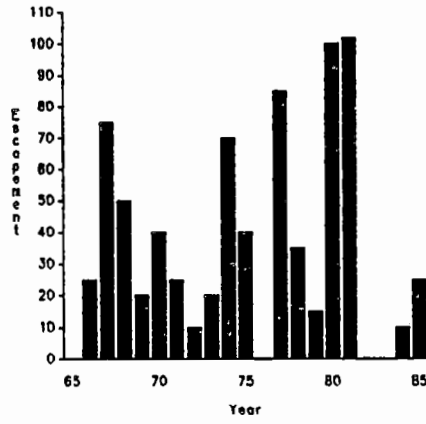
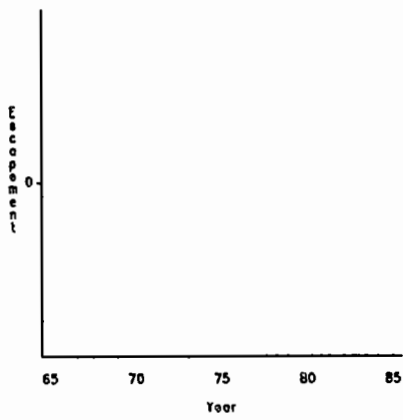
# KNARSTON CREEK (92-4050)

## Escapement & Run Timing

**Sockeye (SK)**

**Coho (CO)**

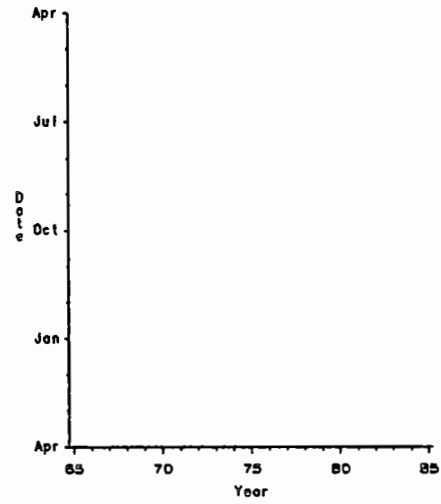
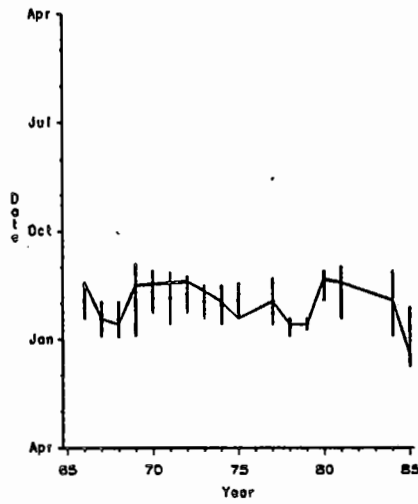
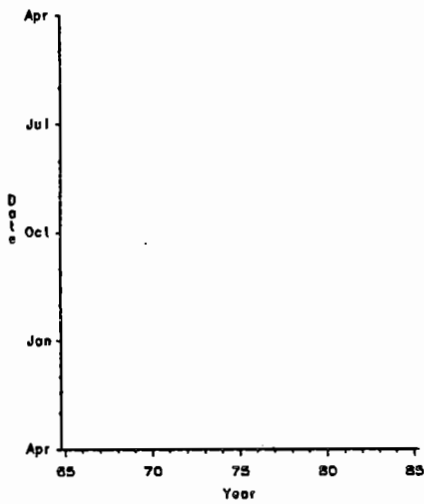
**Pink (PK)**



**Sockeye**

**Coho**

**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15NOV	15DEC
1967	75	01DEC	15DEC	30DEC
1968	50	01DEC	20DEC	31DEC
1969	20	30OCT	17NOV	30DEC
1970	40	05NOV	-	10DEC
1971	25	08NOV	-	20DEC
1972	10	08NOV	14NOV	10DEC
1973	20	17NOV	22NOV	15DEC
1974	70	17NOV	01DEC	20DEC
1975	40	15NOV	15DEC	15DEC
1976	0	-	-	-
1977	85	11NOV	01DEC	20DEC
1978	35	15DEC	20DEC	30DEC
1979	15	15DEC	20DEC	25DEC
1980	100	05NOV	12NOV	30NOV
1981	102	01NOV	15NOV	15DEC
1982	-	-	-	-
1983	0	-	-	-
1984	10	05NOV	30NOV	30DEC
1985	25	05DEC	15JAN	25JAN

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-



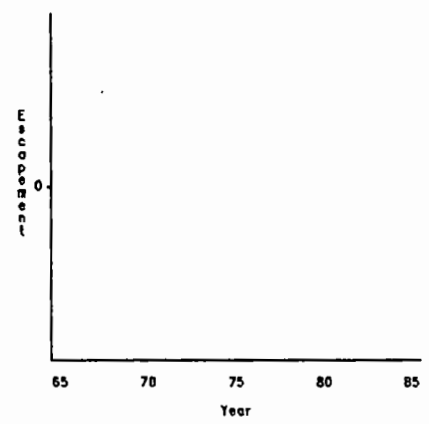
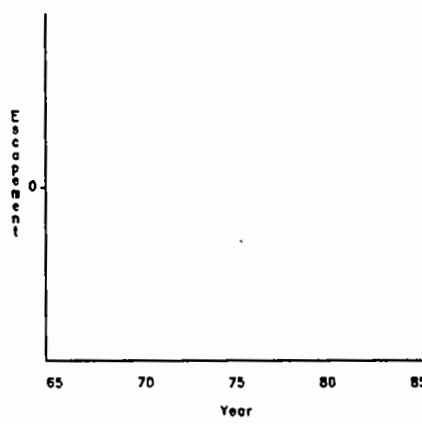
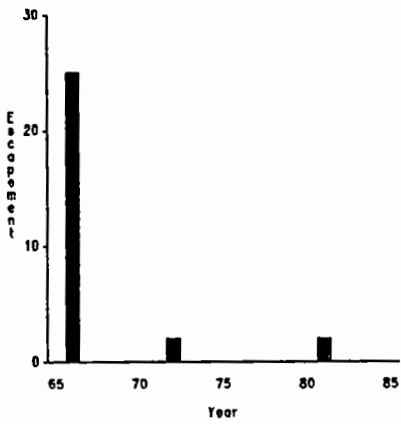
# KNARSTON CREEK (92-4050)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

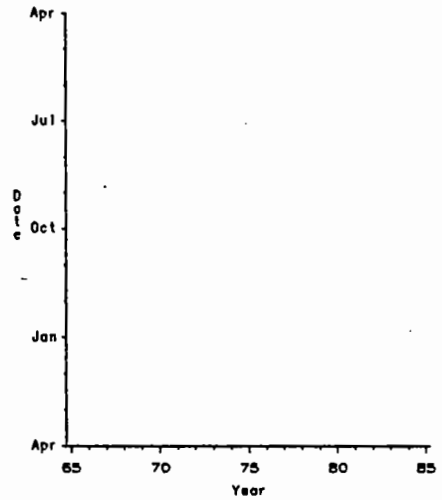
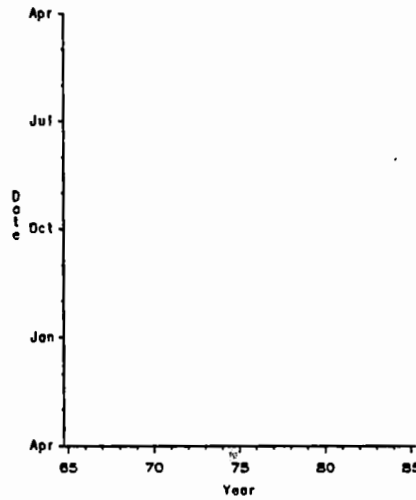
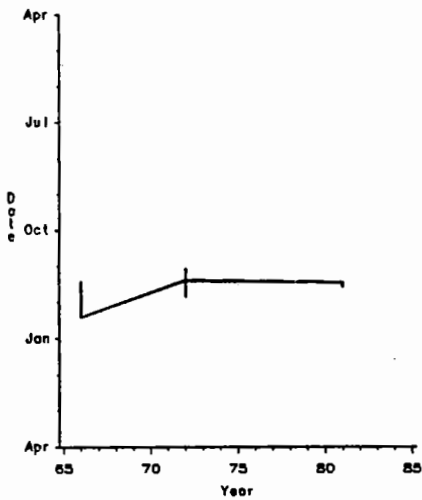
Steelhead (ST)



Chum

Chinook

Steelhead

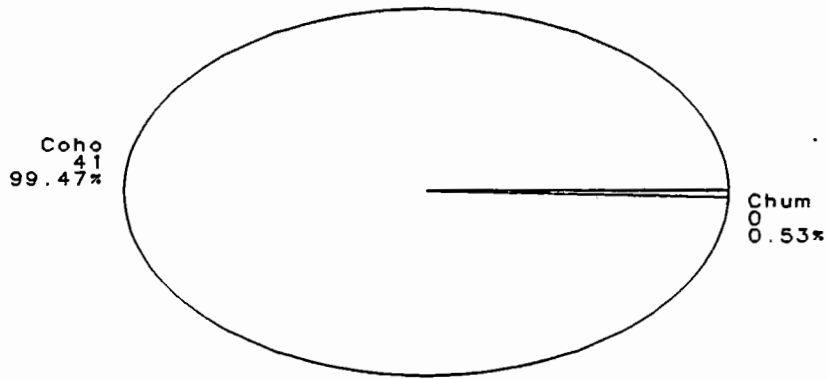


Chum				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15DEC	15DEC
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	2	04NOV	14NOV	20NOV
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	2	16NOV	16NOV	20NOV
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

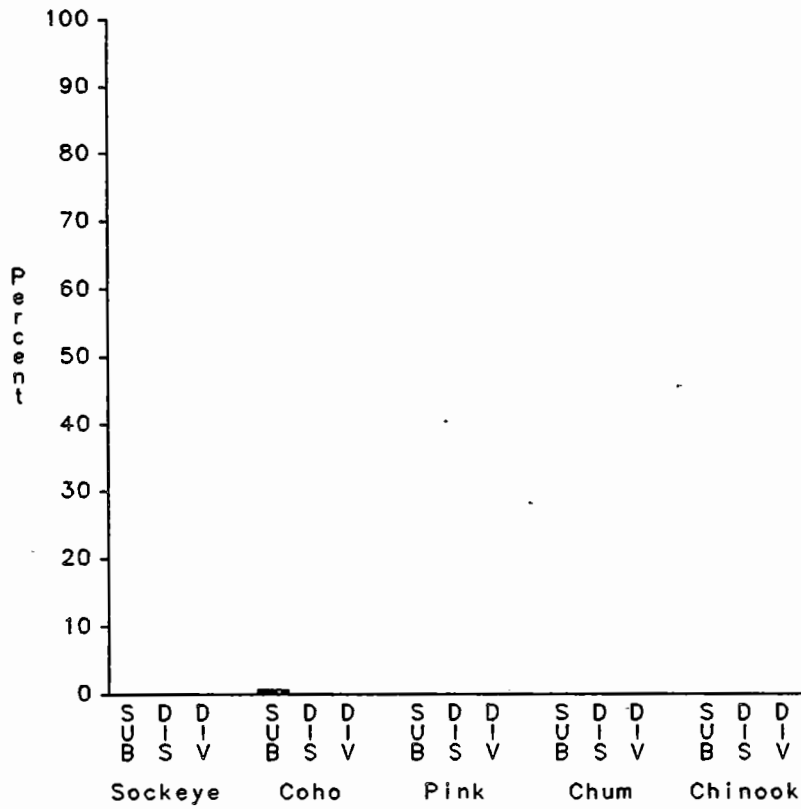
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**KNARSTON CREEK (92-4050)**  
 10-yr Mean Escapement  
 (1976-1985)



**KNARSTON CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



A. DESCRIPTION

Stream Name: BLOODS CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4100	Subdistrict: 17 NANAIMO/LADYSMITH
	Statistical Subarea: 17-18
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 5

Tributaries	Code	Topographic (1:50k) Map: 92F/8
		B.C.G.S. (1:20k) Map: 030
		U.T.M. Mouth: 10.4226.54557
		Lat./Long. Mouth: 49 DG. 15' 07'' 124 DG. 03' 45''
		Mainstem Length: 4.0 km Ref. No.: 17-10
		Watershed Area: Ref. No.:
Location: FLOWS N.E. INTO STRAIT OF GEORGIA E. OF LANTZVILLE - WELLINGTON DISTRICT.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	SLIGHT GRADIENT NEAR SOURCE AND MOUTH; MODERATE IN MID-SECTIONS. (REF. 17-10)

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
D DAM				SMALL DEBRIS DAMS AND SMALL FILLED-IN CEMENT DAM PRESENT BELOW HIGHWAY BUT ARE PASSABLE. (REF. 17-10)
CV CULVERT	0.9			HIGHWAY CULVERT (0.9M DROP, PLUS APRON & LONG, SHALLOW CULVERT) IS A TOTAL OBSTRUCTION SINCE 1967. (REF. 17-10)
CV CULVERT	0.9			POSSIBLY NO LONGER AN OBSTRUCTION DUE TO HIGHWAY IMPROVEMENT IN 1983-84. (REF. 17-67)
F FALLS		0.8		REQUIRES HIGH FLOWS AND/OR HIGH TIDE FOR ACCESS. (REF. 17-1)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: ESTIMATED DISCHARGE RATE IS 0.028 - 1.68CMS. (REF. 17-10)	
DRIES UP TO POOLS IN MANY SECTIONS; MOUTH NOT OPEN UNTIL FIRST FRESHET. SUMMER LOW FLOWS. (REF. 17-10, REF. 17-68)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SPAWN 0.8KM UPSTREAM FROM MOUTH; CREEK IS A GOOD PRODUCER OF COHO. COHO PRESENT ABOVE THE HIGHWAY. COHO ONCE ENTERED GREEN LAKE AND SPAWNED IN SOME SMALL FEEDERS BUT THE FEEDERS ARE NO LONGER EVIDENT. (REF. 17-1, REF. 17-10, REF. 17-11)
CH CHUM SALMON	A GOOD RUN OF CHUMS WAS SAID TO UTILIZE THE CREEK IN THE PAST, BUT WAS APPARENTLY WIPED OUT BY GILLNETTERS. POSSIBLY THE OCCASIONAL CHUM PRESENT ABOVE THE HIGHWAY. (REF. 17-10)
CT CUTTHROAT TROUT	UPPER SECTION OF BLOOD CREEK BETWEEN GREEN LAKE AND AN UNKNOWN DISTANCE BELOW RAILWAY CULVERT UTILIZED BY GREEN LAKE CUTTHROAT SPARNERS. RESIDENT CUTTHROATS ARE PRESENT ABOVE THE HIGHWAY. (REF. 17-10)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	5	1976 - 1985	28A-18	20	28A-18		
Comments: FALL AND WINTER RUNS, GOOD PRODUCTIVITY. (REF. 17-10)							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing										X X	X X	X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
UD URBAN DEVELOPMENT	RESIDENTIAL DEVELOPMENT THROUGHOUT THE LOWER REACHES. (REF. 17-68)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

GRAVEL, SAND AND COARSE RUBBLE SUBSTRATE. (REF. 17-10)
IMPROVEMENTS POSSIBLE INCLUDE STORAGE AT GREEN LAKE, HIGHWAY IMPROVEMENT AND OCCASIONAL REMOVAL OF DEBRIS. (REF. 17-10)
HIGHWAY IMPROVEMENT DONE 1986 - 1987. (REF. 17-67, REF. 17-68)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/07/06
Checked by: DON HOUSEGO	Date: 1987/06/02
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17

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REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 10

AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - BLOODS CREEK. 1969 - 71, NANAIMO RIVER FILES 1 & 2 (G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 11

AUTHOR: HOUSEGO, D.N.  
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS - BLOODS CREEK. 1963 - 1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 68

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

-----  
REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: BLOODS CREEK

WATERSHED-CODE: 92-4100

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	75	0	N/O	0	0
1954	0	N/O	0	N/O	0	0
1955	0	N/O	0	N/O	0	0
1956	0	N/O	0	N/O	0	0
1957	0	25	0	N/O	0	0
1958	0	25	0	75	0	0
1959	0	25	0	N/O	0	0
1960	0	25	0	0	0	0
1961	0	25	0	0	0	0
1962	0	25	0	0	0	0
1963	0	25	0	0	0	0
1964	0	25	0	0	0	0
1965	0	25	0	0	0	0
1966	0	25	0	25	0	0
1967	0	40	0	N/O	0	0
1968	0	50	0	N/O	0	0
1969	0	16	0	N/O	0	0
1970	0	20	0	N/O	0	0
1971	0	10	0	0	0	0
1972	0	4	0	0	0	0
1973	0	6	0	0	0	0
1974	0	10	0	0	0	0
1975	0	N/O	0	0	0	0
1976	0	N/O	0	0	0	0
1977	0	15	0	0	0	0
1978	0	6	0	0	0	0
1979	0	2	0	0	0	0
1980	0	N/O	0	0	0	0
1981	0	N/O	0	0	0	0
1982	0	N/O	0	0	0	0
1983	0	6	0	0	0	0
1984	N/O	20	N/O	N/O	N/O	N/O
1985	N/O	4	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

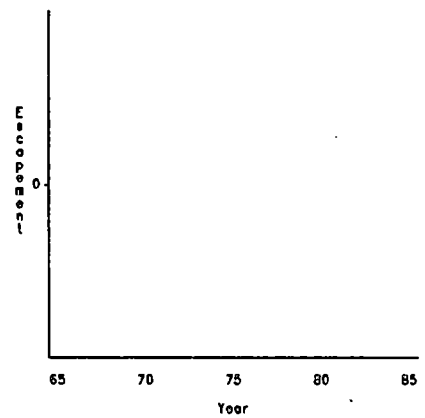
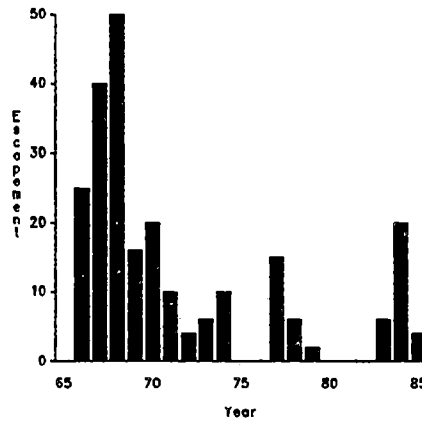
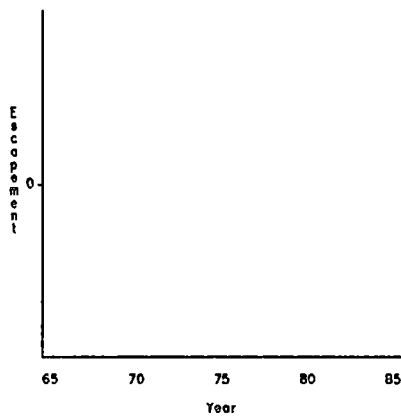
# BLOODS CREEK (92-4100)

## Escapement & Run Timing

Socketeye (SK)

Coho (CO)

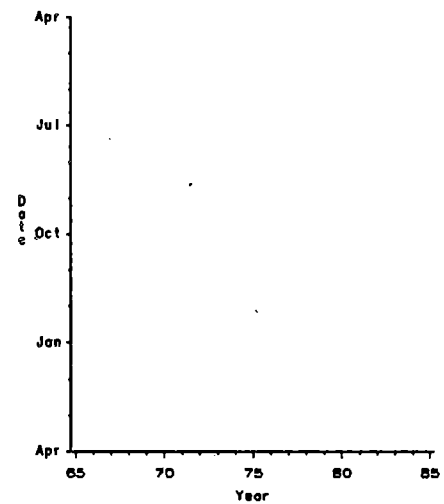
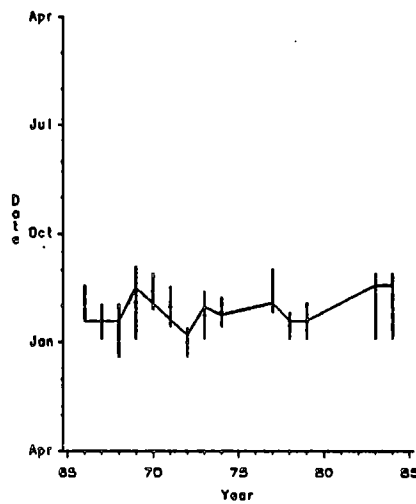
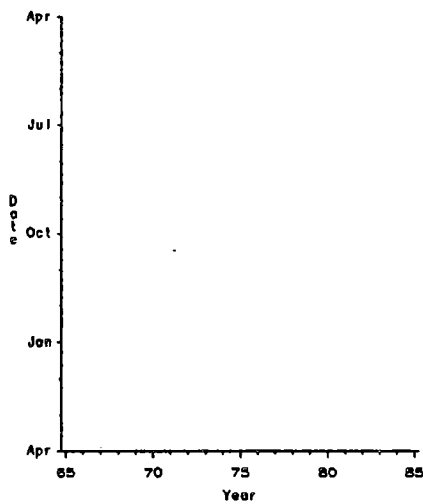
Pink (PK)



Socketeye

Coho

Pink



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15DEC	15DEC
1967	40	01DEC	15DEC	30DEC
1968	50	01DEC	15DEC	14JAN
1969	16	30OCT	17NOV	30DEC
1970	20	05NOV	-	05DEC
1971	10	18NOV	-	20DEC
1972	4	21DEC	27DEC	14JAN
1973	6	20NOV	03DEC	30DEC
1974	10	25NOV	10DEC	20DEC
1975	0	-	-	-
1976	0	-	-	-
1977	15	01NOV	30NOV	05DEC
1978	6	08DEC	15DEC	30DEC
1979	2	30NOV	15DEC	30DEC
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	6	05NOV	15NOV	30DEC
1984	20	05NOV	15NOV	30DEC
1985	4	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

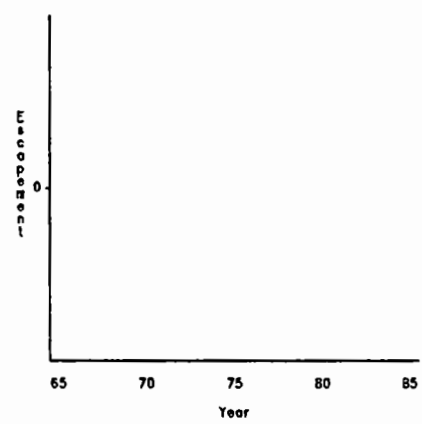
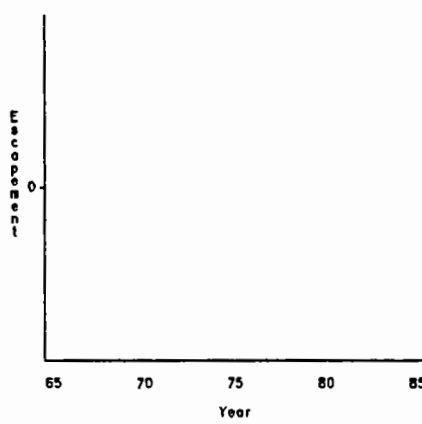
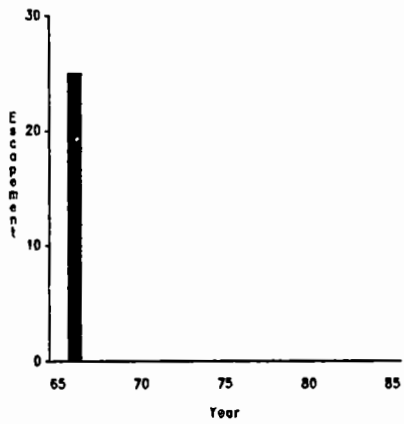
# BLOODS CREEK (92-4100)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

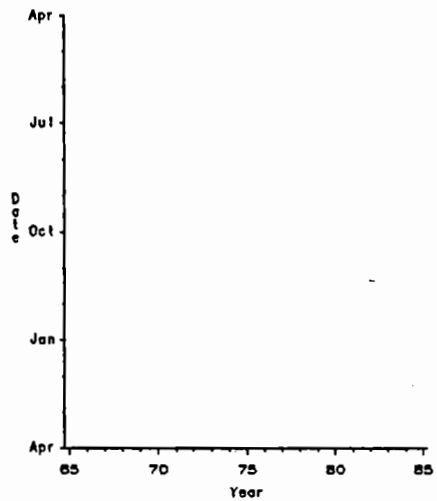
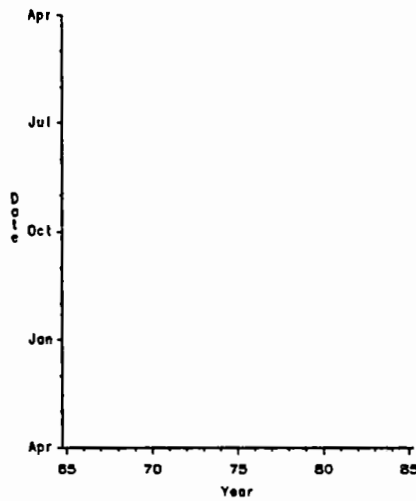
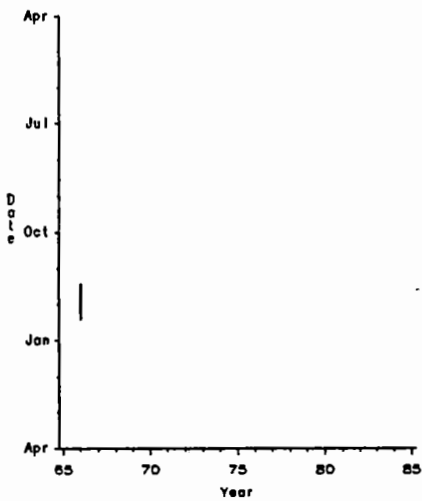
Steelhead (ST)



Chum

Chinook

Steelhead



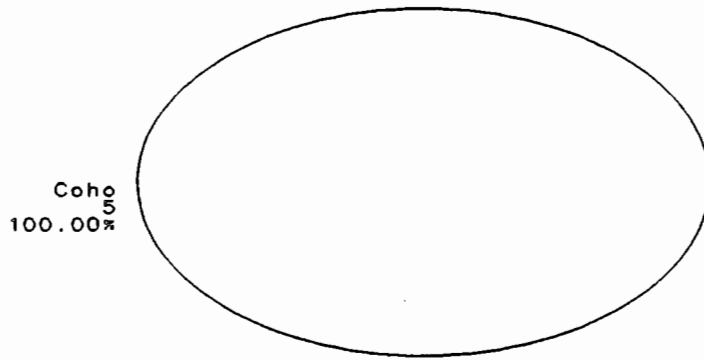
Chum				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15DEC	15DEC
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

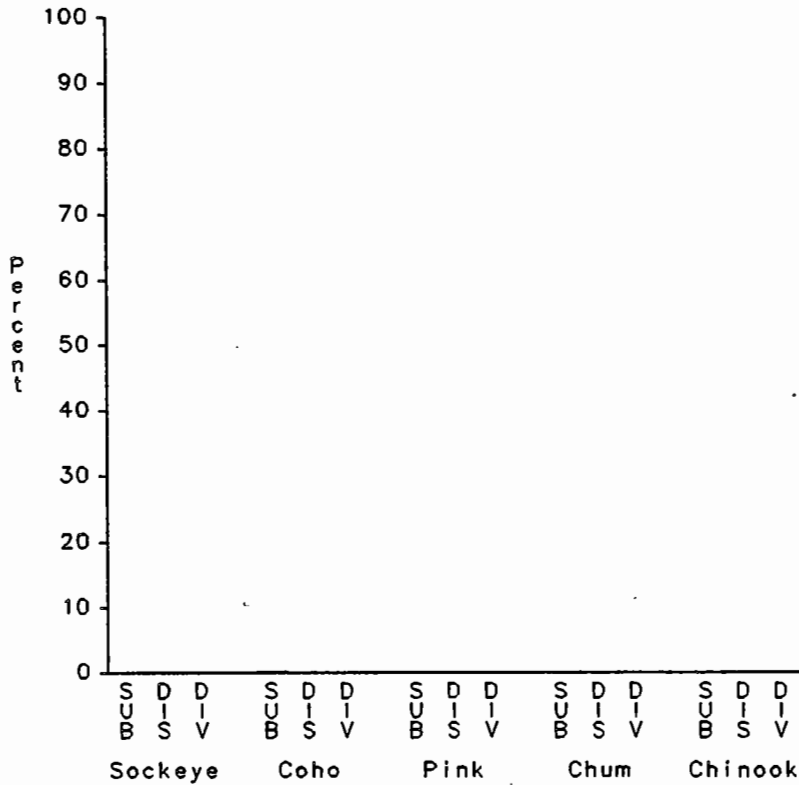
Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-



**BLOODS CREEK (92-4100)**  
 10-yr Mean Escapement  
 (1976-1985)



**BLOODS CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: DEPARTURE CREEK	D.F.O. Division: SOUTH COAST
Local Name: KEIGHLEY CREEK	District: 3 NANAIMO
Watershed Code: 92-4180	Subdistrict: 17 NANAIMO/LADYSMITH
	Statistical Subarea: 17-17
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 5

Tributaries	Code	Topographic (1:50k) Map: 926/4
		B.C.G.S. (1:20k) Map: 021
		U.T.M. Mouth: 10.4295.54506
		Lat./Long. Mouth: 49 06. 12' 25'' 123 06. 58' 00''
		Mainstem Length: 1.2 km Ref. No.: 17-1
		Watershed Area: Ref. No.:
Location: FLOWS S.E. INTO DEPARTURE BAY - WELLINGTON DISTRICT.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	STEEP GRADIENT AT 900M; PASSABLE. (REF. 17-1)

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS		1.2		(REF. 17-13)

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: WATER LEVELS: LOW JULY - AUG; NORMAL SEPT. - OCT.; HIGH NOV. - DEC. (REF. 17-13)			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CO COHO SALMON	LOWER 1.2KM (REF. 17-1)
CM CHUM SALMON	LOWER 0.25KM (REF. 17-67)
AD ALL SALMON	DISTRIBUTION OF SPAWNING SALMON: 0.4 - 0.8KM (REF. 17-13)
CT CUTTHROAT TROUT	IN THE PARK AREA. (REF. 17-67)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	32	1976 - 1985	28A-18	115	28A-18		

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing										X	X X	X

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
CO COLONIZATION	CO COHO SALMON	1.2	COHO COLONIZED ABOVE BARRIER BY HURST. (REF. 17-18)	1986/1987

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
UD URBAN DEVELOPMENT	HEAVY URBAN DEVEL. HAS CAUSED SILTATION PROBLEMS. STORMWATER DRAIN AGGRAVATING CREEK. DEPARTURE BAY PARK CONTAINS AREA OF ERODING BANKS WHICH CAUSES EXTENSIVE SILTATION. RIP-RAPPING AND CATCH BASIN CONSTRUCTION BY MUNICIPALITY IN EFFORTS TO UPGRADE HABITATS FOR SPAWNING AND REARING. (REF. 17-67, REF. 17-68)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ONCE ERODING BANK IS CONTROLLED, THE CREEK HAS POTENTIAL. (REF. 17-67)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

K. SIS COMPLETED BY

Completed by:	GITA KAPAH	Date:	1987/07/06
Checked by:	DOM HOUSEGO	Date:	1987/06/02
Last updated by:	MURRAY WILLIAMS	Date:	1988/07/11

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 13

AUTHOR: UNKNOWN  
DESCRIPTION: DEPARTURE CREEK FILE #5871-BC-2-3, ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS, 1952-1982. (TED EPPS OFFICE).  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

-----  
REFERENCE NO: 17- 18

AUTHOR: HURST, B., B. BLACKMAN  
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT, NOV. 30, 1985. G. LOGAN'S OFFICE.  
LOCATION: C OFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER  
KEYWORDS: AF ALL SPECIES

-----  
REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 68

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

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REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: DEPARTURE CREEK

WATERSHED-CODE: 92-4180

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	75	0	0	0	0
1954	0	25	0	0	0	0
1955	0	N/O	0	0	0	0
1956	0	N/O	0	1	0	0
1957	0	N/O	0	N/O	0	0
1958	0	N/O	0	0	0	0
1959	0	0	0	0	0	0
1960	0	25	0	0	0	0
1961	0	25	0	0	0	0
1962	0	25	0	0	0	0
1963	0	25	0	0	0	0
1964	0	25	0	0	0	0
1965	0	25	0	0	0	0
1966	0	25	0	N/O	0	0
1967	0	30	0	2	0	0
1968	0	10	0	N/O	0	0
1969	0	18	0	UNK	0	0
1970	0	20	0	N/O	0	0
1971	0	8	0	N/O	0	0
1972	0	4	0	2	0	0
1973	0	4	0	N/O	0	0
1974	0	30	0	N/O	0	0
1975	0	40	0	N/O	0	0
1976	0	UNK	0	0	0	0
1977	0	65	0	0	0	0
1978	0	N/O	0	0	0	0
1979	0	115	0	0	0	0
1980	0	27	0	0	0	0
1981	0	28	0	0	0	0
1982	UNK	N/O	UNK	UNK	UNK	0
1983	0	10	0	0	0	0
1984	UNK	UNK	UNK	UNK	UNK	UNK
1985	N/O	10	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

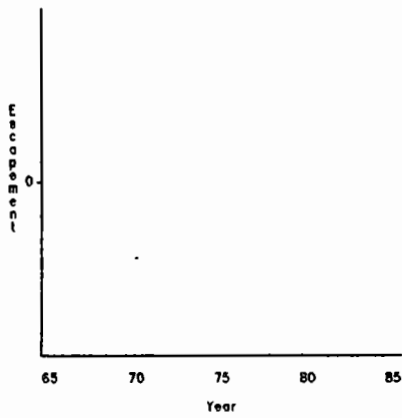
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

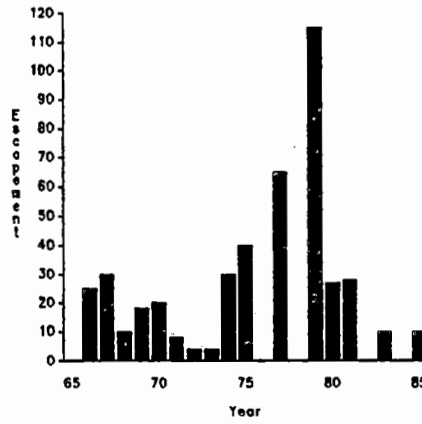
# DEPARTURE CREEK (92-4180)

## Escapement & Run Timing

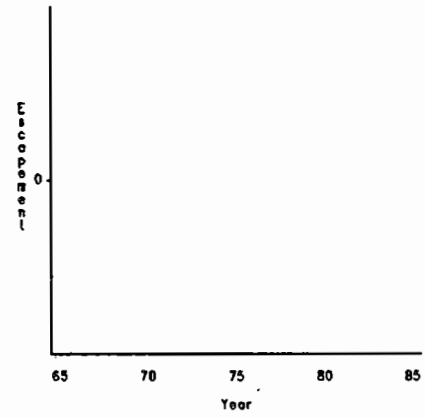
Sockeye (SK)



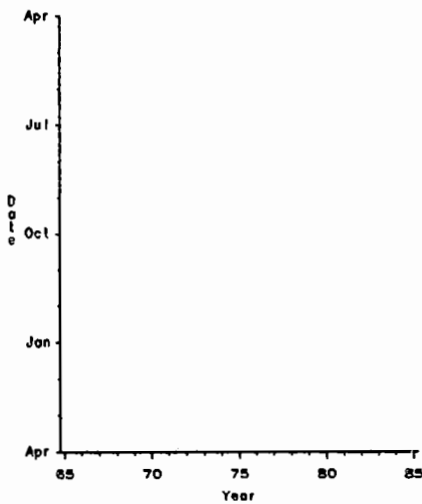
Coho (CO)



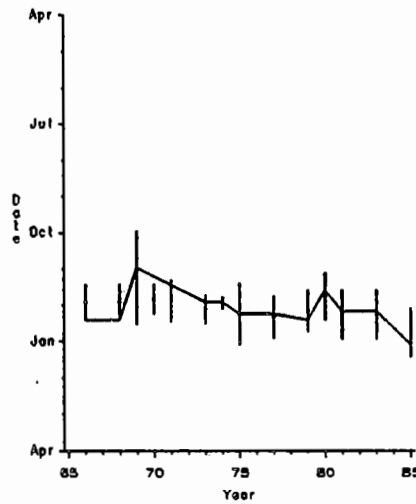
Pink (PK)



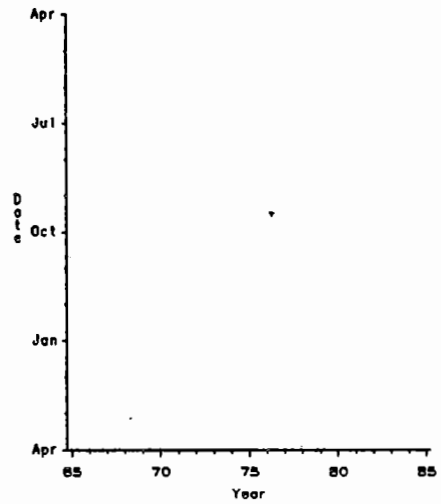
Sockeye



Coho



Pink



Sockeye

Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho

Year	Escapement	Start	Peak	End
1966	25	15NOV	15DEC	15DEC
1967	30	15DEC	15DEC	15DEC
1968	10	15NOV	15DEC	15DEC
1969	18	01OCT	01NOV	18DEC
1970	20	15NOV	-	10DEC
1971	8	11NOV	-	17DEC
1972	5	-	-	-
1973	4	24NOV	30NOV	18DEC
1974	30	28NOV	30NOV	06DEC
1975	40	14NOV	10DEC	05JAN
1976	-	-	-	-
1977	65	25NOV	10DEC	31DEC
1978	0	-	-	-
1979	115	20NOV	15DEC	25DEC
1980	27	05NOV	20NOV	15DEC
1981	28	20NOV	08DEC	31DEC
1982	0	-	-	-
1983	10	20NOV	08DEC	31DEC
1984	-	-	-	-
1985	10	05DEC	05JAN	15JAN

Pink

Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

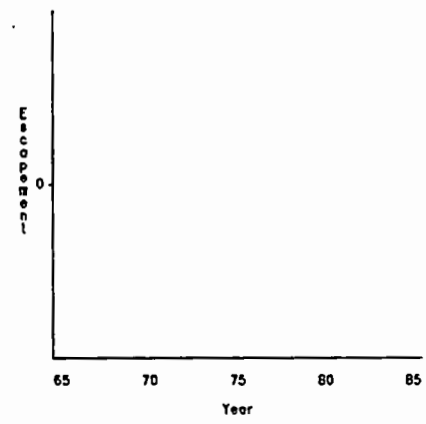
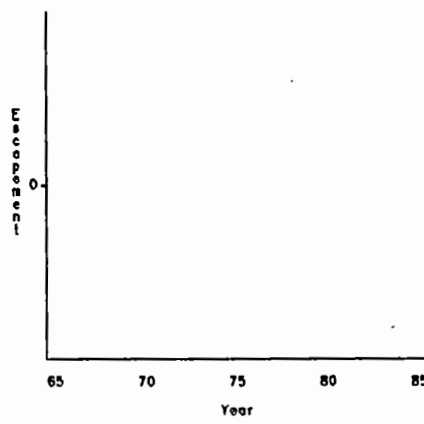
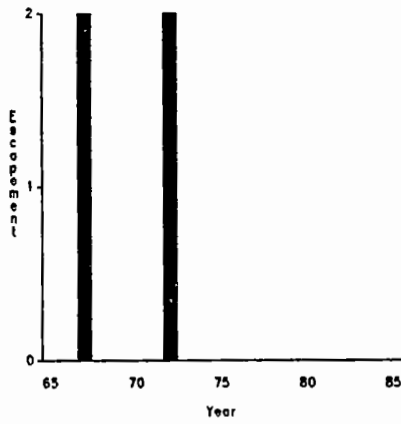
# DEPARTURE CREEK (92-4180)

## Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

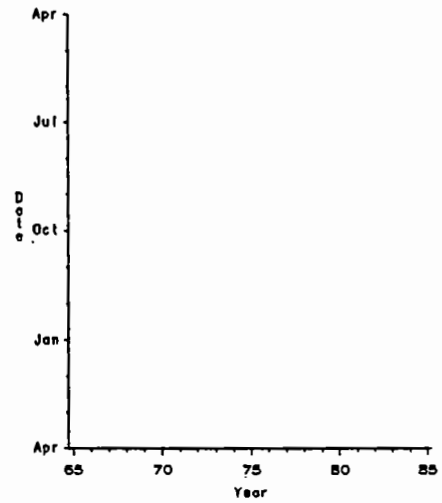
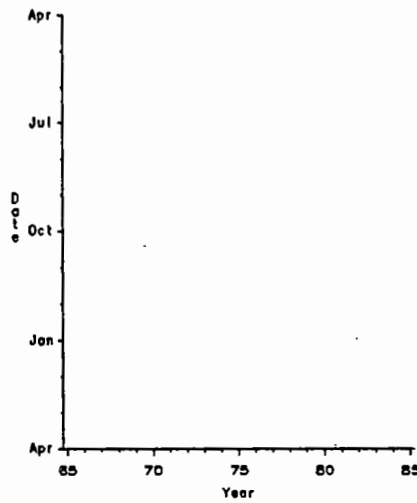
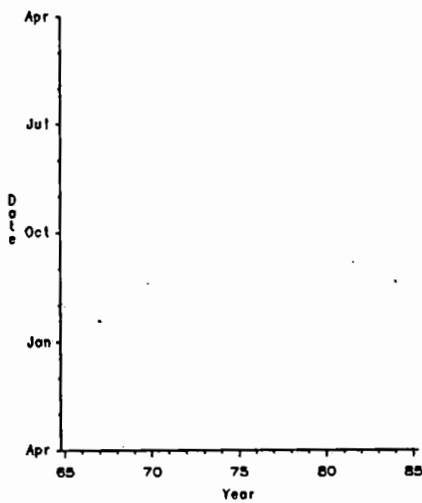
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**

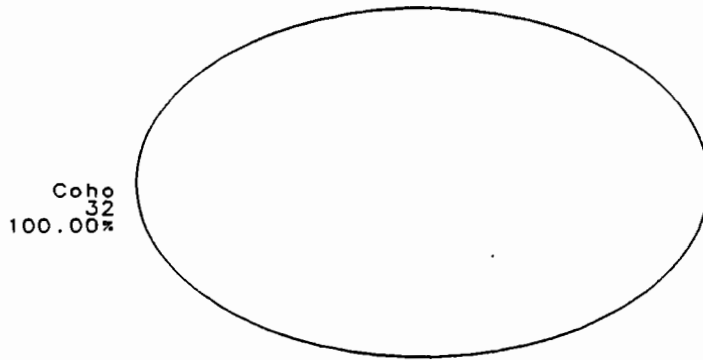


Chum				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	2	15DEC	15DEC	15DEC
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	2	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

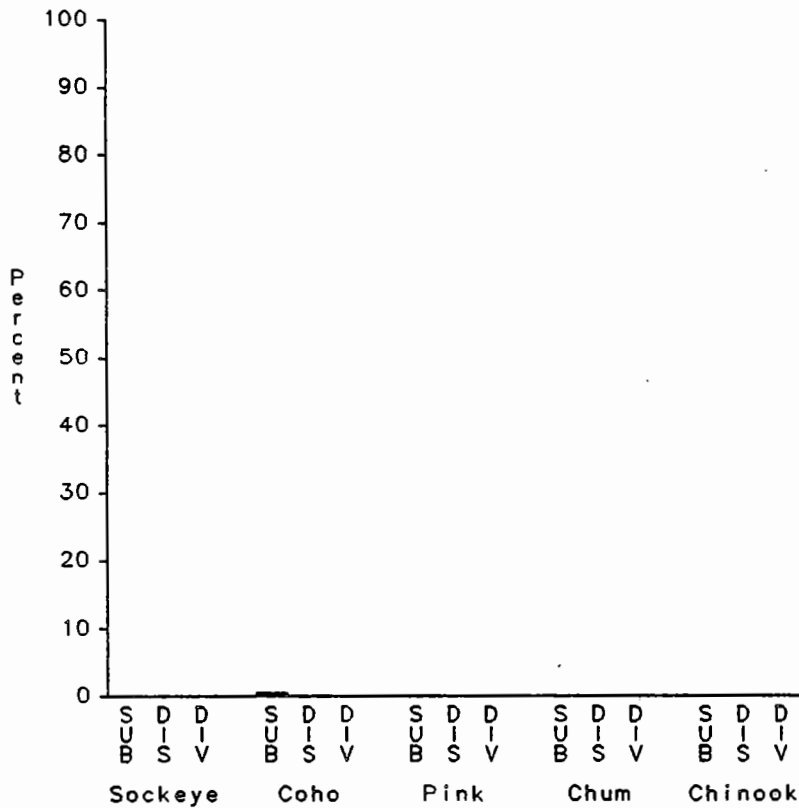
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

DEPARTURE CREEK (92-4180)  
 10-yr Mean Escapement  
 (1976-1985)



DEPARTURE CREEK : Escapement (1976-1985)  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





**A. DESCRIPTION**

Stream Name: <b>MILLSTONE RIVER</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>MILLSTREAM RIVER</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4200</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
UNNAMED CREEK BENSON CREEK	010	B.C.G.S. (1:20k) Map: <b>030</b>
	020	U.T.M. Mouth: <b>10.4315.54468</b>
		Lat./Long. Mouth: <b>49 DG. 10' 20'' 123 DG. 56' 29''</b>
		Mainstem Length: _____ Ref. No.:
		Watershed Area: <b>86.2 km2</b> Ref. No.: <b>17-1</b>
Location: <b>FLOWS FROM BRANNEN LAKE FOR 12.8KM IN S.E. DIRECTION BEFORE EMPTYING INTO NANAIMO HARBOUR.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>GRADIENT 0.7% (REACH 2) TO 1.3% (REACH 1) (REF. 17-15)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
NB NO BARRIER				ENTIRE LENGTH ACCESSIBLE TO ANADROMOUS FISH (1987). SEVERAL AREAS OF DIFFICULT PASSAGE ABOVE FISHWAY, MAY RESTRICT CHUMS OR MAY BE IMPASSABLE AT LOW FLOWSABLE AT LOW FLOWS. (REF. 17-17)
C CASCADE	30.0			IMMEDIATELY ABOVE FALLS; SEVERAL CASCADES AND A FLAT BEDROCK CHUTE; SLOPE- 10%. FAST SHALLOW WATER, NO RESTING AREAS. ADULT ST AND CO MAY PASS AT CERTAIN FLOWS. (REF. 17-19, REF. 17-67)
F FALLS	5.0	2.4		BOWEN PARK FALLS; FISH LADDER BUILT IN 1982 PROVIDES ACCESS. THE FISHWAY WAS NOT OPERATIONAL UNTIL 1987. (REF. 17-19)

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge: Y
W.S.C. Station No. 1: <b>08HB032</b>	No. 2:                                  No. 3:                                  No. 4:
Comments: <b>GAUGE AT NANAIMO. DISCHARGE VARIES FROM 0.15 - 1.52 CMS. (REF. 17-17)</b>	
<b>WATER LICENCES PERMIT 94.7 CMS TO BE PUMPED DIRECTLY FROM THE RIVER. THIS AMOUNT IS IN EXCESS OF THE MAX FLOW OF 91.0 CMS RECORDED ON MARCH 28,1979. (REF. 17-14, REF. 17-20)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CO COHO SALMON	PRESENT IN SMALL NUMBERS DUE TO DIFFICULT ACCESS AND LIMITED SPAWNING AND REARING HABITAT IN LOWER REACHES. COHO FRY FROM NANAIMO RIVER BROOD STOCK WERE STOCKED IN REACH 2 IN 1981-83. IN THE WINTER OF 1983, SMALL NUMBERS OF COHO FROM 1981 STOCKING RETURNED.M. (REF. 17-15, REF. 17-20, REF. 17-21)
CM CHUM SALMON	DFO RECORDS INDICATE LIMITED UTILIZATION OF LOWER 500M (REF. 17-20)
CH CHINOOK SALMON	HISTORICALLY SUPPORTED A RUN OF CH, BUT PRESENT UTILIZATION OF THIS SPECIES IS NIL. (REF. 17-21, REF. 17-65)
ST STEELHEAD	SMOLTS FROM THE BIG QUALICUM HATCHERY HAVE BEEN STOCKED IN THE MILLSTONE ON A NUMBER OF OCCASIONS. STEELHEAD SPAWN IN THE UPPER REACHES. (REF. 17-22, REF. 17-67)

**D. DISTRIBUTION SUMMARY CONTINUED**

Species	Watershed Distribution
AF ALL SPECIES	OTHER SPECIES INCLUDE 3-SPINED STICKLEBACKS, PRICKLY SCULPIN, PUMPKINSEED SUNFISH. (REF. 17-14, REF. 17-15)
CT CUTTHROAT TROUT	RESIDENT CT ARE DISTRIBUTED THROUGHOUT THE SYSTEM AND PROVIDE A SMALL FISHERY RESTRICTED TO UNDER 16/OVER 65 AGE GROUPS. SMOLT TRAPS PLACED ABOVE BOWEN PARK FALLS (1982-83) INDICATED THAT SOME RESIDENT CT FRY MAY SMOLT AND MIGRATE TO THE OCEAN. (REF. 17-20)
KO KOKANEHE	REPORTEDLY PRESENT IN LARGE NUMBERS IN BRANNEN LAKE. (REF. 17-19)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	105	1981 - 1985	28A-18	300	28A-18		
CM CHUM SALMON	6	1981 - 1985	28A-18	20	28A-18		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing									X X	X X	X X	X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	X
ST STEELHEAD	Migration Spawning Incubation Rearing											X	X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
HY HATCHERY	CO COHO SALMON	0.0	INTEND TO COMPARE SURVIVAL OF EARLY AND RELEASES AND REARING POTENTIAL OF LAKE VS RIVER AND EXAMINE RECRUITMENT TO VARIOUS FISHERIES. WILL C.W.T. AND FIN CLIP THE FOLLOWING: 15K LEFT VENTRAL AT 0.5G AND 15K RV AT 2G TO BRANNEN LAKE; 15K LEFT MAXILLARY AT 0.5G & 15K RM AT 2G TO MILLSTONE RIVER. (REF. 17-18)	1985/
CO COLONIZATION	CO COHO SALMON	0.0	SUFFICIENT BROOD STOCK UNAVAILABLE IN THE NANAIMO RIVER MOST YEARS, BY COLONIZING COHO FRY IN MILLSTONE, COULD ACCESS RETURNING ADULTS AND MOVE BACK TO HATCHERY AND THEN OUTPLANT TO THE LARGE NANAIMO SYSTEM. (REF. 17-20, REF. 17-68)	1970/

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	IRRIGATION; FROM BRANNEN LAKE DOWN. (REF. 17-67)
UD URBAN DEVELOPMENT	(REF. 17-67)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

REACH DATA AVAILABLE. (REF. 17-14, REF. 17-15, REF. 17-19)
MOEP INDICATED POTENTIAL HABITAT ALONG ENTIRE LENGTH INCLUDING MCGARRIGLE AND MCNEIL TRIBUTARIES. (REF. 17-2, REF. 17-23)
RECOMMENDATIONS: 1) NO FURTHER WATER LICENCES BE ISSUED 2) WATER INLET TO BUTTERTUBS MARSH BE SCREENED 3) INSTALLATION OF A FISH TRAP IN THE BOWEN PARK FISHWAY ( FOR BROOD STOCK CAPTURE) 4) FURTHER STUDIES OF COHO COLONIZATION POTENTIAL TO BE CARRIED OUT (B. HURST & R. BAMS) (REF. 17-14, REF. 17-20)
FISH GET THROUGH FISHWAY BUT NOW CAN'T GO PAST THE CASCADES! (ST CAN PASS BUT NOT COHO) (REF. 17-65, REF. 17-67)
CITY WILL DO SOME FLOOD CONTROL WORK ON BUTTERTUBS MARSH AREA (1987) (REF. 17-67)

J. FISHERY OFFICER NARRATIVE

Date Prepared:     /   /	Prepared By:
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K. SIS COMPLETED BY

Completed by:	GITA KAPAHI	Date:	1987/07/06
Checked by:	DON HOUSEGO	Date:	1987/06/02
Last updated by:	MURRAY WILLIAMS	Date:	1988/07/08

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 2

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 14

AUTHOR: PICK, R.J., T.A. SEPTAV  
DESCRIPTION: A BIOPHYSICAL STUDY OF THE MILLSTONE RIVER, OCT. 1979. NANAIMO RIVER SALMONID ENHANCEMENT PROJECT, SPECIAL PROJECTS DIVISION, SEP.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 15

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: COHO SALMON - SMOLT PRODUCTION FROM FRY STOCKING IN A LOW ELEVATION VANCOUVER ISLAND STREAM.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: CO COHO FS FISH SAMPLING R REARING

-----  
REFERENCE NO: 17- 17

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

-----  
REFERENCE NO: 17- 18

AUTHOR: HURST, B., B. BLACKMAN  
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT, NOV. 30, 1985. G. LOGAN'S OFFICE.  
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER  
KEYWORDS: AF ALL SPECIES

-----  
REFERENCE NO: 17- 19

AUTHOR: UNKNOWN  
DESCRIPTION: RUSH CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY, 1982.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

-----  
REFERENCE NO: 17- 21

AUTHOR: UNKNOWN  
DESCRIPTION: MILLSTONE RIVER RILE #5B71-BC-2-3 ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS 1981-1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES S SPAWNING

-----  
REFERENCE NO: 17- 22

AUTHOR: HURST, B.  
DESCRIPTION: NANAIMO RIVER SALMON ENHANCEMENT PROJECT - PERSONAL INFORMATION.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT

-----  
REFERENCE NO: 17- 23  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: STREAM AND LAKE INVENTORY MAPS, M.O.E. 926/4 EAST AND WEST. 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 65  
-----

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 67  
-----

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S OFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68  
-----

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>DIVER LAKE CREEK, JINGLE CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4200-010</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92F/1
		B.C.G.S. (1:20k) Map: 030
		U.T.M. Mouth: 10.4250.54496
		Lat./Long. Mouth: 49 DG. 11' 45'' 124 DG. 01' 50''
		Mainstem Length: 2.4 km Ref. No.: 17-24
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO MILLSTONE RIVER.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>LOW GRADIENT. (REF. 17-24)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>CV CULVERT</b>		<b>0.5</b>		<b>0.5KM FROM DIVER LAKE OFF BEAVER CREEK. (REF. 17-24)</b>
<b>NB NO BARRIER</b>		<b>2.4</b>		<b>LENGTH ACCESSIBLE TO ANADROMOUS FISH (REF. 17-24)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: <b>ESTIMATED DISCHARGE INTERMITTENT TO 0.28CMS (REF. 17-24)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CT CUTTHROAT TROUT</b>	<b>RESIDENT AND DIVER LAKE SPAWNERS WINTER RUNS. POOR PRODUCTIVITY. DIVER LAKE IS A SMALL MATURE LOW LAND LAKE WITH GOOD CUTTHROAT AND WATERFOWL HABITAT. GOOD ACCESS. (REF. 17-24)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

VERY SMALL STREAM FLOWING THROUGH MIXED SECOND GROWTH, SWAMP AND FARMLAND. ENTIRE STREAM SENSITIVE DUE TO SIZE. SILT AND DETRITUS WITH SCATTERED GOOD GRAVEL. IMPROVEMENTS POSSIBLE: CULVERT AND JAM REMOVAL TO ASSIST SPAWNERS. (REF. 17-24)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:        /    /	Prepared By:
------------------------------	--------------

**K. SIS COMPLETED BY**

Completed by:            GITA KAPAH	Date: 1987/07/06
Checked by:             DON HOUSEGO	Date: 1987/06/02
Last updated by:        B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4200-010  
Stream Name: UNNAMED CREEK  
Page: 1

-----  
REFERENCE NO: 17- 24  
-----

AUTHOR: BURNS, T.  
DESCRIPTION: STREAM INVENTORY FORM. JINGLE CREEK, 1970. (LOCAL INITIATIVE PROGRAM- L.I.P.)  
LOCATION: 0 MDE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT



**A. DESCRIPTION**

Stream Name: <b>BENSON CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4200-020</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>030</b>
		U.T.M. Mouth: <b>10.4232.54510</b>
		Lat./Long. Mouth: <b>49 DG. 12' 32'' 124 DG. 03' 15''</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY OF BRANNEN LAKE.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>F FALLS</b>	<b>10.0</b>			<b>AT MOUTH (REF. 17-30)</b>
<b>F FALLS</b>	<b>30.0</b>			<b>AT MOUTH (REF. 17-30)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
Comments: <b>CRITICAL FLOWS IN SUMMER, TENDS TO DRY OUT. (REF. 17-65)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>ST STEELHEAD</b>	<b>VERY FEW ST BELOW FALLS. (REF. 17-28, REF. 17-30)</b>
<b>CT CUTTHROAT TROUT</b>	<b>ELECTROFISHING INDICATES HIGH DENSITIES. PORTIONS OF STREAM NEAR MOUTH ARE INTERMITTENT. REASONABLE SPAWNING POTENTIAL. (REF. 17-20, REF. 17-30)</b>
<b>RB RAINBOW TROUT</b>	<b>RESIDENTS ABOVE FALLS (REF. 17-28, REF. 17-30)</b>
<b>TR TROUT</b>	<b>AROUND BRANNEN LAKE. (REF. 17-2)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

MOEP MAP INDICATES POTENTIAL HABITAT ALONG ENTIRE LENGTH. (REF. 17-2)
HOWEVER, CREEK HAS LOW FLOW. (REF. 17-65)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by:     GITA KAPAHI	Date: 1987/07/06
Checked by:     DON HOUSEGO	Date: 1987/06/02
Last updated by: B.D. TUTTY	Date: 1988/03/07

-----  
REFERENCE NO: 17- 2  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 20  
-----

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 28  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: MILLSTONE RIVER STREAM SURVEY. DEC. 3, 1969. (MILLSTONE RIVER BYPASS; G. REID FILES)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 30  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 65  
-----

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON

A. DESCRIPTION

Stream Name: <b>CHASE RIVER</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4290</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 926/4
<b>UNNAMED CREEK</b>	<b>100</b>	B.C.G.S. (1:20k) Map: <b>011</b> U.T.M. Mouth: <b>10,4330,54429</b> Lat./Long. Mouth: <b>49 DG. 08' 10'' 123 DG. 55' 15''</b> Mainstem Length: <b>13.8 km</b> Ref. No.: <b>17-31</b> Watershed Area: Ref. No.:
		Location: <b>FLows N.E. INTO NANAIMO HARBOUR, S. OF NANAIMO - NANAIMO DISTRICT.</b>

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	REACH BY REACH SLOPE INFORMATION AVAILABLE. (REF. 17-31)

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
CV CULVERT	3.0			UNDER RAIL LINE, 60M LONG (REF. 17-31, REF. 17-32)
D DAM	5.0			(REF. 17-23)
D DAM	4.6			(REF. 17-23)
D DAM		4.8	AO ALL SALMON	(REF. 17-1)

C. FLOW

Flow Control: <b>Y</b>	Water Survey of Canada (WSC) Flow Gauge: <b>Y</b>
W.S.C. Station No. 1: <b>08HB054</b>	No. 2:    No. 3:    No. 4:
Comments: <b>GAUGE NEAR NANAIMO. ESTIMATED FLOW RATE 0.028 - 14.0 CMS. (REF. 17-31)</b>	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	0.4 KM TO HAREWOOD RESERVOIR. HIGH DENSITIES OF FISH PRESENT (1979). (REF. 17-1, REF. 17-33)
CM CHUM SALMON	0.4KM TO 1.6KM. BEST SPAWNING HABITAT IN LOWER PORTION. HIGH DENSITIES OF FISH PRESENT (1979). (REF. 17-1, REF. 17-33)
ST STEELHEAD	WAS STOCKED WITH ST SMOLTS FROM BIG QUALICUM UNTIL 1983 (REF. 17-20)
CT CUTTHROAT TROUT	HIGH DENSITIES OF FISH PRESENT (1979). HISTORICALLY A GOOD PRODUCER OF CT, BUT PRODUCTION LOW IN PAST FEW YEARS. (REF. 17-20, REF. 17-33)
RB RAINBOW TROUT	HIGH DENSITIES OF FISH PRESENT (1979). (REF. 17-32, REF. 17-33)
RB RAINBOW TROUT	HIGH DENSITIES OF FISH PRESENT (1979) (REF. 17-33)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	122	1976 - 1985	28A-18	200	28A-18		
CM CHUM SALMON	222	1976 - 1985	28A-18	980	28A-18		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X X	X X	

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
HY HATCHERY		0.0	MINI HATCHERY (MALASPINA PROJECT) (REF. 17-67)	1985/
EN ENHANCEMENT ACTS	CO COHO SALMON	0.0	HISTORICAL TRANSPLANT FROM NANAIMO R. (REF. 17-66)	/

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
WQ WATER QUALITY	MINOR WATER QUALITY PROBLEMS DUE TO SEPTIC/URBAN DEVELOPMENT. HEADWATERS IN THE NANAIMO WATER WORKS. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

POSSIBLE POTENTIAL FOR SOME COHO COLONIZATION FROM HAREWOOD RESERVOIR; SPILLWAY SHOULD BE IMPROVED TO REDUCE MORTALITIES. (REF. 17-20)
BANKS STABLE; GOOD DEGREE OF UNDERCUT BANKS WITH STABLE ROOT WADS. (REF. 17-20)
MODERATE AMOUNT OF DOMESTIC INORGANIC GARBAGE IN CHANNEL. (REF. 17-31)
SUBSTRATE PLUGGED WITH SEDIMENT- APPEARS SLIGHTLY POLLUTED; UPPER AREAS LOW POTENTIAL AS IT DRIES TO ISOLATED POOLS. (REF. 17-26)
SEDIMENT NOT SERIOUS PROBLEM DURING INCUBATION PERIOD 1979 - 1983. (REF. 17-17)
HAS 40% GRAVEL; 20% BOULDER; 10% BEDROCK. (REF. 17-20)
COBBLE/BOULDER INCREASES NEAR UPPER PORTION OF REACH. (REF. 17-20)
GOOD SYSTEM, BUT MOST OF SPAWNING HABITAT IS IN THE LOWER END. NOTHING IN UPPER END. (REF. 17-65)
HEAVY POACHING BY NATIVES. (REF. 17-67)

J. FISHERY OFFICER NARRATIVE

Date Prepared:     /     /	Prepared By:
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K. SIS COMPLETED BY

Completed by:	GITA KAPANI	Date:	1987/07/06
Checked by:	CINDY HARLOW	Date:	1987/06/02
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 17

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

-----  
REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

-----  
REFERENCE NO: 17- 23

AUTHOR: UNKNOWN  
DESCRIPTION: STREAM AND LAKE INVENTORY MAPS, M.O.E. 92G/4 EAST AND WEST. 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

-----  
REFERENCE NO: 17- 26

AUTHOR: MACEY, S.  
DESCRIPTION: MILLSTONE STUDENT PROJECTS (1982, 1983). MALASPINA COLLEGE AQUACULTURE AND FISHERIES TECHNOLOGY PROGRAM. (BILL PENNELL FILES).  
LOCATION: EE MALASPINA COLLEGE - NANAIMO  
KEYWORDS: AF ALL SPECIES

-----  
REFERENCE NO: 17- 31

AUTHOR: UNKNOWN  
DESCRIPTION: CHASE RIVER COMPUTER PRINTOUT OF REACH TABLE AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

-----  
REFERENCE NO: 17- 32

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS NANAIMO AND NANAIMO LAKES. MAP NO. 92G/4 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 33

AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER ELECTROFISHING . MAY - OCT. 1979. (NANAIMO RIVER FILES 1 & 2; G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

-----  
REFERENCE NO: 17- 65

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

-----  
REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE LIST  
1988/06/29

Watershed Code: 92-4290  
Stream Name: CHASE RIVER  
Page: 2

-----  
REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CD COHO  
PK PINK S SPAWNING SK SOCKEYE



ESCAPEMENT: CHASE RIVER

WATERSHED-CODE: 92-4290

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	UNK	UNK	UNK	UNK	UNK	UNK
1954	UNK	UNK	UNK	UNK	UNK	UNK
1955	UNK	UNK	UNK	UNK	UNK	UNK
1956	UNK	UNK	UNK	UNK	UNK	UNK
1957	UNK	UNK	UNK	UNK	UNK	UNK
1958	UNK	UNK	UNK	UNK	UNK	UNK
1959	UNK	UNK	UNK	UNK	UNK	UNK
1960	UNK	UNK	UNK	UNK	UNK	UNK
1961	UNK	UNK	UNK	UNK	UNK	UNK
1962	UNK	UNK	UNK	UNK	UNK	UNK
1963	UNK	UNK	UNK	UNK	UNK	UNK
1964	UNK	UNK	UNK	UNK	UNK	UNK
1965	UNK	UNK	UNK	UNK	UNK	UNK
1966	UNK	UNK	UNK	UNK	UNK	UNK
1967	UNK	UNK	UNK	UNK	UNK	UNK
1968	UNK	UNK	UNK	UNK	UNK	UNK
1969	UNK	UNK	UNK	UNK	UNK	UNK
1970	UNK	UNK	UNK	UNK	UNK	UNK
1971	UNK	UNK	UNK	UNK	UNK	UNK
1972	UNK	UNK	UNK	UNK	UNK	UNK
1973	UNK	UNK	UNK	UNK	UNK	UNK
1974	0	650	0	170	0	N/O
1975	0	200	0	25	0	0
1976	0	60	0	20	0	0
1977	0	180	0	80	0	0
1978	0	50	0	210	0	0
1979	0	150	0	100	0	0
1980	0	200	0	0	0	0
1981	0	69	0	389	0	0
1982	0	200	0	980	0	0
1983	0	75	0	75	0	0
1984	N/O	40	N/O	20	N/O	N/O
1985	N/O	200	N/O	350	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

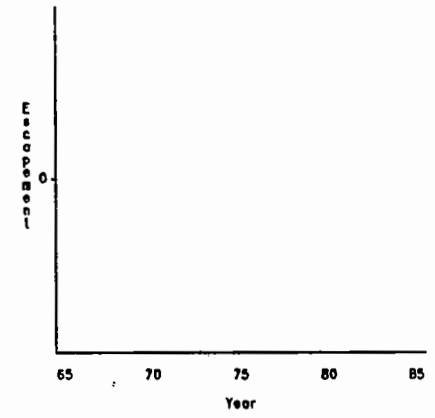
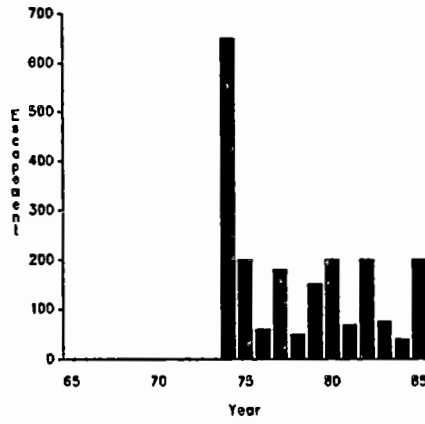
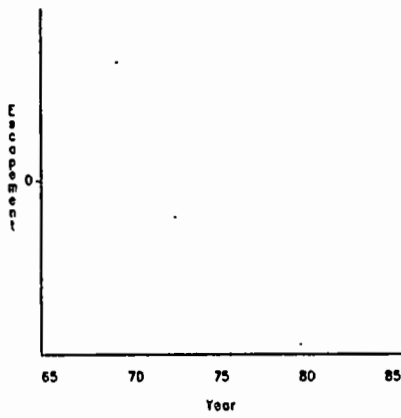
# CHASE RIVER (92-4290)

## Escapement & Run Timing

**sockeye (SK)**

**Coho (CO)**

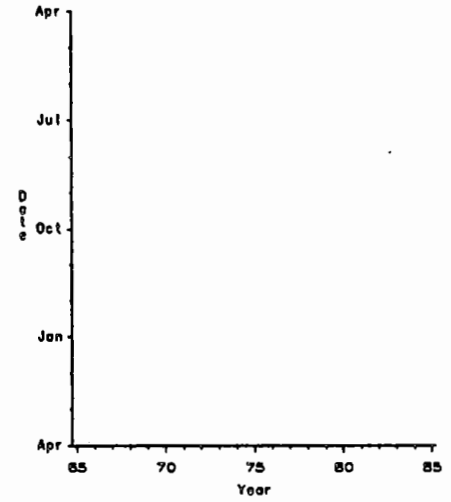
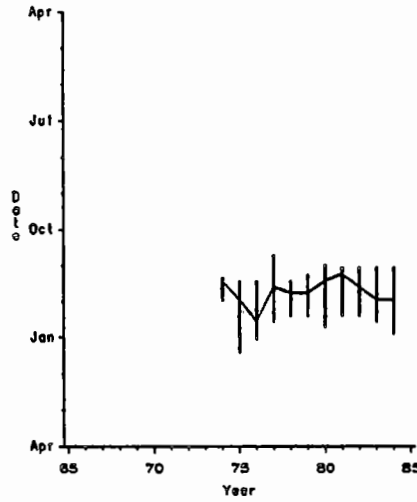
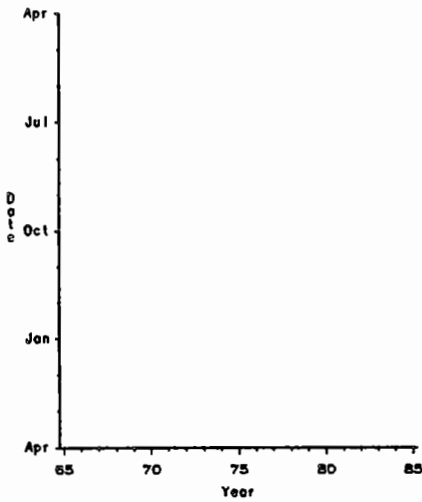
**Pink (PK)**



**Sockeye**

**Coho**

**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	650	12NOV	15NOV	02DEC
1975	200	15NOV	01DEC	15JAN
1976	60	15NOV	20DEC	04JAN
1977	180	24OCT	20NOV	20DEC
1978	50	15NOV	25NOV	15DEC
1979	150	16NOV	25NOV	15DEC
1980	200	01NOV	15NOV	25DEC
1981	60	03NOV	06NOV	15DEC
1982	200	03NOV	-	15DEC
1983	75	03NOV	01DEC	20DEC
1984	40	03NOV	01DEC	30DEC
1985	200	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

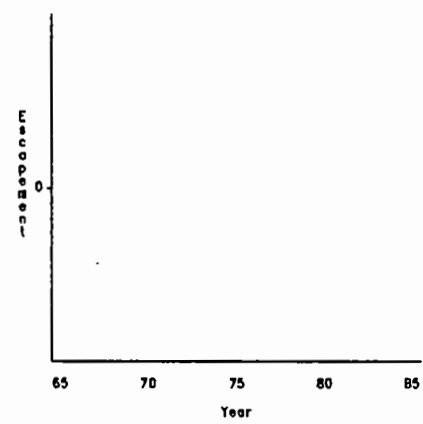
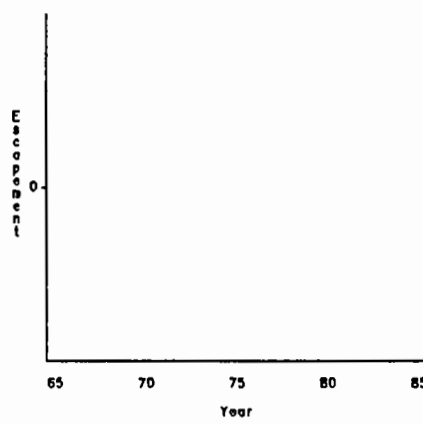
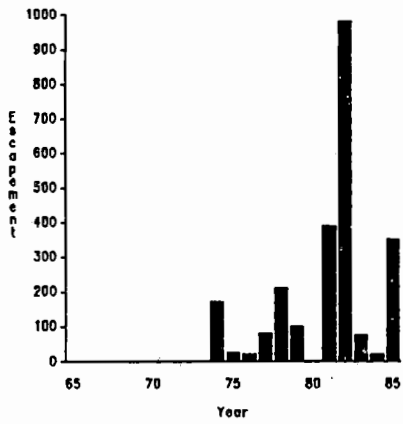
# CHASE RIVER (92-4290)

## Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

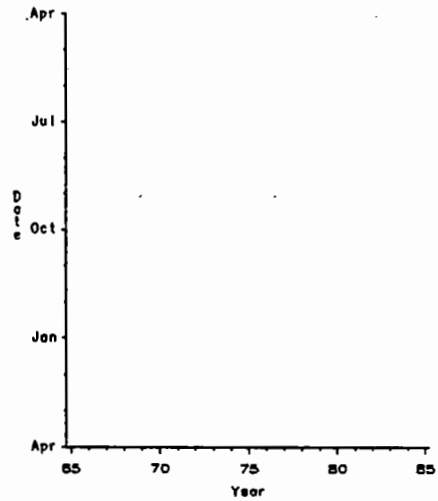
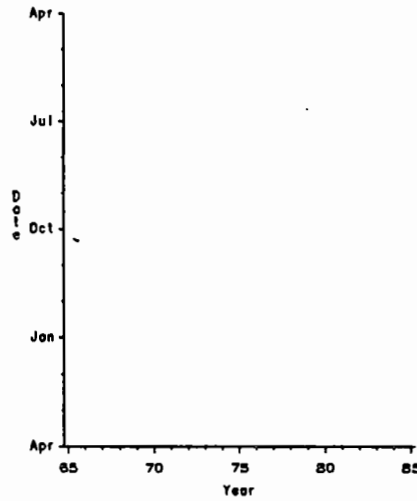
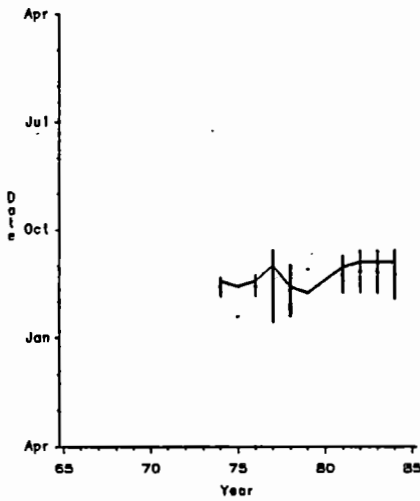
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**



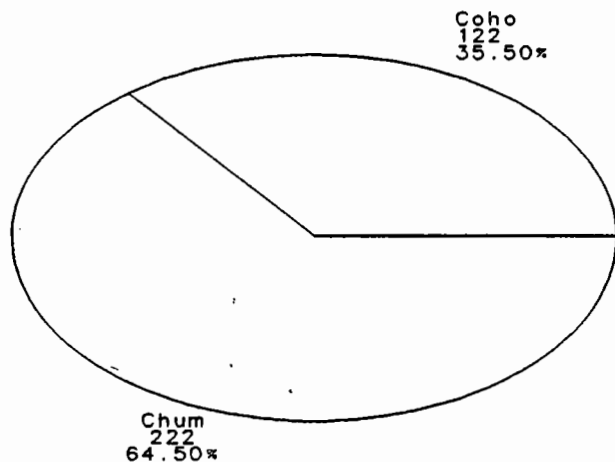
Chum				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	170	12NOV	15NOV	28NOV
1975	25	-	20NOV	15DEC
1976	20	10NOV	15NOV	28NOV
1977	80	20OCT	02NOV	20DEC
1978	210	01NOV	20NOV	15DEC
1979	100	05NOV	25NOV	-
1980	0	-	-	-
1981	380	25OCT	03NOV	25NOV
1982	980	20OCT	30OCT	25NOV
1983	75	20OCT	30OCT	25NOV
1984	20	20OCT	30OCT	30NOV
1985	350	-	-	-

Chinook				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

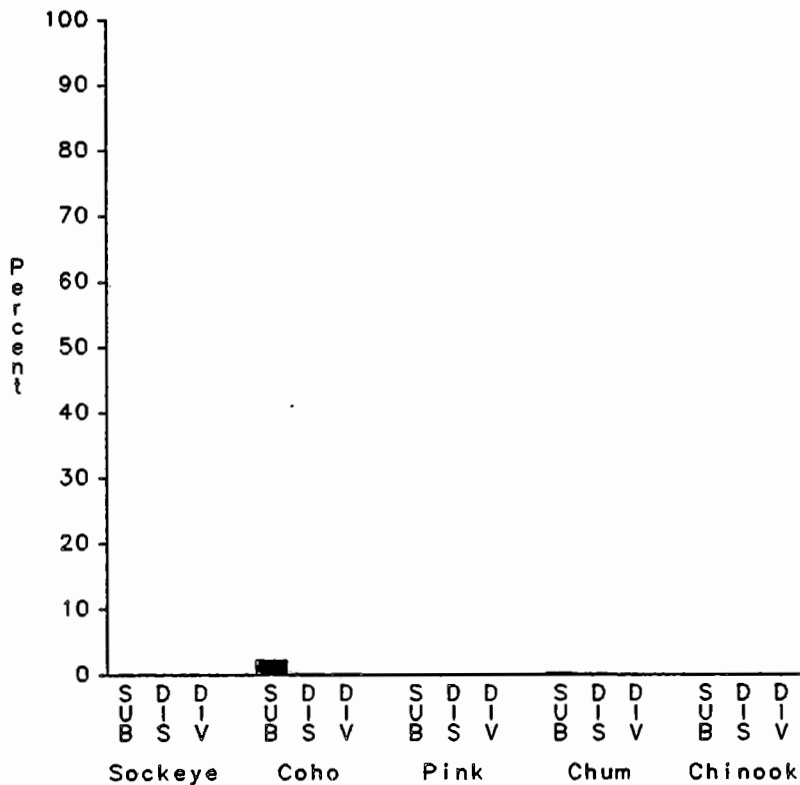
# CHASE RIVER (92-4290)

10-yr Mean Escapement  
(1976-1985)



## CHASE RIVER : Escapement (1976-1985)

Species Escapement as a Proportion of DFO Management Units  
(ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>CAT STREAM CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4290-100</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map: <b>011</b>
		U.T.M. Mouth: <b>10.4314.54444</b>
		Lat./Long. Mouth: <b>49 DG. 08' 52'' 123 DG. 56' 34''</b>
		Mainstem Length: <b>2.9 km</b> Ref. No.: <b>17-49</b>
		Watershed Area: Ref. No.:
Location: <b>FLows INTO CHASE RIVER.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH 1: 2.8KM, 1.4% SLOPE. REACH 2: 0.1KM, 1.8% SLOPE. (REF. 17-49)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NB NO BARRIER</b>		<b>2.9</b>		<b>ENTIRE LENGTH ACCESSIBLE. (REF. 17-49)</b>

**C. FLOW**

Flow Control: W.S.C. Station No. 1:	Water Survey of Canada (WSC) Flow Gauge: No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>0.0 TO 2.8KM. (REF. 17-26, REF. 17-49)</b>
<b>CM CHUM SALMON</b>	<b>LOWER REACHES (REF. 17-26, REF. 17-49)</b>
<b>ST STEELHEAD</b>	<b>POSSIBLE STEELHEAD UTILIZATION (REF. 17-66)</b>
<b>CT CUTTHROAT TROUT</b>	<b>A FEW RESIDENTS. POSSIBLE UTILIZATION FROM SEARUN CUTTHROAT. (REF. 17-50)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>CO COHO SALMON</b>	Migration Spawning Incubation Rearing											<b>X</b>	<b>X X</b>

**F. LIFE HISTORY TIMING CONTINUED**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CM CHUM SALMON	Migration Spawning Incubation Rearing										X X	X X	
Comments: MAY BE A LATE RUN OF CHUMS. (REF. 17-67)													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS		0.0	PARTLY CHANNELIZED TO PREVENT FLOODING. (REF. 17-49, REF. 17-66)	1982/1982

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
UD URBAN DEVELOPMENT	HEAVILY UTILIZED. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

ESTIMATED SURFACE AREA: 4200 SQ.M. ; BANKS ARE STABLE; 30% POOLS; 20% CROWN COVER; 40% OVERHANG. (REF. 17-49)
POCKETS OF SPAWNING. (REF. 17-67)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAHI	Date: 1987/07/06
Checked by: CINDY HARLOW	Date: 1987/06/02
Last updated by: B.D. TUTTY	Date: 1988/03/07

-----  
REFERENCE NO: 17- 26  
-----

AUTHOR: MACEY, S.  
DESCRIPTION: MILLSTONE STUDENT PROJECTS (1982, 1983). MALASPINA COLLEGE AQUACULTURE AND FISHERIES TECHNOLOGY PROGRAM. (BILL PENNELL FILES).  
LOCATION: EE MALASPINA COLLEGE - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 49  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, CAT STREAM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 50  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: CHASE RIVER - CAT STREAM FILE # 5903-C128. ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS, 1982. (IN TED EPPS OFFICE).  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON S SPAWNING

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 67  
-----

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>BECK CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>HONG KONG CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4295</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>926/4</b>
<b>RICHARDS LAKE CREEK</b>	<b>010</b>	B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10.4340.54395</b>
		Lat./Long. Mouth: <b>49 DG. 06' 25" 123 DG. 54' 06"</b>
		Mainstem Length: <b>5.7 km</b> Ref. No.: <b>17-34</b>
		Watershed Area: Ref. No.:
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH BY REACH GRADIENT INFORMATION AVAILABLE. (REF. 17-17, REF. 17-20, REF. 17-34)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>BD BEAVER DAM</b>				<b>PASSABLE (REF. 17-35)</b>
<b>X LOG JAMS</b>				<b>PASSABLE (REF. 17-35)</b>
<b>CV CULVERT</b>				<b>RAILWAY CULVERT; PASSABLE AT HIGH FLOWS. (REF. 17-66)</b>

**C. FLOW**

Flow Control: W.S.C. Station No. 1:	Water Survey of Canada (WSC) Flow Gauge: No. 2:	No. 3:	No. 4:
Comments: <b>ESTIMATED DISCHARGE 0.028CMS - 2.8 CMS. (REF. 17-17, REF. 17-34)</b>			
<b>CRITICAL LOW FLOWS FOR ADULT MIGRATION (REF. 17-66)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CD COHO SALMON</b>	<b>0 - 2.7KM AND HISTORICALLY TO BECK LAKE. STOCKED WITH COHO BY MRSEP. (REF. 17-33, REF. 17-34, REF. 17-35)</b>
<b>CM CHUM SALMON</b>	<b>0 - 2.5KM; LOW NUMBERS. REACH #1 - MIGRATION - CHUM REARING. (REF. 17-33, REF. 17-34, REF. 17-35)</b>
<b>CT CUTTHROAT TROUT</b>	<b>(RESIDENT &amp; ANAD.) 0 - 2.7KM; PROBABLY TO LAKE. BEST PRODUCER OF SEARUNS IN AREA. STOCKED WITH ANAD. CT. CT ORIGINATE IN BECK LAKE AND SWAMPS. (REF. 17-20, REF. 17-34, REF. 17-35)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>CD COHO SALMON</b>	<b>55</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>120</b>	<b>28A-18</b>		
<b>CM CHUM SALMON</b>	<b>7</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>60</b>	<b>28A-18</b>		



**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing										X	X X	X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS	CO COHO SALMON	0.0	STOCKING OF COHO IN LAKE AND STREAM BY N.R.S.E.P. (REF. 17-20, REF. 17-66)	1982/1983

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	IRRIGATION, WATER LICENCES, STOCK WATERING. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

DETAILED SUBSTRATE INFORMATION BY REACH IS AVAILABLE. FEEDER STREAM TO LAKE MAY HAVE POTENTIAL. LAKE HIGHLY EUTROPHIC. MOEP MAP INDICATES POTENTIAL SPAWNING NEAR MOUTH OF RIVER. (REF. 17-34, REF. 17-36)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / / Prepared By:

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1987/07/06
Checked by:	CINDY HARLOW	Date:	1987/06/02
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

-----  
REFERENCE NO: 17- 17  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20  
-----

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 33  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER ELECTROFISHING . MAY - OCT. 1979. (NANAIMO RIVER FILES 1 & 2; G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 34  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: BECK CREEK (ALIAS HONG KONG CREEK). COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 35  
-----

AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - HONG KONG CREEK. 1969-1970.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 36  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP NO. 92G/4 EAST MD WEST.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: BECK CREEK

WATERSHED-CODE: 92-4295

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	UNK	UNK	UNK	UNK	UNK	UNK
1954	UNK	UNK	UNK	UNK	UNK	UNK
1955	UNK	UNK	UNK	UNK	UNK	UNK
1956	UNK	UNK	UNK	UNK	UNK	UNK
1957	UNK	UNK	UNK	UNK	UNK	UNK
1958	UNK	UNK	UNK	UNK	UNK	UNK
1959	UNK	UNK	UNK	UNK	UNK	UNK
1960	UNK	UNK	UNK	UNK	UNK	UNK
1961	UNK	UNK	UNK	UNK	UNK	UNK
1962	UNK	UNK	UNK	UNK	UNK	UNK
1963	UNK	UNK	UNK	UNK	UNK	UNK
1964	UNK	UNK	UNK	UNK	UNK	UNK
1965	UNK	UNK	UNK	UNK	UNK	UNK
1966	UNK	UNK	UNK	UNK	UNK	UNK
1967	UNK	UNK	UNK	UNK	UNK	UNK
1968	UNK	UNK	UNK	UNK	UNK	UNK
1969	UNK	UNK	UNK	UNK	UNK	UNK
1970	UNK	UNK	UNK	UNK	UNK	UNK
1971	UNK	UNK	UNK	UNK	UNK	UNK
1972	UNK	UNK	UNK	UNK	UNK	UNK
1973	UNK	UNK	UNK	UNK	UNK	UNK
1974	0	200	0	N/O	0	0
1975	0	40	0	10	0	0
1976	0	N/O	0	N/O	0	0
1977	0	180	0	60	0	0
1978	0	N/O	0	N/O	0	0
1979	0	20	0	0	0	0
1980	0	120	0	N/O	0	0
1981	0	24	0	9	0	0
1982	0	45	0	1	0	0
1983	0	50	0	0	0	0
1984	N/O	70	N/O	N/O	N/O	N/O
1985	N/O	40	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

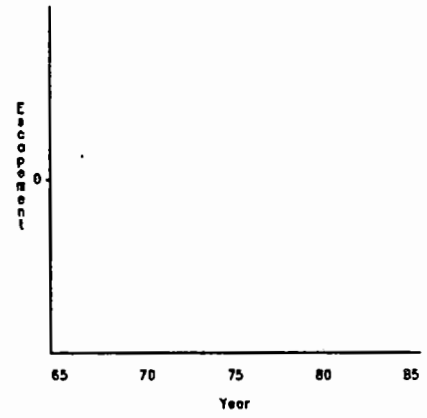
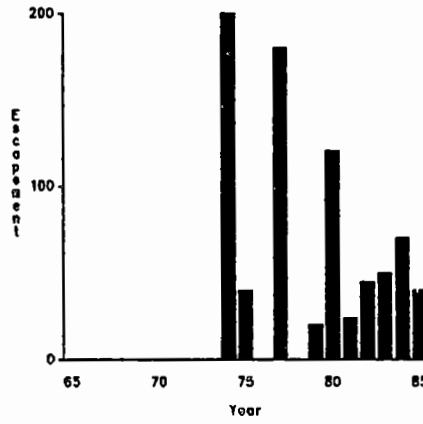
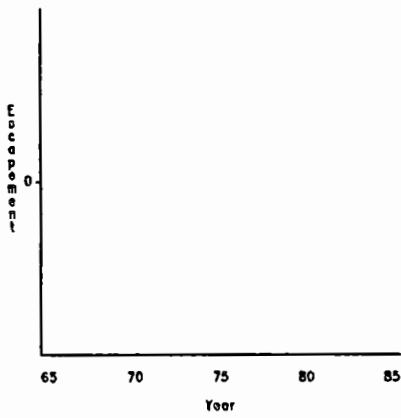
# BECK CREEK (92-4295)

## Escapement & Run Timing

**Sockeye (SK)**

**Coho (CO)**

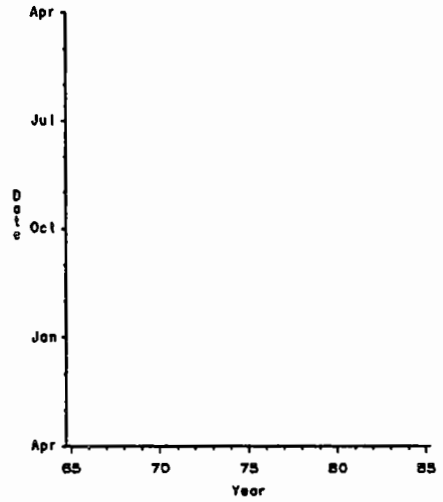
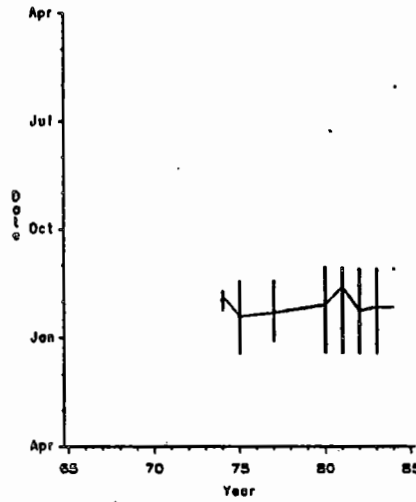
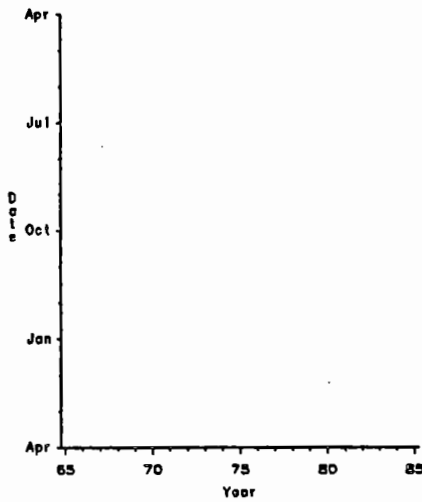
**Pink (PK)**



**Sockeye**

**Coho**

**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	200	23NOV	27NOV	10DEC
1975	40	15NOV	15DEC	15JAN
1976	0	-	-	-
1977	180	19NOV	12DEC	05JAN
1978	0	-	-	-
1979	20	-	-	-
1980	120	03NOV	05DEC	14JAN
1981	25	04NOV	20NOV	15JAN
1982	45	05NOV	10DEC	15JAN
1983	50	05NOV	07DEC	15JAN
1984	70	05NOV	07DEC	-
1985	40	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

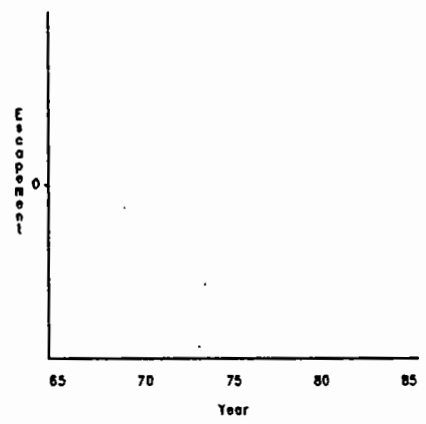
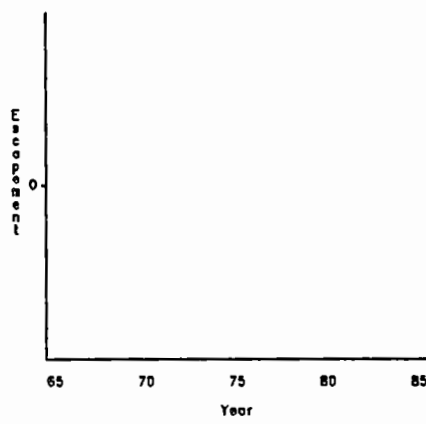
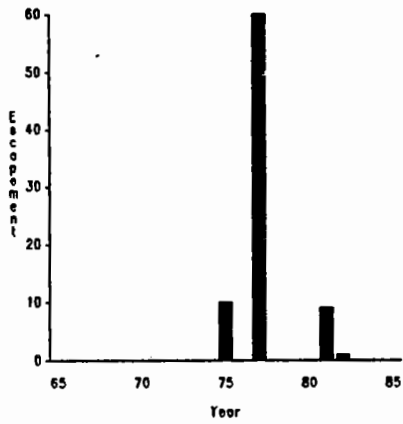
# BECK CREEK (92-4295)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

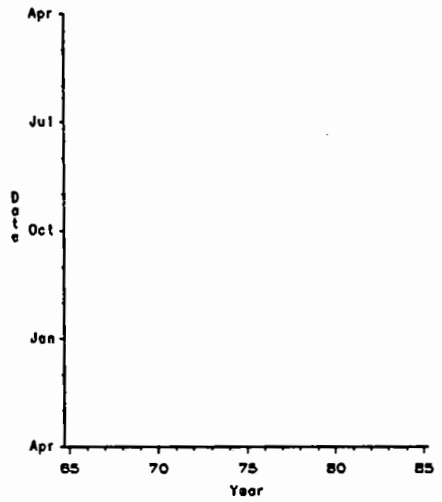
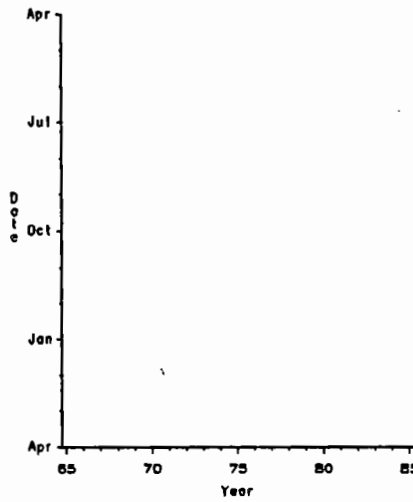
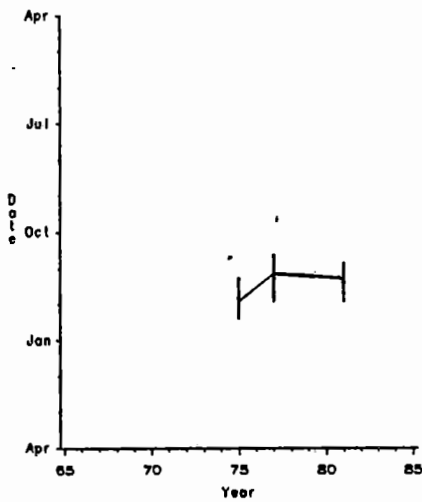
Steelhead (ST)



Chum

Chinook

Steelhead



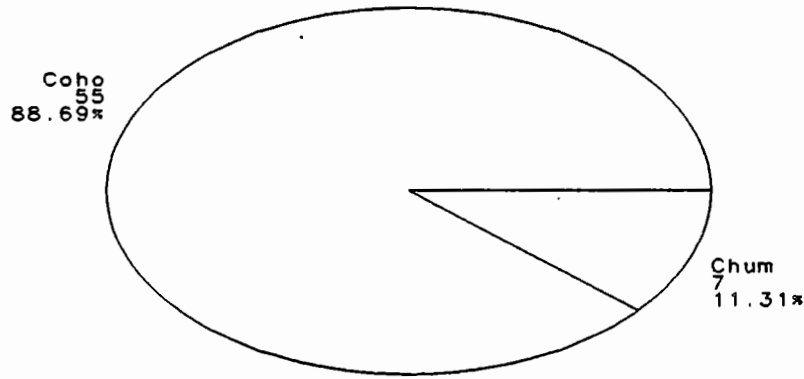
Chum				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	10	10NOV	30NOV	15DEC
1976	0	-	-	-
1977	60	21OCT	08NOV	30NOV
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	9	28OCT	10NOV	30NOV
1982	1	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Chinook				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

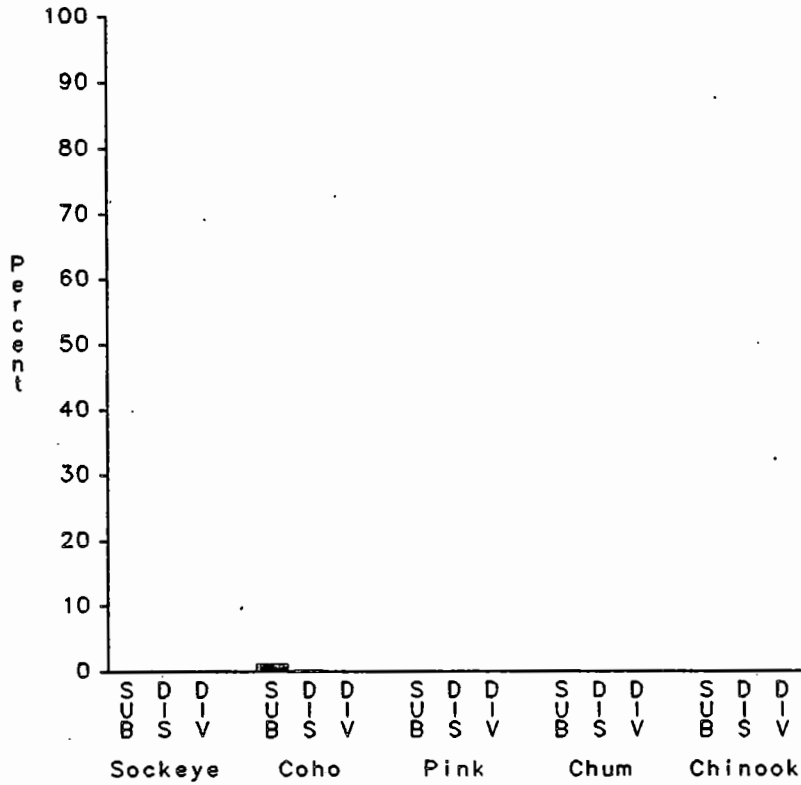
# BECK CREEK (92-4295)

10-yr Mean Escapement  
(1976-1985)



## BECK CREEK : Escapement (1976-1985)

Species Escapement as a Proportion of DFO Management Units  
(ie Subdistrict, District & Division)



A. DESCRIPTION

Stream Name: RICHARDS LAKE CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4295-010	Subdistrict: 17 NANAIMO/LADYSMITH
	Statistical Subarea: 17-14
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 5

Tributaries	Code	Topographic (1:50k) Map: 926/4
		B.C.G.S. (1:20k) Map: 011
		U.T.M. Mouth: 10,4324,54394
		Lat./Long. Mouth: 49 DG. 06' 15" 123 DG. 55' 30"
		Mainstem Length: 2.0 km Ref. No.: 17-20
		Watershed Area: Ref. No.:
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	LOW GRADIENT, <1% (REF. 17-20)

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
CV CULVERT			CO COHO SALMON	RAILWAY CULVERT IMPASSABLE AT LOW FALL FLOWS. (REF. 17-66)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: STABLE REARING FLOWS. SUMMER WATER TEMP. ELEVATION CAN OCCUR. (REF. 17-20, REF. 17-66)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	HISTORICALLY COHO UP TO RICHARDS LAKE AND INTO TRIBUTARIES. STOCKED WITH COHO 1982 AND 1983 BY N.R.S.E.P. (REF. 17-20)
CO COHO SALMON	BELOW RICHARDS LAKE, UP TO SWAMP AND REARING THROUGHOUT CREEK. (REF. 17-66)
CT CUTTHROAT TROUT	IN RICHARDS LAKE. (REF. 17-20)
RB RAINBOW TROUT	IN RICHARDS LAKE (REF. 17-20)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing										X	X X	X

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
CO COLONIZATION	CO COHO SALMON	0.0	STOCKING PROGRAM BY N.R.S.E.P. (REF. 17-20, REF. 17-66)	1982/1983

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
UD URBAN DEVELOPMENT	POTENTIAL WATER QUALITY PROBLEMS. DEVELOPMENT ZONE FOR SUBDIVISION FOR NANAIMO. (REF. 17-66)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

GOOD REARING POTENTIAL BUT SPawning GRAVELS MAY BE LIMITED BECAUSE OF SILTATION IN LOW GRADIENT/SWAMP HABITATS THROUGHOUT. TRIBUTARY TO LAKE S.W. END MAY HAVE SOME REARING POTENTIAL. LAKE IS PROBABLY ANOXIC IN HYPOLIMNION IN SUMMER MONTHS. (REF. 17-20)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

K. SIS COMPLETED BY

Completed by:	GITA KAPAHU	Date:	1987/07/06
Checked by:	CINDY HARLOW	Date:	1987/06/02
Last updated by:	B.D. TUTTY	Date:	1988/03/07



hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4295-010  
Stream Name: RICHARDS LAKE CREEK  
Page: 1

-----  
REFERENCE NO: 17- 20

-----  
AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 66

-----  
AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>NANAIMO RIVER</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300</b>	Subdistrict: <b>17 NANAIMO/LAOSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92G/4
THATCHER CREEK	015	B.C.G.S. (1:20k) Map: 001
HASLAM CREEK	020	U.T.M. Mouth: <b>10.4349.54421</b>
		Lat./Long. Mouth: <b>49 DG. 07' 45'' 123 DG. 53' 40''</b>
		Mainstem Length: <b>58.0 km Ref. No.: 17-1</b>
		Watershed Area: <b>841.0 km2 Ref. No.: 17-1</b>
Location: FLOWS E. & N. INTO NANAIMO HARBOUR, NANAIMO DIST.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	SLOPE 0.6% (REF. 17-38)

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
NB NO BARRIER				58.2KM OF SURVEYED ACCESSIBLE STREAM. (REF. 17-34)
D DAM				AT 4TH LAKE -M & B STORAGE FOR HARMAC PULPMILL WITHDRAWAL. (REF. 17-66)
F FALLS		13.6		CAN BE DIFFICULT PASSAGE DURING LOW WATER. (REF. 17-1)
F FALLS		16.0		LOW WATER. (REF. 17-1)

**C. FLOW**

Flow Control: Y	Water Survey of Canada (WSC) Flow Gauge: Y
W.S.C. Station No. 1: 08HB033	No. 2:                      No. 3:                      No. 4:
Comments: GAUGE LOCATIONS: 08HB033 BOVE ROCKYRUM C.; 005 NEAR EXTENSION; 034 NEAR CASSIDY. (REF. 17-38)	
DISCHARGE: MIN RECORDED FLOW IS 0.803CMS, SELDOM BELOW 2.8CMS, BELOW M& B RMP HOUSE. ANNUAL AVE. DISCHARGE RATE IS 40.04CMS. (REF. 17-38)	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
SK SOCKEYE SALMON	RESIDENTS (REF. 17-20)
CO COHD SALMON	3.2KM TO 35.2KM (DEADWOOD C; WOLF C.; HASLAM C.) (REF. 17-1)
PK PINK SALMON	HISTORICAL RUN TO HASLAM CREEK TRIBUTARY LOST MID-50'S DUE TO MINE TAILINGS. (REF. 17-20)
CM CHUM SALMON	0.4KM TO 11.2KM (POLKINGHORNE CH.; LOWER HASLAM C.) (REF. 17-1)
CM CHUM SALMON	SPAWN IN LOWER 12KM (REF. 17-20, REF. 17-30)
CH CHINOOK SALMON	6.4KM TO 32KM (EARLY AND LATE). BELOW BORE HOLE AND TO BASE OF 4TH LAKE DAM (REF. 17-1)
ST STEELHEAD	THROUGHOUT. (REF. 17-1)

D. DISTRIBUTION SUMMARY CONTINUED

Species	Watershed Distribution
CT CUTTHROAT TROUT	NUMBERS VERY LOW (REF. 17 20)
CT CUTTHROAT TROUT	SEEM TO BE COMING BACK INTO SYSTEM, IMPROVING. (REF. 17-65)
DV DOLLY VARDEN	IN UPPER REACHES AND 1ST AND 2ND LAKE (REF. 17-20)
KO KOKANEK	PRESENT IN 1ST AND 2ND LAKE (REF. 17-20)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	2740	1976 - 1985	28A-18	4800	28A-18		
CM CHUM SALMON	41820	1976 - 1985	28A-18	50000	28A-18		
CH CHINOOK SALMON	1984	1976 - 1985	28A-18	4370	28A-18		

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing									X X	X X	X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing									X	X X	X X	X
CH CHINOOK SALMON	Migration Spawning Incubation Rearing		X	X X	X X	X X	X X			X	X X	X	
CH CHINOOK SALMON	Migration Spawning Incubation Rearing									X	X X X	X	
ST STEELHEAD	Migration Spawning Incubation Rearing	X X	X X	X X	X X	X					X X	X X	X X

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
HY HATCHERY	CT CUTTHROAT TROUT	0.0	(REF. 17-65)	1979/1981
HY HATCHERY	CH CHINOOK SALMON CM CHUM SALMON CO COHO SALMON	0.0	ONGOING. CURRENT EVALUATION OF HATCHERY. (REF. 17-65)	1979/1987
HY HATCHERY		0.0	CURRENT EVALUATION OF HATCHERY (REF. 17-66)	/1987
HY HATCHERY	ST STEELHEAD	8.0	(REF. 17-65)	1979/1981

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
WW WATER WITHDRAWAL	HATCHERY WATER FROM HARMAC PIPELINE, RIVER WATER AND NAPOLEON C. AND, AS OF 1987, A DUG WELL. (REF. 17-20)
FD FORESTRY	MAY BE PROBLEMS FROM OLD MAC BLO LOGGING OPERATION - ROAD MAINTENANCE MAY BE SLOWED OR STOPPED THUS INCREASING SILTATION IN THE MAINSTEM. (REF. 17-67)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

NANAIMO RIVER HATCHERY (CEDP) FILES DIVIDES THE NANAIMO RIVER MAINSTEM INTO 18 REACHES. DETAILED REACH INFORMATION AVAILABLE. (REF. 17-20, REF. 17-39)
SPAWNING AREAS AVAILABLE ARE UNDERUTILIZED ESPECIALLY UPSTREAM FROM LAKES. (REF. 17-20, REF. 17-30)
COMPETITION FOR REARING HABITAT IS MINIMAL AND PREDATION IS LOW. HIGH EGG MORTALITIES IN SIDE CHANNEL AREAS. TEND TO DRY OUT AND FREEZE DURING LOW PERIODS IN WINTER. DEGRADATION OF SPAWNING AND REARING HABITAT (I.E. IRRIGATION AND SILTATION IN LOWER ELEVATIONS) HAS REDUCED POTENTIAL. (REF. 17-20)
MUCH OF SYSTEM UNDERUTILIZED; COHO COLONIZATION AND FRY STOCKING BELOW BARRIERS SHOULD BRING UP COHO POTENTIAL IF SUFFICIENT NUMBERS OF FRY CAN BE RELEASED. (SEE COMMENTS RE: MILLSTONE) (REF. 17-20)
POTENTIAL OF LOWER MAINSTEM COULD BE INCREASED BY FLOW CONTROL IN SIDE CHANNELS. POTENTIAL OF THE UPPER MAINSTEM FOR STEELHEAD, COHO AND CHINOOK. (REF. 17-20, REF. 17-23)
GREAT POTENTIAL TO INCREASE STEELHEAD FROM OVER 700,000 SQ.M OF INACCESSIBLE HABITAT AVAILABLE FOR STOCKING. (REF. 17-20)
WATERSHED ABOVE DAM SHOULD CONTRIBUTE 35% OF TOTAL FLOW SO MINIMAL CONTRIBUTION SHOULD BE 0.49CMS. ANY FLOW INCREASES BELOW DAM SHOULD BE REFLECTED BELOW M & B INTAKES --WHERE MOST CRITICAL AREA EXISTS. (REF. 17-38)
SOME FORM OF CONTINUOUS MONITORING AND CONTROL OF RESERVOIR LEVEL NEEDED. TO PROVIDE ADDITIONAL FLOWS, FACILITIES INSTALLED BELOW THE DAM TO RELEASE AT LEAST 1.12CMS IS NEEDED. (REF. 17-38)
SOME RELEASE OF WATER FROM 4TH LAKE RESERVOIR THRU COOPERATION WITH HARMAC MAC BLO TO RAISE RIVER TO ALLOW CHINOOK TO PASS. (REF. 17-67)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / /	Prepared By:
--------------------	--------------

K. SIS COMPLETED BY

Completed by:	GITA KAPAH	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/06
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

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REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

-----  
REFERENCE NO: 17- 23

AUTHOR: UNKNOWN  
DESCRIPTION: STREAM AND LAKE INVENTORY MAPS, M.O.E. 92G/4 EAST AND WEST. 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

-----  
REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 34

AUTHOR: UNKNOWN  
DESCRIPTION: BECK CREEK (ALIAS HONG KONG CREEK), COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

-----  
REFERENCE NO: 17- 38

AUTHOR: LILL, A.F., ROY HAMILTON  
DESCRIPTION: WATER REQUIREMENTS FOR THE FISHERIES RESOURCE OF THE NANAIMO RIVER. APRIL 24, 1973.  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: FL FLOW PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 39

AUTHOR: SEPTAV, TONY  
DESCRIPTION: NANAIMO RIVER MAINSTEM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. (1982)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

-----  
REFERENCE NO: 17- 65

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

-----  
REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

-----  
REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT



ESCAPEMENT: NANAIMO RIVER

WATERSHED-CODE: 92-4300

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	7,500	750	35,000	1,500	3,500
1954	N/O	7,500	200	75,000	1,500	3,500
1955	N/O	3,500	200	15,000	3,500	3,500
1956	N/O	7,500	25	35,000	3,500	3,500
1957	25	15,000	750	35,000	7,500	1,500
1958	UNK	3,500	200	75,000	3,500	3,500
1959	0	1,500	25	7,500	3,500	1,500
1960	0	1,500	25	3,500	750	1,500
1961	N/O	750	0	7,500	750	750
1962	N/O	1,500	N/O	7,500	750	1,500
1963	N/O	1,500	N/O	3,500	1,500	UNK
1964	N/O	3,500	N/O	15,000	750	UNK
1965	0	1,500	0	15,000	3,500	750
1966	N/O	3,500	N/O	75,000	1,500	1,500
1967	UNK	6,000	N/O	22,000	1,200	1,200
1968	UNK	800	N/O	26,000	1,500	UNK
1969	UNK	1,200	UNK	26,000	1,100	UNK
1970	N/O	4,750	0	30,000	1,500	UNK
1971	0	4,250	0	17,500	850	0
1972	1	2,250	0	70,000	1,950	UNK
1973	N/O	1,500	N/O	36,000	1,200	UNK
1974	N/O	4,800	N/O	38,000	2,400	0
1975	0	1,500	0	15,000	525	UNK
1976	0	850	0	14,000	1,100	UNK
1977	0	4,800	0	48,000	2,800	UNK
1978	2	900	0	46,800	2,500	0
1979	5	2,500	14	36,000	4,370	0
1980	6	4,000	30	50,000	2,826	0
1981	0	3,000	30	35,000	300	0
1982	3	4,250	0	50,000	1,440	0
1983	0	2,100	1	46,400	1,606	0
1984	N/O	2,700	N/O	42,000	2,250	N/O
1985	2	2,300	12	50,000	650	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

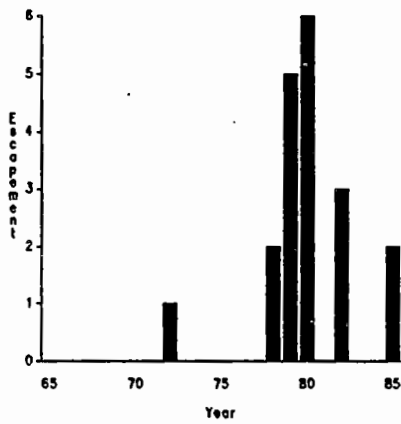
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

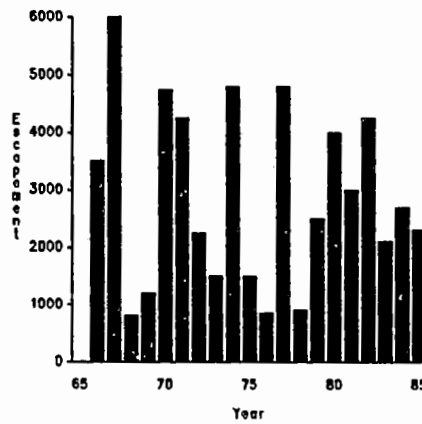
# NANAIMO RIVER (92-4300)

## Escapement & Run Timing

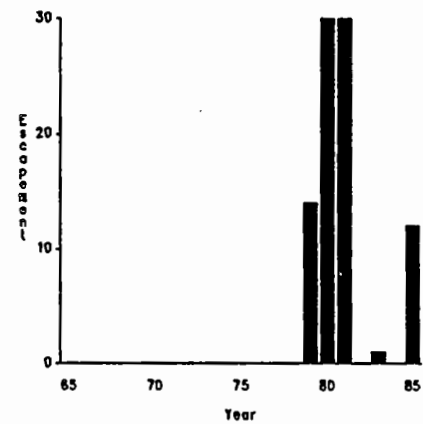
### Sockeye (SK)



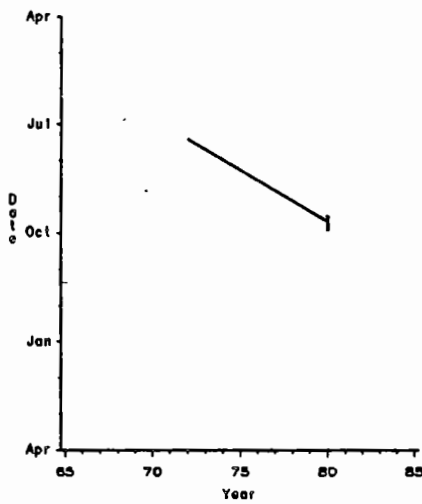
### Coho (CO)



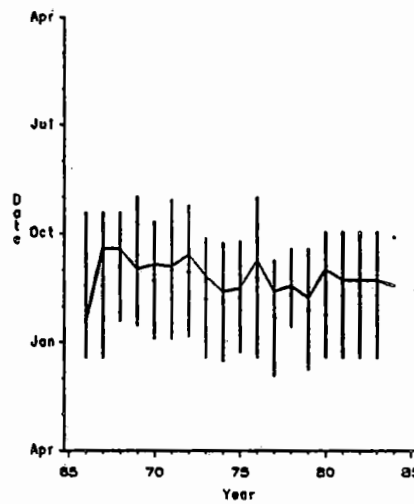
### Pink (PK)



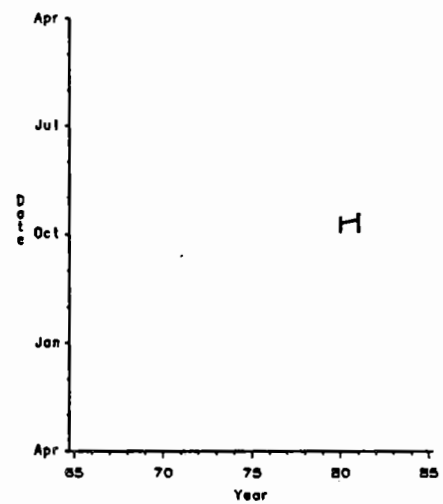
### Sockeye



### Coho



### Pink



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	1	-	15JUL	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	2	-	-	-
1979	5	-	-	-
1980	6	18SEP	23SEP	30SEP
1981	0	-	-	-
1982	3	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	2	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	3,500	15SEP	15OCT	15JAN
1967	6,000	15SEP	15OCT	15JAN
1968	800	15SEP	15OCT	15DEC
1969	1,200	01SEP	01NOV	19DEC
1970	4,750	22SEP	28OCT	30DEC
1971	4,250	04SEP	30OCT	30DEC
1972	2,250	09SEP	20OCT	28DEC
1973	1,500	06OCT	07NOV	15JAN
1974	4,800	10OCT	20NOV	18JAN
1975	1,500	09OCT	17NOV	10JAN
1976	850	02SEP	25OCT	14JAN
1977	4,800	25OCT	20NOV	30JAN
1978	900	15OCT	19NOV	20DEC
1979	2,500	15OCT	25NOV	25JAN
1980	4,000	01OCT	01NOV	14JAN
1981	3,000	01OCT	10NOV	15JAN
1982	4,250	01OCT	10NOV	15JAN
1983	2,100	01OCT	10NOV	15JAN
1984	2,700	05OCT	15NOV	-
1985	2,300	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	-	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	14	-	-	-
1980	30	18SEP	23SEP	30SEP
1981	30	15SEP	20SEP	30SEP
1982	0	-	-	-
1983	1	-	-	-
1984	0	-	-	-
1985	12	-	-	-



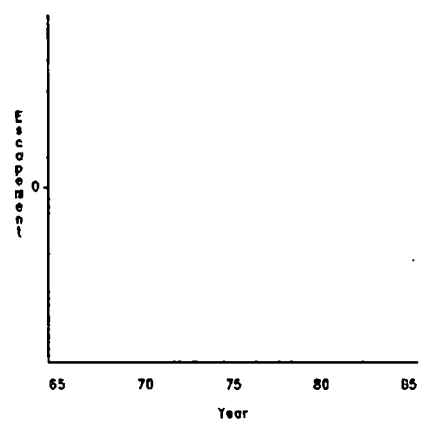
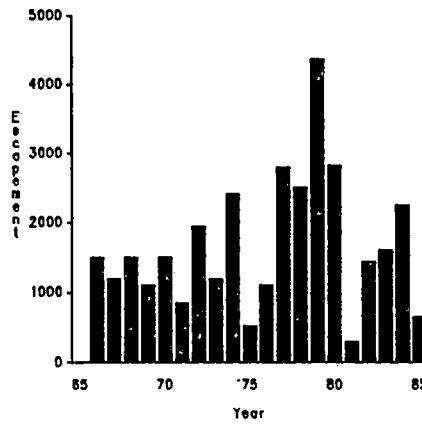
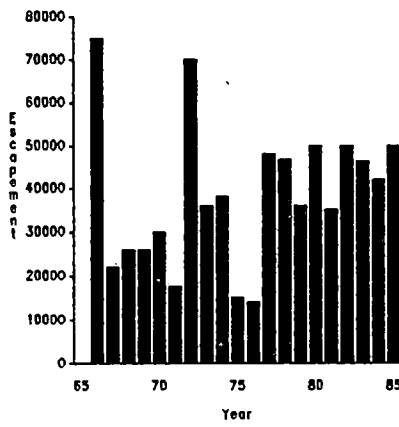
# NANAIMO RIVER (92-4300)

## Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

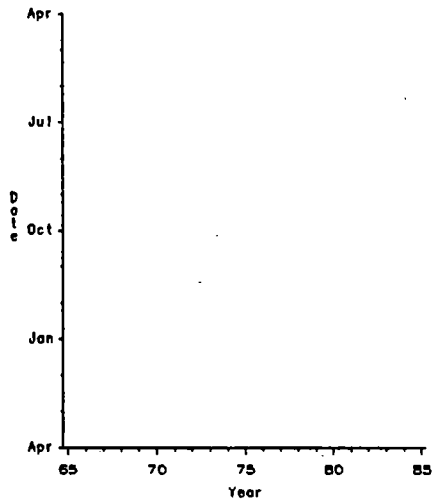
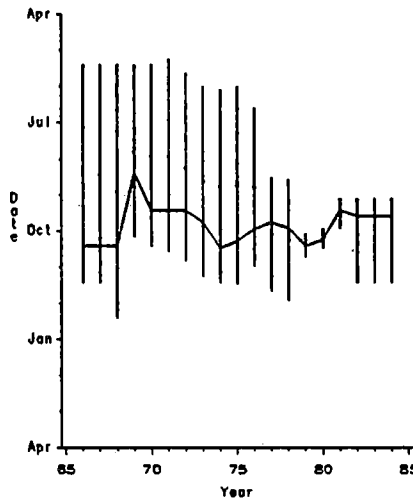
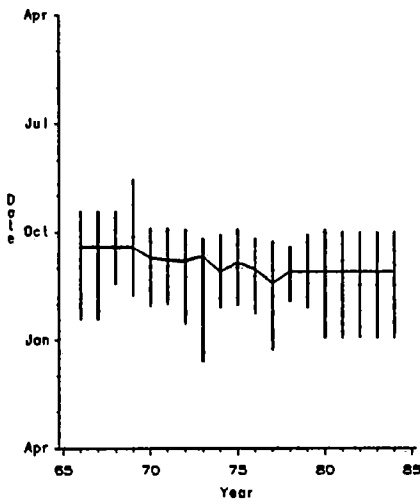
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**



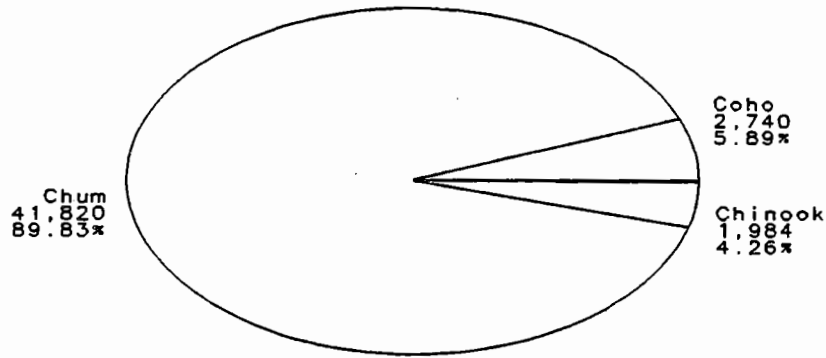
Chum				
Year	Escapement	Start	Peak	End
1966	75,000	15SEP	15OCT	15DEC
1967	22,000	15SEP	15OCT	15DEC
1968	26,000	15SEP	15OCT	15NOV
1969	26,000	18AUG	15OCT	25NOV
1970	30,000	29SEP	24OCT	04DEC
1971	17,300	29SEP	26OCT	02DEC
1972	70,000	30SEP	27OCT	19DEC
1973	36,000	08OCT	23OCT	20JAN
1974	38,000	05OCT	05NOV	05DEC
1975	15,000	30SEP	28OCT	03DEC
1976	14,000	08OCT	03NOV	10DEC
1977	48,000	11OCT	15NOV	10JAN
1978	46,800	15OCT	05NOV	30NOV
1979	36,000	05OCT	05NOV	05DEC
1980	50,000	01OCT	05NOV	31DEC
1981	35,000	03OCT	05NOV	31DEC
1982	50,000	03OCT	05NOV	31DEC
1983	46,400	03OCT	05NOV	31DEC
1984	42,000	03OCT	05NOV	31DEC
1985	50,000	-	-	-

Chinook				
Year	Escapement	Start	Peak	End
1966	1,500	15MAY	15OCT	15NOV
1967	1,200	15MAY	15OCT	15NOV
1968	1,500	15MAY	15OCT	15DEC
1969	1,100	15MAY	14AUG	07OCT
1970	1,500	15MAY	15SEP	15OCT
1971	850	10MAY	15SEP	20OCT
1972	1,950	22MAY	15SEP	28OCT
1973	1,200	02JUN	25SEP	10NOV
1974	2,400	05JUN	17OCT	15NOV
1975	525	02JUN	11OCT	16NOV
1976	1,100	20JUN	01OCT	01NOV
1977	2,800	18AUG	25SEP	22NOV
1978	2,500	20AUG	30SEP	31NOV
1979	4,370	05OCT	15OCT	25OCT
1980	2,826	01OCT	10OCT	17OCT
1981	300	05SEP	15SEP	30SEP
1982	1,440	05SEP	20SEP	15NOV
1983	1,606	05SEP	20SEP	15NOV
1984	2,250	05SEP	20SEP	15NOV
1985	650	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

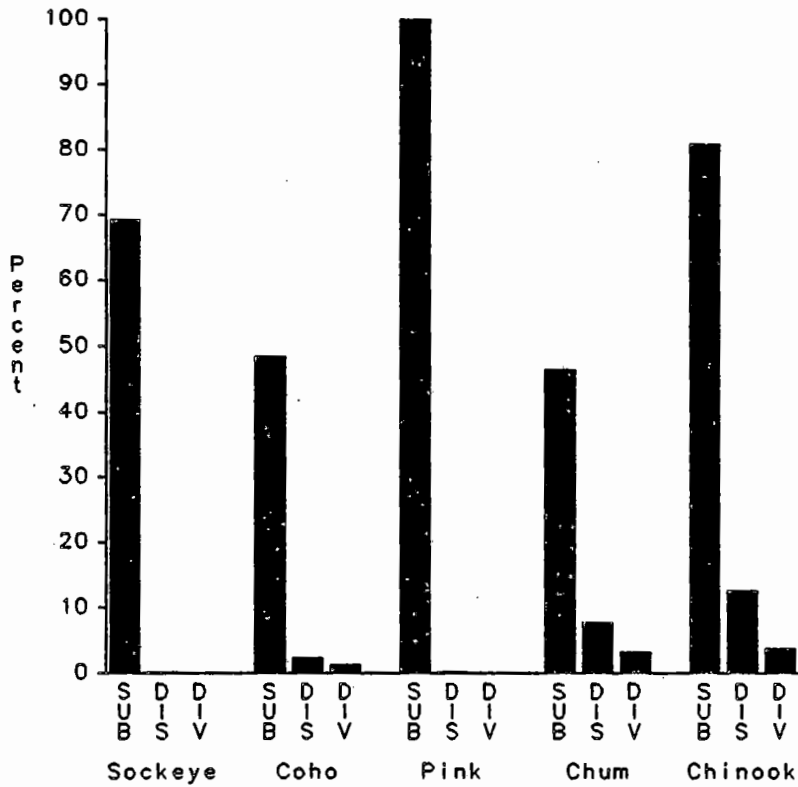
# NANAIMO RIVER (92-4300)

10-yr Mean Escapement  
(1976-1985)



## NANAIMO RIVER : Escapement (1976-1985)

Species Escapement as a Proportion of DFO Management Units  
(ie Subdistrict, District & Division)



U



**E. ESCAPEMENT SUMMARY CONTINUED**

Species	Escapement			Maximum Recorded Escapement	[Ref. No.]	Management Target Escapement	[Ref. No.]
	Mean	Period of Record	[Ref. No.]				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing										X X	X X	X X
CT CUTTHROAT TROUT	Migration Spawning Incubation Rearing	X X											X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS	CO COHO SALMON	0.0	HATCHERY INVOLVEMENT IN A COHO STOCKING PROGRAM. (REF. 17-66)	/
EN ENHANCEMENT ACTS	CT CUTTHROAT TROUT	0.0	BROOD STOCK SOURCE FOR SEA RUN CUTTHROAT (REF. 17-20)	/

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE-	LIVESTOCK IN STREAM CAUSE PROBLEMS. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

AREA UPSTREAM FROM ISLAND HIGHWAY DREDGED (1985) TO FORM POND.(FIDDLERS GREEN GOLF COURSE); COHO COLONIZING STOPPED AS A RESULT. (REF. 17-20, REF. 17-65)
POSSIBLE IMPROVEMENTS: DEBRIS REMOVAL; BANK FENCING; IMPROVEMENT OF SPawning AREA. (REF. 17-52)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1986/04/07
Checked by:	JOHN STEPHEN	Date:	1986/04/07
Last updated by:	B.D. TUTTY	Date:	1988/03/07

hab314102670  
REFERENCE LIST  
1988/07/18

Watershed Code: 92-4300-015  
Stream Name: THATCHER CREEK  
Page: 1

-----  
REFERENCE NO: 17- 17  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20  
-----

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 51  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, THATCHER CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 52  
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AUTHOR: BURNS, J.E., D.J. WILDERS  
DESCRIPTION: STREAM SURVEY FORM - THATCHER CREEK, 1969 - 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 65  
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AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>HASLAM CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-020</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
<b>NAPOLEON CREEK</b>	<b>005</b>	B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10.4372.54367</b>
		Lat./Long. Mouth: <b>49 DG. 04' 00'' 123 DG. 51' 46''</b>
		Mainstem Length: <b>17.7 km</b> Ref. No.: <b>17-42</b>
		Watershed Area: <b>62.2 km<sup>2</sup></b> Ref. No.: <b>17-42</b>
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH BY REACH SLOPE INFORMATION AVAILABLE. (REF. 17-42)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>F FALLS</b>	<b>1.0</b>	<b>7.7</b>		<b>(REF. 17-42)</b>
<b>F FALLS</b>	<b>2.0</b>	<b>7.7</b>	<b>CM CHUM SALMON CO COHO SALMON CT CUTTHROAT TROUT PK PINK SALMON RB RAINBOW TROUT SK SOCKEYE SALMON</b>	<b>ST CAN PASS. LOG JAMS SOMETIMES MAKE THESE FALLS COMPLETELY IMPASSABLE. (REF. 17-42)</b>
<b>F FALLS</b>		<b>8.5</b>		<b>MOST TRIBUTARY STREAMS ABOVE FALLS ARE ALSO INACCESSIBLE. (REF. 17-17)</b>
<b>NB NO BARRIER</b>		<b>13.7</b>		<b>LENGTH ACCESSIBLE TO ANAD. FISH (REF. 17-42)</b>
<b>X LOG JAMS</b>		<b>14.5</b>		<b>(REF. 17-32)</b>

**C. FLOW**

Flow Control: <b>N</b>	Water Survey of Canada (WSC) Flow Gauge: <b>Y</b>
W.S.C. Station No. 1: <b>08HB003</b>	No. 2:                      No. 3:                      No. 4:
<b>Comments: GAUGE NEAR CASSIDY. SUMMER MINIMUM FLOWS: 0.1 TO 0.375 CMS MAXIMUM DISCHARGE: 5.6 TO 50.4 CMS (REF. 17-41)</b>	
<b>MAC BLO HAVE WATER LICENCE FOR 0.9BCMS (REF. 17-3B)</b>	
<b>VERY DIFFICULT PASSAGE AT LOW FLOWS. FISH HOLD IN POOL BETWEEN FALLS. PRIME TARGET AREA FOR POACHERS. (REF. 17-66)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>UP TO FALLS AT 7.5KM. HABITAT IN REACHES 2 AND 3 NOT SUITABLE FOR COHO AND BEST FOR ST PRODUCTION. (REF. 17-20)</b>
<b>PK PINK SALMON</b>	<b>PINK RUN DISAPPEARED IN MID 1950'S (REF. 17-68)</b>
<b>CM CHUM SALMON</b>	<b>UP TO 3KM ABOVE ISLAND HIGHWAY, NUMBERS GREATEST BELOW HIGHWAY. (REF. 17-20)</b>

D. DISTRIBUTION SUMMARY CONTINUED

Species	Watershed Distribution
CH CHINOOK SALMON	TO 7.5KM. VERY FEW CHINOOK. NOT THERE ALL THE TIME (SPORADIC) ONLY SEEN IN UPPER AREA NEAR RAILWAY TRACKS. (REF. 17-20, REF. 17-65)
ST STEELHEAD	ANADROMOUS LENGTH (17.7KM). ACCESSIBLE. MOST PRODUCTIVE STEELHEAD AREA IS ABOVE FALLS IN LOWER REACH 2. ST ONLY SPECIES FOUND DURING ELECTROFISHING. (REF. 17-20, REF. 17-33, REF. 17-42)
CT CUTTHROAT TROUT	HISTORICALLY HAD A GOOD RUN OF ANAD CT. (REF. 17-20)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	552	1981 - 1983	28A-18	600	28A-18		
CM CHUM SALMON	6675	1981 - 1984	28A-18	18800	28A-18		
CH CHINOOK SALMON	76	1981 - 1982	28A-18	145	28A-18		

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing									X X	X X	X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing									X	X X	X X	X
CH CHINOOK SALMON	Migration Spawning Incubation Rearing									X X	X X		
CT CUTTHROAT TROUT	Migration Spawning Incubation Rearing		X X										

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS	CO COHO SALMON	0.0	STOCKING BY HATCHERY. (REF. 17-66)	/
EN ENHANCEMENT ACTS	ST STEELHEAD	0.0	CLOSED TO ANGLING (REF. 17-68)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
WW WATER WITHDRAWAL	MAC BLO HAS A LICENCE FOR THE CREEK. (REF. 17-66)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

EXTREMELY GOOD PRODUCER OF CO AND ST. AREA ABOVE FALLS SHOULD BE LEFT TO ST PRODUCTION. FISH TRAP OR FENCE COULD PROVIDE EXCELLENT BROOD STOCK SOURCE. HABITAT PROTECTION MOST IMPORTANT IN THIS SYSTEM. MAY BE NECESSARY TO STOCK COHO IN LOWER REACH IN YEARS WHEN RECRUITMENT IS LOW. NO FURTHER WATER LICENCES SHOULD BE ISSUED. POSSIBLE INVESTIGATION OF WATER STORAGE SHOULD BE CONSIDERED. (REF. 17-44)

MOEP MAP INDICATES POTENTIAL SPAWNING HABITAT LOWER REACHES OF STREAM. (REF. 17-36)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / /

Prepared By:

K. SIS COMPLETED BY

Completed by: GITA KAPAHI  
Checked by: CINDY HARLOW  
Last updated by: MURRAY WILLIAMS

Date: 1987/07/06  
Date: 1987/06/02  
Date: 1988/07/08



-----  
REFERENCE NO: 17- 17

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AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20

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AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 32

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS NANAIMO AND NANAIMO LAKES. MAP NO. 92G/4 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 33

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER ELECTROFISHING . MAY - OCT. 1979. (NANAIMO RIVER FILES 1 & 2; G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 36

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP NO. 92G/4 EAST AND WEST.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 38

-----  
AUTHOR: LILL, A.F., ROY HAMILTON  
DESCRIPTION: WATER REQUIREMENTS FOR THE FISHERIES RESOURCE OF THE NANAIMO RIVER. APRIL 24, 1973.  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: FL FLOW PY PHYSICAL HABITAT

REFERENCE NO: 17- 41

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: NOTES ON HASLAM CREEK CHANNELING. 11/2/70.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: EM ENHANCEMENT

REFERENCE NO: 17- 42

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: HASLAM CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. 1982.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPANNING

REFERENCE NO: 17- 44

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER SALMON ENHANCEMENT PROJECT ELECTROFISHING STUDIES.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 65

-----  
AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON

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REFERENCE NO: 17- 66  
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AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68  
-----

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPawning

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

**A. DESCRIPTION**

Stream Name: <b>NAPOLEON CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>STINKY CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-020-005</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth:
		Lat./Long. Mouth: <b>49 DG. 04' 07'' 123 DG. 51' 45''</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location: <b>CREEK IS OUTLET FOR NANAIMO RIVER SEP HATCHERY. NOT SHOWN ON TOPOGRAPHIC MAPS. (REF. 17)</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>D DAM</b>	<b>3.0</b>	<b>0.7</b>	<b>AF ALL SPECIES</b>	<b>IMPASSABLE EXCEPT DURING EXTREME FLOODS. (REF. 17-17, REF. 17-45, REF. 17-46)</b>

**C. FLOW**

Flow Control: <b>Y</b>	Water Survey of Canada (WSC) Flow Gauge: <b>N</b>
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
Comments: <b>DISCHARGE: CONTROLLED FLOW UP TO 0.76CMS. (REF. 17-45)</b>	
<b>FLOODS ONLY WHEN MAINSTEM IS IN EXTREME FLOOD CONDITION. (REF. 17-20)</b>	
<b>INLET IS VIA UNDERGROUND PIPE FROM NANAIMO RIVER MAINSTEM. (REF. 17-46)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>UTILIZE ACCESSIBLE PORTION. (REF. 17-45)</b>
<b>CM CHUM SALMON</b>	<b>UTILIZE ACCESSIBLE PORTION; SPawning HABITAT LIMITED DUE TO SILTATION. (REF. 17-45)</b>
<b>CT CUTTHROAT TROUT</b>	<b>OCCASIONAL TROUT AND SCULPINS PRESENT. RESIDENT CT IN PONDS ABOVE DAM. (REF. 17-20)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X	X X
CH CHUM SALMON	Migration Spawning Incubation Rearing											X	X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS		0.0	CONSTRUCTED A SMALL PORTABLE FISH LADDER ON THE WEIR. (REF. 17-65)	1986/1986

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

ACCESSIBLE PORTION: GOOD REARING HABITAT. SPAWNING HABITAT LIMITED DUE TO SILTATION. COULD BE IMPROVED BY REMOVING LOG JAMS TO PERMIT FLUSHING OR BY BLOCKING THE CHANNEL FROM THE MANAIMO RIVER SO THAT FLOODWATER (MAIN SOURCE OF SILT) COULD NOT ENTER. (REF. 17-26, REF. 17-45, REF. 17-46)
FISH LADDER COULD PROVIDE ADULT ACCESS ABOVE DAM (REF. 17-45)
IMPASSABLE PORTION: UPPER 100M HAS GOOD SPAWNING POTENTIAL BUT NEEDS FLUSHING TO REMOVE SILT. MARSHALL SUGGESTS USING THIS AREA TO PRODUCE COHO SMOLTS. POTENTIAL PRODUCTION ESTIMATED AT 21,600 SMOLTS. (REF. 17-46)
SUMMER WATER TEMPERATURES MAY BE TOO HIGH FOR HIGH DENSITY REARING BUT IF FRY WERE NOT RELEASED UNTIL EARLY FALL, POTENTIAL IS VERY HIGH. (REF. 17-20)
CLEAN THE PIPELINE TO INCREASE FLOW (IT IS TOO COSTLY AT PRESENT) (REF. 17-65)
PRIVATE HATCHERY USED FOR CONSTRUCTION IN HEADWATER AREA (REF. 17-68)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: CINDY HARLOW	Date: 1987/06/06
Checked by: GITA KAPAHI	Date: 1987/11/23
Last updated by: B.D. TUTTY	Date: 1988/03/07

-----  
REFERENCE NO: 17- 17  
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AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20  
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AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 26  
-----

AUTHOR: MACEY, S.  
DESCRIPTION: WILLSTONE STUDENT PROJECTS (1982, 1983). MALASPINA COLLEGE AQUACULTURE AND FISHERIES TECHNOLOGY PROGRAM. (BILL PENNELL FILES).  
LOCATION: EE MALASPINA COLLEGE - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 45  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, NAPOLEON CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 46  
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AUTHOR: MARSHALL, D.E., B. SNYDER  
DESCRIPTION: 1981 PROPOSED SALMONID ENHANCEMENT ACTIVITIES AND TARGET LEVELS FOR THE NANAIMO COMMUNITY DEVELOPMENT PROJECT.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON EN ENHANCEMENT

REFERENCE NO: 17- 65  
-----

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 68  
-----

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT S SPAWNING

**A. DESCRIPTION**

Stream Name: <b>NORTH HASLAM CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-020-020</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10 4342 54332</b>
		Lat./Long. Mouth: <b>49 DG. 02' 50'' 123 DG. 53' 56''</b>
		Mainstem Length: <b>Ref. No.:</b>
		Watershed Area: <b>Ref. No.:</b>
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	REACH #1: 4.2KM UPSTREAM FROM MOUTH HAS SLOPE 3.1%. (REF. 17-53)

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	6.0			(REF. 17-17)

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2:                                  No. 3:                                  No. 4:
NO INFORMATION AVAILABLE	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CT CUTTHROAT TROUT	USE FOR REARING (REF. 17-53)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

ABOVE BARRIER POSSIBLE PRODUCTIVE COHO HABITAT. BELOW FALLS IS A MAJOR OVERWINTERING COHO SMOLT AREA (REF. 17-68)
---

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:    /    /	Prepared By:
--------------------------	--------------

**K. SIS COMPLETED BY**

Completed by: <b>GITA KAPAH</b>	Date: <b>1987/07/06</b>
Checked by: <b>CINDY HARLOW</b>	Date: <b>1987/06/02</b>
Last updated by: <b>B.D. TUTTY</b>	Date: <b>1988/03/07</b>

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-020-020  
Stream Name: NORTH HASLAM CREEK  
Page: 1

-----  
REFERENCE NO: 17- 17  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 53  
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AUTHOR: UNKNOWN  
DESCRIPTION: 1982, NORTH HASLAM CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 68  
-----

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING



**A. DESCRIPTION**

Stream Name: <b>STARK LAKE CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-030</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10.4333.54360</b>
		Lat./Long. Mouth: <b>49 DG. 04' 30'' 123 DG. 54' 45''</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 2.6KM U/S; SLOPE 1.7%</b>
	<b>#2: 2.9KM U/S; SLOPE 0%</b>
	<b>#3: 3.9KM U/S; SLOPE 0%</b>
	<b>#4: 3.2KM U/S; SLOPE 0% (REF. 17-54)</b>
	<b>REACH REACH</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>R AGRICULTURE</b>	<b>3.0</b>			<b>LOCATION UNCLEAR. (REF. 17-54)</b>

**C. FLOW**

Flow Control: <b>M</b>	Water Survey of Canada (WSC) Flow Gauge: <b>M</b>
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
Comments: <b>5 - 6M DROP AT LOW WATER, OBSTRUCTS FISH PASSAGE. (REF. 17-65)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CC SCULPINS (GENERAL)</b>	<b>PRESENT (REF. 17-54)</b>
<b>SB STICKLEBACKS (GEN)</b>	<b>PRESENT (REF. 17-54)</b>
<b>TR TROUT</b>	<b>0.0 - 2.6KM. (REARING) (REF. 17-54)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	LIVESTOCK WATERING. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

THE RIGHT BANK IS AT THE FOOT OF AN OLD BULLDOZED ROAD. THIS HEAVILY INFLUENCES THE BANK COMPOSITION. (REF. 17-54)
MAY HAVE COHO REARING POTENTIAL. (REF. 17-66)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
----------------------------	--------------

**K. SIS COMPLETED BY**

Completed by: <b>GITA KAPAHI</b>	Date: <b>1987/11/25</b>
Last updated by: <b>BRIAN TUTTY</b>	Date: <b>1988/03/22</b>
Last checked by: <b>CINDY HARLOW</b>	Date: <b>1987/06/06</b>

hab314102670  
REFERENCE LIST  
1988/07/18

Watershed Code: 92-4300-030  
Stream Name: STARK LAKE CREEK  
Page: 1

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REFERENCE NO: 17- 54

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: 1982, STARK LAKE CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 17- 65

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AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 66

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AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>MCKAY LAKE CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 HANAIMO</b>
Watershed Code: <b>92-4300-040</b>	Subdistrict: <b>17 HANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>926/4</b>
		B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10.4293.54351</b>
		Lat./Long. Mouth: <b>49 DG. 04' 01'' 123 DG. 57' 55''</b>
		Mainstem Length: <b>2.1 km</b> Ref. No.: <b>17-55</b>
		Watershed Area: Ref. No.:
Location:		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 1.8KM U/S ; 3.6% SLOPE    REACH #2: 2.1KM U/S ; 0% SLOPE. (REF. 17-55)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CT CUTTHROAT TROUT</b>	<b>APPEAR TO BE RESIDENT BELOW REACH #1. (REF. 17-55)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

ONE LAKE IN SYSTEM; AIR AND FIELD PHOTOS AVAILABLE. (REF. 17-55)
LAKE SURVEY DONE MAY 9/1979; LOCATION - UTM 295340; MAX DEPTH - 8.5M; MEAN DEPTH - 4.2M; PERIMETER - 1000M; ELEVATION - 200M; SURFACE AREA - 35,058 SQ. M; VOLUME - 116,236 CU.M. (REF. 17-37)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/06
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-040  
Stream Name: MCKAY LAKE CREEK  
Page: 1

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REFERENCE NO: 17- 37  
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AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: NANAIMO RIVER SALMONID ENHANCEMENT PROJECT, 1980. LAKE SURVEYS.  
LOCATION: 0 MDE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 55  
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AUTHOR: UNKNOWN  
DESCRIPTION: 1982, MCKAY LAKE CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

**A. DESCRIPTION**

Stream Name: <b>BERKLEY CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-050</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 926/4
		B.C.G.S. (1:20k) Map: <b>001</b>
		U.T.M. Mouth: <b>10.4290.54358</b>
		Lat./Long. Mouth: <b>49 DG. 04' 20'' 123 DG. 58' 17''</b>
		Mainstem Length: <b>5.2 km</b> Ref. No.: <b>17-56</b>
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO THE NANAIMO RIVER.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>3.9% SLOPE. (REF. 17-56)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control: <b>N</b>	Water Survey of Canada (WSC) Flow Gauge: <b>N</b>		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: <b>CREEK DRIES UP IN MIDSUMMER. (REF. 17-56)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>AF ALL SPECIES</b>	<b>NO SPECIES FOUND. (NO FISH CAUGHT) (REF. 17-56)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

NO INFORMATION AVAILABLE
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**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
----------------------------	--------------

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAHI	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/06
Last updated by:	B.D. TUTTY	Date:	1988/03/07



hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-050  
Stream Name: BERKLEY CREEK  
Page: 1

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REFERENCE NO: 17- 56  
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AUTHOR: UNKNOWN  
DESCRIPTION: 1982, BERKELY CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPawning

**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-065</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92F/1
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth:
		Lat./Long. Mouth: <b>DG. ' ' DG. ' '</b>
		Mainstem Length: <b>2.7 km</b> Ref. No.: <b>17-57</b>
		Watershed Area: Ref. No.:
Location: <b>UNNAMED CREEK BETWEEN ELKHORN AND BOULDER CREEKS.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 2.7KM UPSTREAM; 7.0% SLOPE. (REF. 17-57)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>AF ALL SPECIES</b>	<b>NO FISH PRESENT IN SURVEY, BUT POSSIBLE REARING. (REF. 17-57)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

DOWNSTREAM FROM BEGINNING OF REACH, BEDROCK INCREASES AND BANKS BECOME PREDOMINANTLY BEDROCK; ABOVE POINT SITE IT BECOMES PREDOMINANTLY GRAVEL AND COBBLE. (REF. 17-57)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:      /      /                              Prepared By:

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/06
Last updated by:	B.D. TUTTY	Date:	1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-065  
Stream Name: UNNAMED CREEK  
Page: 1

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REFERENCE NO: 17- 57

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AUTHOR: UNKNOWN  
DESCRIPTION: 1982, BOULDER CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

**A. DESCRIPTION**

Stream Name: <b>BOULDER CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-070</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92F/1
<b>MANSON CREEK</b>	<b>010</b>	B.C.G.S. (1:20k) Map: <b>010</b>
		U.T.M. Mouth: <b>10.4264.54359</b>
		Lat./Long. Mouth: <b>49 06. 04' 25'' 124 06. 00' 37''</b>
		Mainstem Length: <b>6.9 km</b> Ref. No.: <b>17-57</b>
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO THE NANAIMO RIVER.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 6.9KM UPSTREAM; 5.1% SLOPE. (REF. 17-57)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>X LOG JAMS</b>		<b>0.3</b>		<b>STUMPS AND LOGS ARE A POSSIBLE REARING BLOCK. (REF. 17-57)</b>

**C. FLOW**

Flow Control: <b>N</b>	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
Comments: <b>VERY STEEP; SUBJECT TO FRESHETS. LOW FLOW IN SUMMER. (REF. 17-66)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>AF ALL SPECIES</b>	<b>NO FISH PRESENT IN SURVEY, BUT POSSIBLE REARING AT BOTTOM END. (REF. 17-57, REF. 17-66)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
FD FORESTRY	PAST AND PRESENT LOGGING. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

POSSIBLE FISH UTILIZATION AT BOTTOM END. (REF. 17-66)
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**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/06
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-070  
Stream Name: BOULDER CREEK  
Page: 1

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REFERENCE NO: 17- 57

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, BOULDER CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>MANSON CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-070-010</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>010</b>
		U.T.M. Mouth: <b>10.4262.54379</b>
		Lat./Long. Mouth: <b>49 DG. 05' 30'' 124 DG. 00' 55''</b>
		Mainstem Length: <b>3.8 km</b> Ref. No.: <b>17-58</b>
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO BOULDER C.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 3.8KM UPSTREAM; 9.4% SLOPE. (REF. 17-58)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>NO INFORMATION AVAILABLE</b>	

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													



**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
FO FORESTRY	LOGGING IN PAST FEW YEARS. (REF. 17-66)
MI MINING	SOME MINING EXPLORATION. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

AIR AND FIELD PHOTOS AVAILABLE. (REF. 17-58)
--

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
----------------------------	--------------

**K. SIS COMPLETED BY**

Completed by: <b>GITA KAPAHI</b>	Date: <b>1987/06/06</b>
Checked by: <b>CINDY HARLOW</b>	Date: <b>1987/06/06</b>
Last updated by: <b>B.D. TUTTY</b>	Date: <b>1988/03/07</b>

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-070-010  
Stream Name: MANSON CREEK  
Page: 1

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REFERENCE NO: 17- 58  
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AUTHOR: UNKNOWN  
DESCRIPTION: 1982, MANSON CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>SOUTH FORK NANAIMO RIVER</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-080</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>010</b>
		U.T.M. Mouth: <b>10.4213.54362</b>
		Lat./Long. Mouth: <b>49 DG. 04' 40'' 124 DG. 04' 37''</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location: <b>SOURCE IS RHEINHART LAKE.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: 4.7KM LONG; SLOPE 1.5%. (DETAILED REACH INFO AVAIL) (REF. 17-20, REF. 17-59)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>X LOG JAMS</b>				<b>DEBRIS ACCUMULATIONS AND LOG JAMS IN REACHES 6, 7 AND 10. (REF. 17-20)</b>
<b>F FALLS</b>	<b>2.0</b>			<b>(REF. 17-30)</b>
<b>F FALLS</b>	<b>2.6</b>			<b>(REF. 17-30)</b>
<b>D DAM</b>	<b>30.0</b>		<b>AO ALL SALMON</b>	<b>BEFORE REACH #2. (REF. 17-20, REF. 17-59)</b>

**C. FLOW**

Flow Control: <b>Y</b>	Water Survey of Canada (WSC) Flow Gauge: <b>M</b>
W.S.C. Station No. 1:	No. 2:    No. 3:    No. 4:
<b>NO INFORMATION AVAILABLE</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>ST STEELHEAD</b>	<b>HEAVILY UTILIZE REACH 1. AVAILABLE SPAWNING HABITAT IS LIMITED. MANY PARR PRESENT DURING SURVEYS. (REF. 17-20, REF. 17-59)</b>
<b>AO ALL SALMON</b>	<b>REACH #1 IS THE ONLY REACH ACCESSIBLE TO ANADROMOUS FISH, ACCESS BLOCKED BY DAM. (REF. 17-20, REF. 17-59)</b>
<b>CT CUTTHROAT TROUT</b>	<b>REACHES 3 - 10; LARGE NUMBERS OF RESIDENT FISH (PRIMARYLY CUTTHROAT) OBSERVED. (REF. 17-20, REF. 17-59)</b>
<b>DV DOLLY VARDEN</b>	<b>PRESENT. (REF. 17-20, REF. 17-59)</b>
<b>RB RAINBOW TROUT</b>	<b>SOME RESIDENTS PRESENT. (REF. 17-20, REF. 17-59)</b>
<b>TR TROUT</b>	<b>REACH #2: SOUTH FORK DAM, HAS EXCELLENT PRODUCTION. GOOD POPULATIONS OF CUTTHROAT, RAINBOW AND DOLLY VARDEN. (REF. 17-20, REF. 17-59)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ST STEELHEAD	Migration Spawning Incubation Rearing	X X	X X	X X	X X	X					X X	X	X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
WW WATER WITHDRAWAL	DAM SUPPLIES ALL THE WATER FOR THE CITY OF NANAIMO. (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

ACCESSIBLE AREA: LOWER PORTION OF REACH 1 HAS AREAS OF POTENTIAL SIDE CHANNEL DEVELOPMENT. BOULDER - RIFFLE NATURE OF STREAM IS LESS THAN IDEAL FOR COHO. FLOWS SHOULD BE MUCH GREATER DURING LOW FLOW PERIOD. (REF. 17-20, REF. 17-59)
INACCESSIBLE AREA: AREA ABOVE DAM HAS GOOD POTENTIAL FOR COHO COLONIZATION.THERE ARE SEVERAL OTHER STREAMS IN THE SOUTH NANAIMO WATERSHED WHICH ARE BARREN BUT CONTAIN GOOD HABITAT POTENTIAL. SOME STREAMS IN THIS AREA ARE BETTER SUITED FOR STEELHEAD RATHER THAN COHO PRODUCTION. (REF. 17-20, REF. 17-59)
DETAILED INFORMATION RE: STOCKING AREAS BY SPECIES AVAILABLE. (REF. 17-20)
UTILIZATION OF S. NANAIMO WATERSHED COULD DOUBLE PRESENT COHO PRODUCTION OF ENTIRE NANAIMO RIVER WATERSHED. AVAILABILITY OF BROODSTOCK WILL BE THE PROBLEM. SEE MILLSTONE COMMENTS (17-68) (REF. 17-20, REF. 17-68)
INDICATES POTENTIAL HABITAT IN LOWER REACHES OF SOUTH NANAIMO RIVER. (REF. 17-2)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPAHI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/06
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-080  
Stream Name: SOUTH FORK NANAIMO RIVER  
Page: 1

-----  
REFERENCE NO: 17- 2

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 20

-----  
AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 30

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 59

-----  
AUTHOR: UNKNOWN  
DESCRIPTION: 1982, SOUTH NANAIMO RIVER, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 66

-----  
AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68

-----  
AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

**A. DESCRIPTION**

Stream Name: <b>DUNSMUIR CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-080-100</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>009</b>
		U.T.M. Mouth: <b>10.4148,54320</b>
		Lat./Long. Mouth: <b>49 DG. 02' 25'' 124 DG. 09' 52''</b>
		Mainstem Length: <b>12.3 km Ref. No.: 17-1</b>
		Watershed Area: <b>112.0 km<sup>2</sup> Ref. No.: 17-1</b>
Location: <b>MAJOR TRIBUTARY OF S. NANAIMO RIVER.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH #1: LENGTH 2.6KM; SLOPE 3%; REACH #2: LENGTH 2.6KM; SLOPE 1.5%; REACH #3: LENGTH 1.9KM; SLOPE 1.8%; REACH #4: LENGTH 2.7KM; SLOPE 4%; REACH #5: LENGTH 2.5KM; SLOPE 3.0%. (REF. 17-20, REF. 17-59)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	2.5			IN REACH 1; UPPER PORTION IS CANYON 10M LONG. (REF. 17-20, REF. 17-59)
C CASCADE	3.5			10 M LONG. (REF. 17-30)
F FALLS	25.0			50M LONG SERIES OF 5 FALLS. (REF. 17-30)
X LOG JAMS				IN REACH 2, 2 LARGE JAMS. (REF. 17-30)
F FALLS	1.5			IN REACH 4 (REF. 17-30)
F FALLS	2.0			IN REACH 4 (REF. 17-30)
C CASCADE	15.0			10M LONG, REACH 5 (REF. 17-20, REF. 17-30)
F FALLS	2.0			REACH 5 (REF. 17-20, REF. 17-30)
X LOG JAMS				REACH 5 (REF. 17-20, REF. 17-30)
F FALLS	8.0			15M LONG; TRIBUTARY SW. OF DUNSMUIR C (REF. 17-30)
F FALLS	6.0			30M LONG; TRIBUTARY SW. OF DUNSMUIR C. (REF. 17-30)

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
ST STEELHEAD	ALTHOUGH IT IS BARREN ABOVE REACH 1, NANAIMO RIVER SEP HAVE STOCKED THIS AREA WITH STEELHEAD. (REF. 17-20, REF. 17-59)

**D. DISTRIBUTION SUMMARY CONTINUED**

Species	Watershed Distribution
CT CUTTHROAT TROUT	POSSIBLY IN REACH 1 (REF. 17-20, REF. 17-59)
DV DOLLY VARDEN	IN REACH 1 (REF. 17-20, REF. 17-59)
RB RAINBOW TROUT	RESIDENTS IN REACH 1 (REF. 17-20, REF. 17-59)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

EXTREMELY HIGH POTENTIAL FOR STEELHEAD PRODUCTION, SHOULD BE STOCKED WITH 50,000 FRY YEARLY. (REF. 17-20, REF. 17-59)
REACH 2 HAS REASONABLE POTENTIAL FOR COHO REARING. (REF. 17-20, REF. 17-59)
2 TRIBUTARY STREAMS FLOW INTO REACH 1. THESE STREAMS ARE VERY STEEP AND APPEAR TO HAVE LIMITED POTENTIAL BUT UPPER PORTION OF BOTH STREAMS FLOW OUT OF A LARGE FLAT SWAMPY AREA WHICH MIGHT WARRANT FURTHER INVESTIGATION FOR COHO REARING POTENTIAL. (REF. 17-20, REF. 17-59)
MAP INDICATES POTENTIAL HABITAT; TRIBUTARY S.W. OF DUNSMUIR. (REF. 17-2)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/06
Last updated by: B.D. TUTTY	Date: 1988/03/07

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 2

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES DB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 59

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, SOUTH NANAIMO RIVER, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING



**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-080-100-050</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92F/1
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth: <b>10.4144.54320</b>
		Lat./Long. Mouth: <b>49 DG. 02' 25'' 124 DG. 10' 12''</b>
		Mainstem Length: <b>3.6 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO DUNSMUIR C.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH 1: LENGTH - 0.6KM; SLOPE - 4% ; REACH 2: LENGTH - 1.6KM;SLOPE - 4%; REACH 3: LENGTH - 1.0KM; REACH 3 TO END OF SURVEY: LENGTH - 0.4KM; SLOPE - 6%. (REF. 17-17)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	8.0			<b>15M LONG (REF. 17-30)</b>
F FALLS	6.0			<b>30 M LONG (REF. 17-30)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>NO INFORMATION AVAILABLE</b>	

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

REACH BY REACH HABITAT PARAMETERS AVAILABLE. (REF. 17-17)
MAP INDICATES POTENTIAL HABITAT. (REF. 17-2)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
----------------------------	--------------

**K. SIS COMPLETED BY**

Completed by:     GITA KAPANI	Date: 1987/06/06
Checked by:     CINDY HARLOW	Date: 1987/06/04
Last updated by:     B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-080-100-050  
Stream Name: UNNAMED CREEK

Page: 1

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REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 2

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 17

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>JUMP CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-080-110</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>010</b>
		U.T.M. Mouth: <b>10.4148,54320</b>
		Lat./Long. Mouth: <b>49 DG. 02' 25'' 124 DG. 09' 52''</b>
		Mainstem Length: <b>11.5 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location:		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	REACH 1: LENGTH - 2.7KM; SLOPE - 1.5% ; REACH 2: LENGTH - 1.1KM; SLOPE 0.7% ; REACH 3: LENGTH - 0.8KM; SLOPE 0.6%; REACH 4: LENGTH - 1.0KM ; SLOPE 4% ; REACH 5: JUMP LAKE ; REACH 6: LENGTH - 3.0KM; SLOPE 3% ; REACH 7: LENGTH - 2.9KM ; SLOPE - 7%. (REF. 17-20)

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
C CASCADE	15.0			50M LONG; IN REACH 4 (REF. 17-20, REF. 17-30)
D DAM	35.0			AT THE END OF REACH 4 IS JUMP LAKE DAM (REF. 17-20, REF. 17-30)
C CASCADE	5.0			200M LONG; IN REACH 6 (REF. 17-20, REF. 17-30)
C CASCADE	15.0			60M LONG IN REACH 7 (REF. 17-20, REF. 17-30)
C CASCADE	40.0			200M LONG (REF. 17-20, REF. 17-30)
C CASCADE	15.0			50M LONG (REF. 17-20, REF. 17-30)
C CASCADE	15.0			40M LONG (REF. 17-20, REF. 17-30)
F FALLS	40.0			AT TERMINATION OF SURVEY (REF. 17-20, REF. 17-30)
X LOG JAMS		4.6		REACH 3; 2 LARGE LOG DEBRIS JAMS (REF. 17-20, REF. 17-30)

**C. FLOW**

Flow Control: Y	Water Survey of Canada (WSC) Flow Gauge: N		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: FLOW IS CONTROLLED BY JUMP LAKE DAM. WATER IS STORED IN JUMP LAKE AS PART OF CITY OF NANAIMO WATER SUPPLY. SUMMER RELEASE APPROX. 1.0CMS. TEMP. 12 - 15 C. (REF. 17-17, REF. 17-20)			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CT CUTTHROAT TROUT	RESIDENTS THROUGHOUT; JUMP LAKE HAS LARGE NUMBERS OF CUTTHROAT. (REF. 17-20, REF. 17-30)
DV DOLLY VARDEN	RESIDENTS THROUGHOUT (REF. 17-20, REF. 17-30)
RB RAINBOW TROUT	RESIDENTS THROUGHOUT (REF. 17-20, REF. 17-30)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

REACH 1 - 6; EXCELLENT POTENTIAL FOR COHO AND STEELHEAD REARING. REACH 7 AND TRIBS HAVE SOME POTENTIAL FOR STEELHEAD REARING. REACHES 6 AND 7 ARE ONLY AREAS OBSERVED IN THE S. NAHAIMO RIVER WHERE SILTATION COULD BE A PROBLEM. SILT SOURCE IS UPSTREAM FROM TERMINATION OF SURVEY. (REF. 17-20)
POTENTIAL FOR COHO (REF. 17-66)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPANI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/04
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-080-110  
Stream Name: JUMP CREEK  
Page: 1

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: 6 DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 17

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>4TH FORK JUMP CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-080-110-030</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: 92F/1 B.C.G.S. (1:20k) Map: 009 U.T.M. Mouth: Lat./Long. Mouth: DG. ' " DG. ' " Mainstem Length: 7.1 km Ref. No.: 17-1 Watershed Area: Ref. No.:
<b>UNNAMED CREEK</b>	<b>110</b>	Location: <b>FEEDER STREAM TO JUMP LAKE</b>

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%     .5 - 2%     2 - 5%     5 - 10%     >10%	<b>REACH 1: LENGTH - 1.5KM; SLOPE - 4% ; REACH 2: LENGTH - 4.0KM; SLOPE - 4% ; REACH 3: LENGTH - 1.6KM; SLOPE - 11% ; REACH 3 TO END OF SURVEY: LENGTH - 0.9KM; SLOPE 23% . (REF. 17-17, REF. 17-59)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>C CASCADE</b>	<b>1.5</b>			<b>2M LONG; IN REACH 1 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>3.0</b>			<b>15M LONG IN REACH 1 (REF. 17-30)</b>
<b>F FALLS</b>	<b>3.5</b>			<b>IN REACH 3 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>3.0</b>			<b>3.5M LONG; IN REACH 3 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>4.0</b>			<b>15M LONG IN REACH 3 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>9.0</b>			<b>40M LONG IN REACH 3 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>70.0</b>			<b>450M LONG IN REACH 3 (REF. 17-30)</b>
<b>C CASCADE</b>	<b>20.0</b>			<b>20M LONG; REACH 3 TO END (REF. 17-30)</b>
<b>F FALLS</b>	<b>20.0</b>			<b>REACH 3 TO END OF SURVEY. (REF. 17-30)</b>

**C. FLOW**

Flow Control: <b>M</b>	Water Survey of Canada (WSC) Flow Gauge: <b>M</b>		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: <b>DURING DRY PERIOD, FLOW IS INTERGRAVEL IN LOWER PORTION OF STREAM. (REF. 17-17, REF. 17-59)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CT CUTTHROAT TROUT</b>	<b>SMALL NUMBERS OF RESIDENTS OBSERVED (REF. 17-59)</b>
<b>RB RAINBOW TROUT</b>	<b>SMALL NUMBERS OF RESIDENTS OBSERVED (REF. 17-59)</b>
<b>TR TROUT</b>	<b>LOWER REACH POSSIBLY USED BY LAKE RESIDENTS FOR SPAWNING (REF. 17-59)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
NO INFORMATION AVAILABLE							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

LOW POTENTIAL; STEEP SLOPE. RESIDENT FISH PRESENT. INTERMITTENT FLOW NEAR MOUTH. (REF. 17-59)
SUBSTRATE INFORMATION AVAILABLE. (REF. 17-20)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by:	GITA KAPAHI	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/04
Last updated by:	B.D. TUTTY	Date:	1988/03/07



hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-080-110-030  
Stream Name: UNNAMED CREEK

Page: 1

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 17

AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON

REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 59

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, SOUTH NANAIMO RIVER, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING





hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-080-110-030-010  
Stream Name: UNNAMED CREEK

Page: 1

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REFERENCE NO: 17- 1

-----  
AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH  
- DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 20

-----  
AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

**A. DESCRIPTION**

Stream Name: <b>WOLF CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-095</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth: <b>10.4192.54377</b>
		Lat./Long. Mouth: <b>49 DG. 05' 25'' 124 DG. 06' 25''</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location:		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>REACH 1: 1.4KM LONG; SLOPE - 8.2% ; REACH 2: 5.2KM LONG; SLOPE - 10.4% ; REACH 3: 0.2KM LONG; SLOPE - 0.2% (REF. 17-61)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>X LOG JAMS</b>				<b>IN REACH 1; IS A POSSIBLE OBSTRUCTION TO FISH (REF. 17-30, REF. 17-61)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>DV DOLLY VARDEN</b>	<b>0 - 1.4KM (REF. 17-61)</b>
<b>RB RAINBOW TROUT</b>	<b>0 - 1.4KM (REF. 17-61)</b>
<b>TR TROUT</b>	<b>0 - 1.4KM (REF. 17-61)</b>
<b>TR TROUT</b>	<b>ALL THREE SPECIES USE CREEK FOR REARING ONLY. (REF. 17-61)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
FO FORESTRY	UPPER 400M OF REACH 1 LOGGED AND CLEARED FOR A HYDRO LINE RIGHT OF WAY (REF. 17-30, REF. 17-61)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

A HIGH AMOUNT OF DEBRIS IN THE CHANNEL AND FLOODPLAIN; POOLS AND SMALL FALLS FORMED BY DEBRIS (MOSTLY UPSTREAM OF THE NANAIMO RIVER ROAD); POOLS UP TO 1.25M DEEP (REF. 17-30, REF. 17-61)
ABOVE NANAIMO RIVER ROAD THE STREAM CHANNEL WANDERS WITHIN THE VALLEY FLATS DUE TO DIVERSIONS CREATED BY LOGS AND DEBRIS BECOMING LODGED IN THE CHANNEL (REF. 17-30, REF. 17-61)
FLOW MOSTLY RIFFLE WITH 5% ROCK CONTROLLED POOLS IN REACH #1 (REF. 17-61)
GOOD REARING POTENTIAL IN REACH #1 BUT PROBABLY ONLY UTILIZED BY RESIDENT TROUT (REF. 17-61)
LIMITED OVERWINTERING HABITAT. SMALL POCKETS OF SPAWNING GRAVEL (10 - 15CM). (REF. 17-61)
POTENTIAL HABITAT IN UPPER REACHES OF STREAM (REF. 17-2)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
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**K. SIS COMPLETED BY**

Completed by: GITA KAPAHU	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/04
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-095  
Stream Name: WOLF CREEK  
Page: 1

-----  
REFERENCE NO: 17- 2  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: 0 MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 30  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: W MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 61  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, WOLF CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PS POPULATION SAMPLING PY PHYSICAL HABITAT  
S SPAWNING





F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO INFORMATION AVAILABLE													

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
TR TRANSPLANT	CO COHO SALMON	0.0	STOCKED BY NANAIMO RIVER SEP (REF. 17-20)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	CLASSIC EXAMPLE OF LOGGING DAMAGE; NUMEROUS OLD LOG JAMS, BUT ALL ARE PASSABLE (REF. 17-63)
FO FORESTRY	LOGGING MAY CAUSE PROBLEMS (REF. 17-67)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

REACH 1: 3.6KM UPSTREAM, 3.6KM LONG , 1.8% SLOPE	REACH 2: 7.5KM UPSTREAM, 3.9KM LONG , 1.1% SLOPE
POOR BANK STABILITY; SILT AND CLAY BANKS HAVE COLLAPSED IN MANY AREAS AND MUCH SEDIMENT AND DEBRIS IS PRESENT (REF. 17-63, REF. 17-64)	
SUBSTRATE STABILITY POOR, ESPECIALLY IN UPPER SECTION; SUBSTRATE SILTATION HIGH. CANOPY PARTIAL; BEST IN REARING SECTION (MIDDLE) (REF. 17-64)	
AREA SURVEYED: BELOW OLD BLACKJACK LAKE CROSSING TO CONFLUENCE WITH MAINSTEM NANAIMO RIVER (APPROX. 4.8KM) ; UPPER SECTION (1.6KM LONG) - GOOD SPAWNING GRAVEL, VERY LOOSELY COMPACTED AND BADLY SILTED, HIGH UTILIZATION (REDDS). MIDDLE SECTION (2.4KM LONG) - EXCELLENT REARING HABITAT (ALMOST CONTINUOUS BOULDER-RIFFLE THROUGHOUT, HIGH UTILIZATION BY JUVENILES. (REF. 17-64)	
BECAUSE OF THE HIGH WINTER FLOOD DAMAGE, HATCHERY COHO FRY COULD AUGMENT PRODUCTION. (REF. 17-20)	
HIGH SUMMER WATER TEMPERATURES MIGHT PRECLUDE THE USE OF AN UPPER DAM SITE AS REARING HABITAT. (REF. 17-20)	
IMPROVEMENTS POSSIBLE: FLOW CONTROL FEASIBLE AT BARNABY OUTLET; SOME DEBRIS REMOVAL AND BANK STABILIZATION WOULD HELP; THREE TRIBUTARIES OFF MT. DE COSMOS COULD BE IMPROVED FOR COHO - CUTTHROAT BY DEBRIS CLEARING. (REF. 17-30, REF. 17-63)	
MOEP MAP INDICATES POTENTIAL SPAWNING ALONG LOWER AND MIDDLE REACHES OF STREAM (REF. 17-30)	

J. FISHERY OFFICER NARRATIVE

Date Prepared: / /	Prepared By:
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K. SIS COMPLETED BY

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/04
Last updated by: B.D. TUTTY	Date: 1988/03/07

-----  
REFERENCE NO: 17- 1  
-----

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 20  
-----

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 30  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 62  
-----

AUTHOR: NANAIMO RIVER SEP HATCHERY FILES  
DESCRIPTION: 1982, NORTH NANAIMO RIVER. COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPANING

REFERENCE NO: 17- 63  
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AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - DEADWOOD CREEK, 1969 - 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AO ALL SALMON PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 17- 64  
-----

AUTHOR: HORNCASTLE, G.S.  
DESCRIPTION: DEADWOOD CREEK (NORTH NANAIMO RIVER) SNORKLE OBSERVATIONS. FILE #85-01 STREAM INVENTORY, NANAIMO RIVER. 0644, JUNE 2, 1975.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AO ALL SALMON FS FISH SAMPLING PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 17- 67  
-----

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>BLACKJACK CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4300-100-010</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92F/1</b>
		B.C.G.S. (1:20k) Map: <b>020</b>
		U.T.M. Mouth:
		Lat./Long. Mouth: <b>DG. ' ' DG. ' '</b>
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location: <b>TRIBUTARY TO THE NORTH NANAIMO RIVER</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CT CUTTHROAT TROUT</b>	<b>PRESENT (REF. 17-67)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
NO INFORMATION AVAILABLE	

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

NO INFORMATION AVAILABLE
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**J. FISHERY OFFICER NARRATIVE**

Date Prepared:     /     /	Prepared By:
----------------------------	--------------

**K. SIS COMPLETED BY**

Completed by:     GITA KAPAHI	Date: 1987/06/06
Checked by:     CINDY HARLOW	Date: 1987/06/04
Last updated by:     B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4300-100-010  
Stream Name: BLACKJACK CREEK  
Page: 1

-----  
REFERENCE NO: 17- 67  
-----

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>HOLDEN C; HOLDEN LAKE CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4305</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-14</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth:
		Lat./Long. Mouth: <b>49 06. 08' 00'' 123 06. 52' 30''</b>
		Mainstem Length: <b>10.3 km</b> Ref. No.: <b>17-48</b>
		Watershed Area: Ref. No.:
Location: <b>FLows INTO NANAIMO HARBOUR.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>SLIGHT GRADIENT. REACH BY REACH SLOPE INFORMATION AVAILABLE (REF. 17-30, REF. 17-48)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>CV CULVERT</b>				<b>NORTH OF HOLDEN LAKE (REF. 17-32)</b>
<b>CV CULVERT</b>				<b>SOUTH OF HOLDEN LAKE (REF. 17-32)</b>
<b>BD BEAVER DAM</b>				<b>SOUTH OF HOLDEN LAKE (REF. 17-32)</b>
<b>D DAM</b>		<b>1.6</b>		<b>PASSABLE CEMENT IRRIGATION ADJUSTABLE DAM (REF. 17-47)</b>

**C. FLOW**

Flow Control: <b>Y</b>	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: <b>ACCESS TO QUENELL LAKE PREVENTED BY IRRIGATION DAM (REF. 17-68)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>7.7KM UPSTREAM FROM MOUTH. OBSERVED AT YELLOWPOINT ROAD CULVERT. (17-68) (REF. 17-47, REF. 17-68)</b>
<b>CO COHO SALMON</b>	<b>0 - 3.8KM; 5.5 - 6.7KM (REF. 17-32, REF. 17-33, REF. 17-48)</b>
<b>CT CUTTHROAT TROUT</b>	<b>PRESENT. 4.3KM - 6.7KM; 8.4KM - 10.3KM (REF. 17-32, REF. 17-33, REF. 17-48)</b>
<b>RB RAINBOW TROUT</b>	<b>4.3KM - 5.5KM (REF. 17-32, REF. 17-48)</b>
<b>TR TROUT</b>	<b>OTHER TROUT: 2.6KM - 3.8KM; 5.5KM - 8.4KM (REF. 17-32, REF. 17-48)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>CO COHO SALMON</b>	<b>30</b>	<b>1983 - 1985</b>	<b>28A-18</b>	<b>43</b>	<b>28A-18</b>		



-----  
REFERENCE NO: 17- 30

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 32

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS NANAIMO AND NANAIMO LAKES. MAP NO. 92G/4 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 33

AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER ELECTROFISHING . MAY - OCT. 1979. (NANAIMO RIVER FILES 1 & 2; G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 36

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP NO. 92G/4 EAST AND WEST.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 47

AUTHOR: UNKNOWN  
DESCRIPTION: HOLDEN CREEK FILE #5871-BC-2-3, ENVIRONMENT CANADA, FISHERIES AND OCEANS ANNUAL REPORT OF SALMON STREAM AND SPAWNING  
GROUNDS, 1969 - 1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AD ALL SALMON S SPAWNING

REFERENCE NO: 17- 48

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, HOLDEN CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AD ALL SALMON S SPAWNING

REFERENCE NO: 17- 68

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE



**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>THOMAS CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4590</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map:
		U.T.M. Mouth:
		Lat./Long. Mouth: <b>DG. ' ' DG. ' '</b>
		Mainstem Length: <b>Ref. No.:</b>
		Watershed Area: <b>Ref. No.:</b>
Location: <b>FLWS INTO LADYSMITH HARBOUR. NOT FOUND ON TOPOGRAPHIC MAP.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>FAIRLY LOW GRADIENT (REF. 17-66)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>NO INFORMATION AVAILABLE</b>				

**C. FLOW**

Flow Control: <b>N</b>	Water Survey of Canada (WSC) Flow Gauge: <b>N</b>		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: <b>SUBJECT TO SUMMER LOW FLOWS (REF. 17-66)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>IN LOWER 0.4KM (REF. 17-66)</b>
<b>CT CUTTHROAT TROUT</b>	<b>IN LOWER 0.4KM (REF. 17-66)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>NO INFORMATION AVAILABLE</b>							

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>NO INFORMATION AVAILABLE</b>													

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	SOME AGRICULTURE RELATED PROBLEMS (REF. 17-66)
FD FORESTRY	SAMMILL AND DRYLAND SORT AT THE MOUTH (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

CREEK HAS BEEN CONSIDERED FOR INCREASED COHO PRODUCTION (REF. 17-66)
--

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/04
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4590  
Stream Name: UNNAMED CREEK  
Page: 1

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REFERENCE NO: 17- 66

-----  
AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER HAWAII OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

**A. DESCRIPTION**

Stream Name: <b>UNNAMED CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>WALKERS C; PERRY CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4595</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b> B.C.G.S. (1:20k) Map: U.T.M. Mouth: <b>10.4375.54305</b> Lat./Long. Mouth: <b>DG. ' ' ' ' DG. ' ' ' ' ' '</b> Mainstem Length: <b>2.0 km</b> Ref. No.: <b>17-1</b> Watershed Area: Ref. No.:
Location: <b>FLOWS W. INTO HEAD OF LADYSMITH HARBOUR - OYSTER DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%   .5 - 2%   2 - 5%   5 - 10%   >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>CV CULVERT</b>		<b>1.3</b>		<b>IMPASSABLE AT LOW FLOWS (AT THE HIGHWAY). IMPROVEMENTS PROPOSED. (REF. 17-1, REF. 17-66)</b>
<b>F FALLS</b>		<b>2.0</b>		<b>(REF. 17-1)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
<b>NO INFORMATION AVAILABLE</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>0.4KM TO 2.0KM (REF. 17-1, REF. 17-66)</b>
<b>CM CHUM SALMON</b>	<b>0.4KM TO 0.8KM (TO HIGHWAY) (REF. 17-1, REF. 17-66)</b>
<b>CT CUTTHROAT TROUT</b>	<b>TO FALLS AT 2.0KM (REF. 17-66)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>CO COHO SALMON</b>	<b>110</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>250</b>	<b>28A-18</b>		
<b>CM CHUM SALMON</b>	<b>770</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>1950</b>	<b>28A-18</b>		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing											X X	X X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS		0.0	ONGOING COMMUNITY DEVELOPMENT PROJECT ON WALKER C (T.MORRIS) (REF. 17-66)	1983/

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
UD URBAN DEVELOPMENT	LAND CLEARING HAS CAUSED SOME CREEK PROBLEMS (REF. 17-66)
MW WATER WITHDRAWAL	HAS SOME WATER LICENSES ON IT (REF. 17-66)
RE RESERVES	SUFFERS FROM ILLEGAL FISHING (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

GOOD PRODUCER OF COHO FOR ITS SIZE (REF. 17-66)
RECOMMEND CONTINUATION OF THE COMMUNITY DEVELOPMENT PROJECT (REF. 17-66)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAHI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/05
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4595  
Stream Name: UNNAMED CREEK  
Page: 1

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REFERENCE NO: 17- 1  
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AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CD COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: WALKERS CREEK

WATERSHED-CODE: 92-4595

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	200	0	3,500	0	0
1954	0	400	0	1,500	0	0
1955	0	75	0	400	0	0
1956	0	400	0	1,500	0	0
1957	0	750	0	750	0	0
1958	0	750	0	3,500	0	0
1959	0	25	0	N/O	0	0
1960	0	200	0	75	0	0
1961	0	75	0	75	0	0
1962	0	200	0	1,500	0	0
1963	0	75	0	75	0	0
1964	0	200	0	75	0	0
1965	0	400	0	200	0	0
1966	0	75	0	400	0	0
1967	0	250	0	200	0	0
1968	0	106	0	474	0	0
1969	0	145	0	130	0	0
1970	0	150	0	125	0	0
1971	0	650	0	650	0	0
1972	0	275	0	250	0	0
1973	0	90	0	45	0	0
1974	0	750	0	500	0	0
1975	0	150	0	125	0	0
1976	0	85	0	115	0	0
1977	0	190	0	1,950	0	0
1978	0	120	0	780	0	0
1979	0	60	0	270	0	0
1980	0	100	0	605	0	0
1981	0	40	0	428	0	0
1982	0	250	0	900	0	0
1983	0	20	0	1,300	0	0
1984	N/O	130	N/O	1,150	N/O	N/O
1985	N/O	100	N/O	200	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR PRESENT BUT NO ESTIMATE MADE

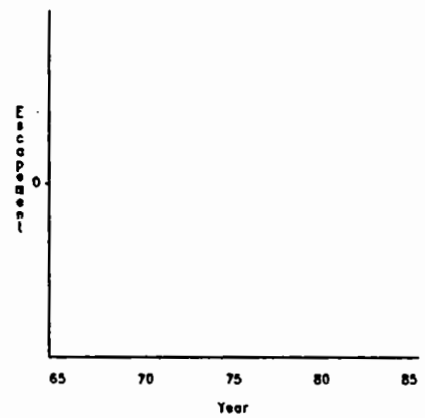
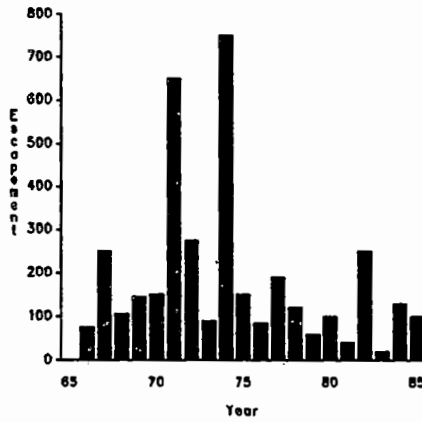
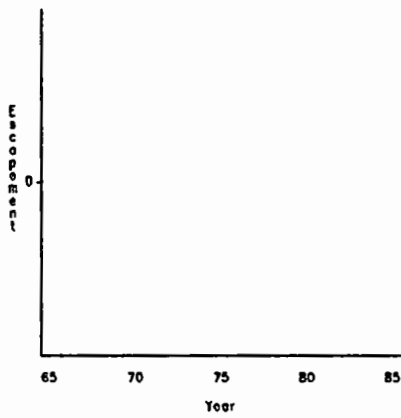
# UNNAMED C (92-4595)

## Escapement & Run Timing

Socketeye (SK)

Coho (CO)

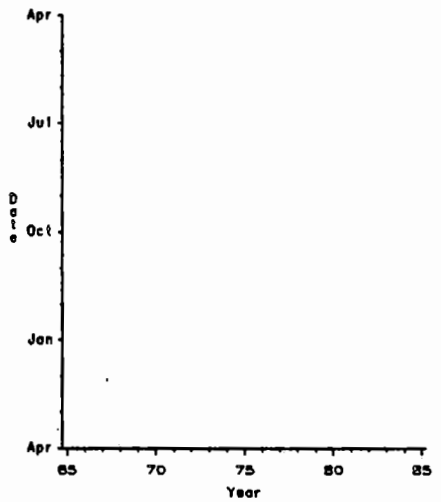
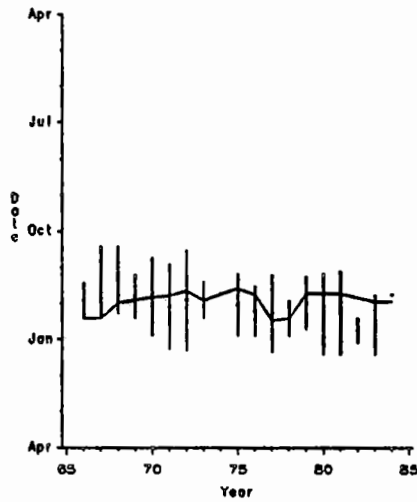
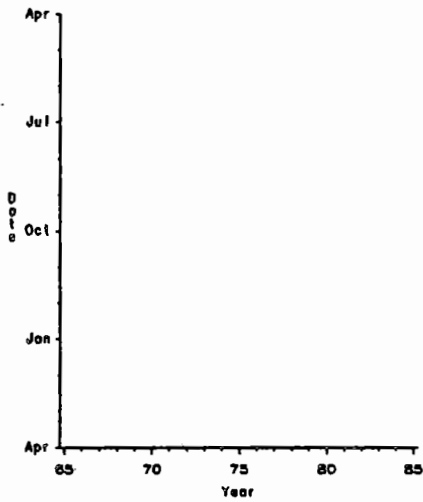
Pink (PK)



Socketeye

Coho

Pink



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	75	15NOV	15DEC	15DEC
1967	250	15OCT	15DEC	15DEC
1968	106	15OCT	02DEC	11DEC
1969	145	08NOV	-	15DEC
1970	150	25OCT	27NOV	30DEC
1971	650	30OCT	28NOV	10JAN
1972	275	18OCT	22NOV	11JAN
1973	90	14NOV	30NOV	15DEC
1974	750	-	-	-
1975	150	07NOV	20NOV	30DEC
1976	85	18NOV	25NOV	30DEC
1977	190	08NOV	17DEC	12JAN
1978	120	30NOV	19DEC	30DEC
1979	80	10NOV	24NOV	24DEC
1980	100	07NOV	24NOV	14JAN
1981	40	05NOV	24NOV	15JAN
1982	250	15DEC	21AUG	05JAN
1983	20	25NOV	01DEC	15JAN
1984	130	25NOV	01DEC	-
1985	100	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

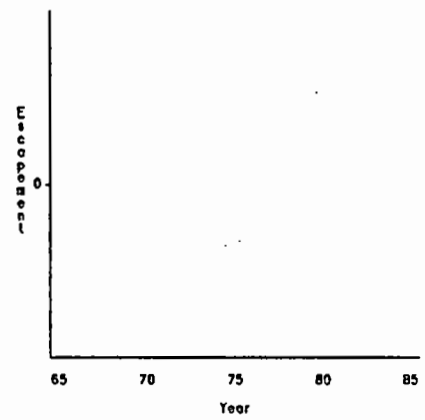
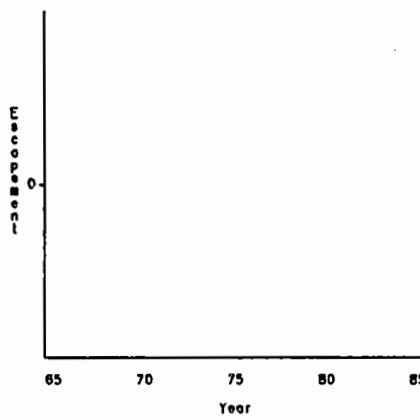
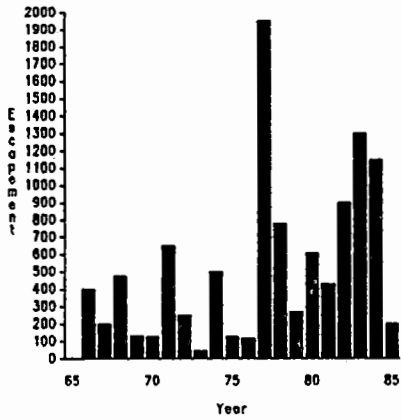


# UNNAMED C (92-4595) Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

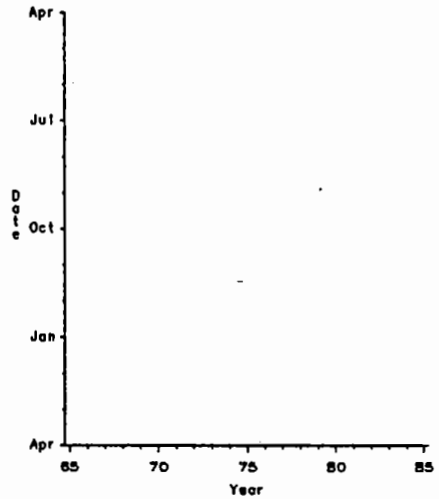
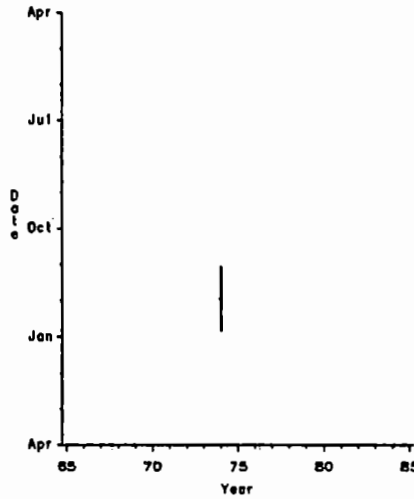
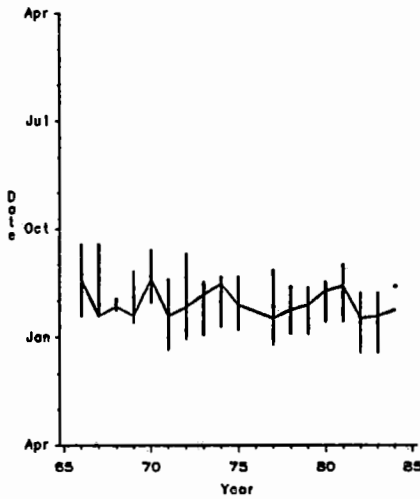
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**

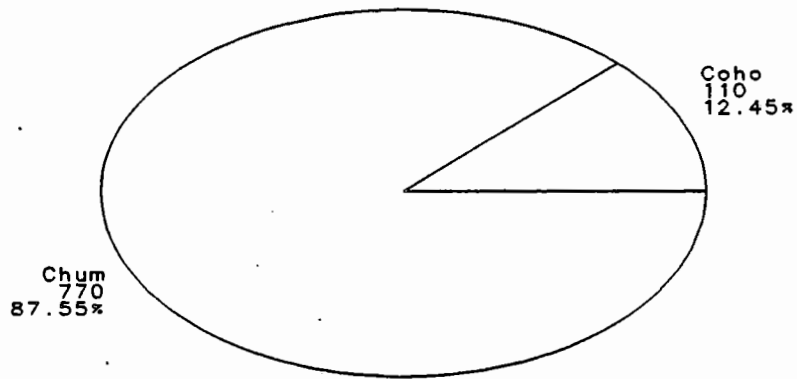


Chum				
Year	Escapement	Start	Peak	End
1966	400	15OCT	15NOV	15DEC
1967	200	15OCT	15DEC	15DEC
1968	474	30NOV	07DEC	11DEC
1969	130	07NOV	15DEC	21DEC
1970	125	20OCT	14NOV	04DEC
1971	650	14NOV	15DEC	12JAN
1972	250	23OCT	08DEC	03JAN
1973	45	16NOV	27NOV	31DEC
1974	500	12NOV	18NOV	24DEC
1975	125	12NOV	04DEC	27DEC
1976	115	-	-	-
1977	1,950	06NOV	17DEC	08JAN
1978	780	20NOV	10DEC	30DEC
1979	270	21NOV	06DEC	30DEC
1980	603	16NOV	24NOV	20DEC
1981	428	01NOV	20NOV	20DEC
1982	900	25NOV	17DEC	15JAN
1983	1,300	25NOV	15DEC	15JAN
1984	1,150	20NOV	10DEC	-
1985	200	-	-	-

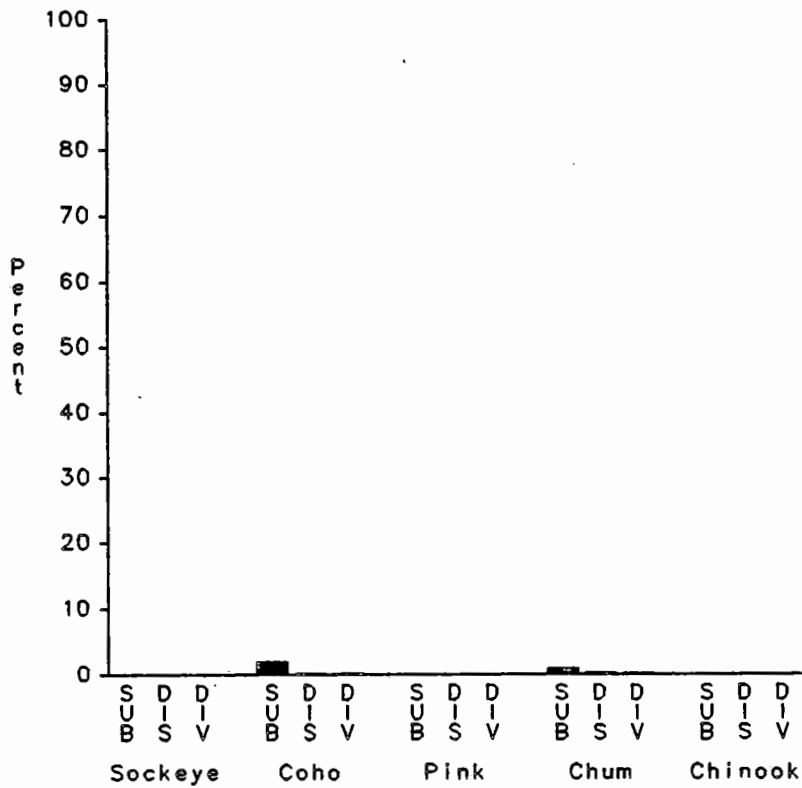
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	04NOV	20NOV	20DEC
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

UNNAMED C (92-4595)  
 10-yr Mean Escapement  
 (1976-1985)



UNNAMED C : Escapement (1976-1985)  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: <b>BUSH CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4600</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92G/4</b>
		B.C.G.S. (1:20k) Map: <b>091</b>
		U.T.M. Mouth: <b>10.4381.54293</b>
		Lat./Long. Mouth: <b>49 DG. 00' 50'' 123 DG. 50' 46''</b>
		Mainstem Length: <b>2.4 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>FLOWS N.E. INTO LADYSMITH HARBOUR, OYSTER DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>F FALLS</b>	<b>3.6</b>	<b>2.4</b>	<b>CO COHO SALMON</b>	<b>JUST ABOVE POWER LINES (REF. 17-1, REF. 17-66)</b>

**C. FLOW**

Flow Control: <b>N</b>	Water Survey of Canada (WSC) Flow Gauge: <b>M</b>		
W.S.C. Station No. <b>1:</b>	No. <b>2:</b>	No. <b>3:</b>	No. <b>4:</b>
Comments: <b>THERE ARE NO SERIOUS FLOW PROBLEMS (REF. 17-66)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>0.8KM TO 2.4KM (TO FALLS) (REF. 17-1, REF. 17-66)</b>
<b>CN CHUM SALMON</b>	<b>TO 2.0KM (REF. 17-1, REF. 17-66)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>CO COHO SALMON</b>	<b>128</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>290</b>	<b>28A-18</b>		
<b>CN CHUM SALMON</b>	<b>2878</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>10500</b>	<b>28A-18</b>		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>CO COHO SALMON</b>	Migration Spawning Incubation Rearing										<b>X</b>	<b>X X</b>	<b>X</b>

F. LIFE HISTORY TIMING CONTINUED

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CM CHUM SALMON	Migration Spawning Incubation Rearing									X	X X	X X	
Comments: SPAWNING FROM TIDAL ZONE TO FALLS (2.4KM) (REF. 17-1)													

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS		0.0	SOME BLASTING OF FALLS BY B. HURST (REF. 17-66)	1983/1983

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
RE RESERVES	IVY GREEN PARK IS NOW AN INDIAN RESERVE AND HAS ILLEGAL FISHING PROBLEMS (REF. 17-66)
FO FORESTRY	SOME LOGGING ACTIVITY IN TOP END (REF. 17-66)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

GOOD HABITAT AROUND THE FIRST FALLS. HAVE HAD SOME BLASTING DONE BUT NOT ENOUGH TO PROVIDE FISH PASSAGE. (REF. 17-66)
---

J. FISHERY OFFICER NARRATIVE

Date Prepared: / /	Prepared By:
--------------------	--------------

K. SIS COMPLETED BY

Completed by: GITA KAPAHI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/04
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4600  
Stream Name: BUSH CREEK  
Page: 1

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REFERENCE NO: 17- 1  
-----

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
-KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPawning SK SOCKEYE

ESCAPEMENT: BUSH CREEK

WATERSHED-CODE: 92-4600

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	400	0	750	0	0
1954	0	200	0	7,500	0	0
1955	0	75	0	3,500	0	0
1956	0	400	0	200	0	0
1957	0	400	0	7,500	0	0
1958	0	750	0	15,000	0	0
1959	0	75	0	400	0	0
1960	0	200	0	1,500	0	0
1961	0	75	0	750	0	0
1962	0	75	0	1,500	0	0
1963	0	200	0	3,500	0	0
1964	0	200	0	3,500	0	0
1965	0	200	0	750	0	0
1966	0	200	0	3,500	0	0
1967	0	100	1	1,300	0	0
1968	0	117	0	3,000	0	0
1969	0	80	0	3,425	0	0
1970	0	160	0	6,750	0	0
1971	0	290	0	1,500	0	0
1972	0	60	0	6,600	0	0
1973	0	150	0	2,650	0	0
1974	0	220	0	2,200	0	0
1975	0	80	0	380	0	0
1976	0	50	0	475	0	0
1977	0	270	0	1,900	0	0
1978	0	130	0	950	0	0
1979	0	148	0	1,010	0	0
1980	0	130	0	1,340	0	0
1981	0	30	0	1,300	0	0
1982	0	290	0	2,650	0	0
1983	0	UNK	0	3,100	0	0
1984	N/O	50	N/O	10,500	N/O	N/O
1985	N/O	50	N/O	5,550	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

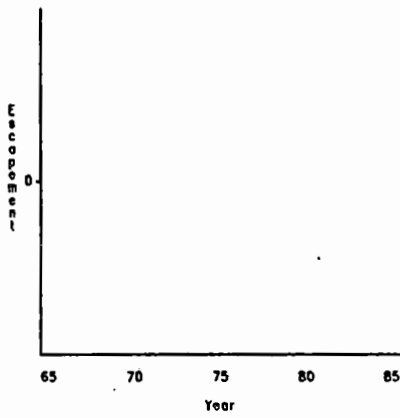
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

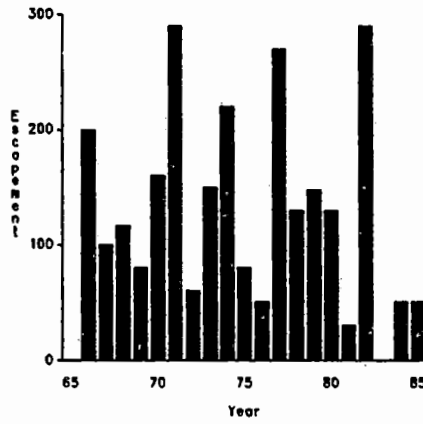
# BUSH CREEK (92-4600)

## Escapement & Run Timing

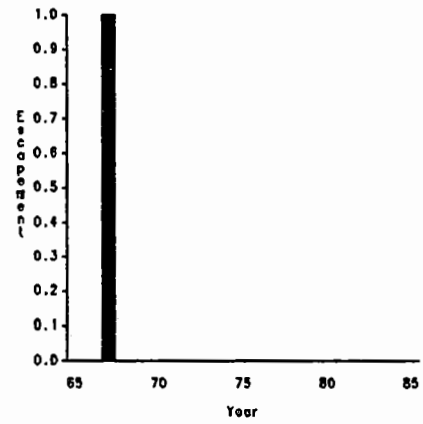
**Sockeye (SK)**



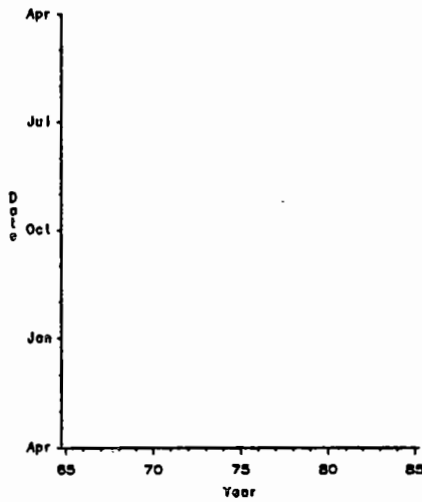
**Coho (CO)**



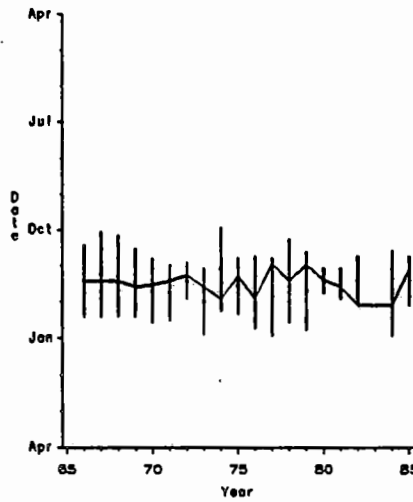
**Pink (PK)**



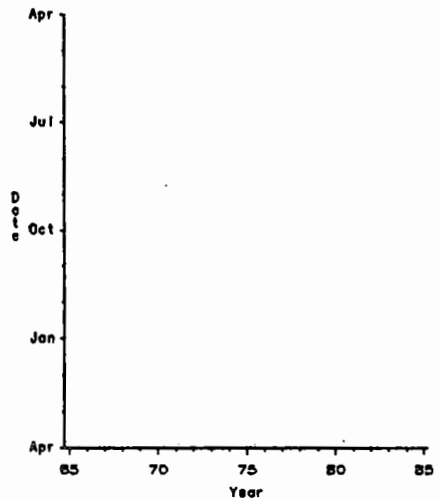
**Sockeye**



**Coho**



**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	200	15OCT	15NOV	15DEC
1967	100	04OCT	15NOV	15DEC
1968	117	07OCT	13NOV	15DEC
1969	80	18OCT	20NOV	15DEC
1970	160	27OCT	18NOV	20DEC
1971	290	01NOV	15NOV	18DEC
1972	60	30OCT	10NOV	30NOV
1973	150	04NOV	-	30DEC
1974	220	30SEP	30NOV	10DEC
1975	80	28OCT	11NOV	13DEC
1976	50	25OCT	30NOV	25DEC
1977	270	28OCT	31OCT	31DEC
1978	130	10OCT	15NOV	20DEC
1979	148	21OCT	01NOV	28DEC
1980	130	04NOV	14NOV	25NOV
1981	30	04NOV	20NOV	30NOV
1982	290	25OCT	05DEC	04DEC
1983	-	-	-	-
1984	50	20OCT	05DEC	31DEC
1985	50	25OCT	05NOV	05DEC

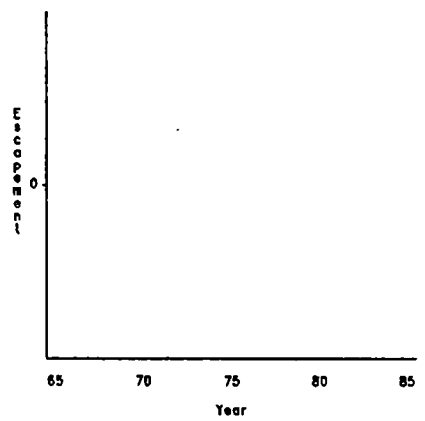
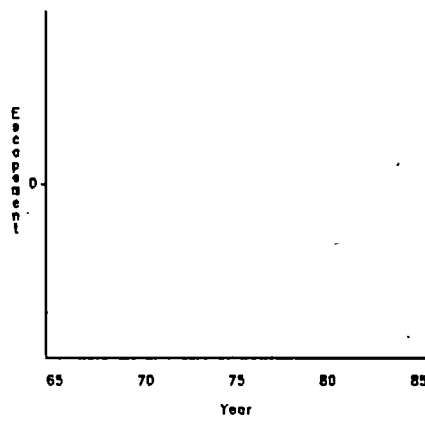
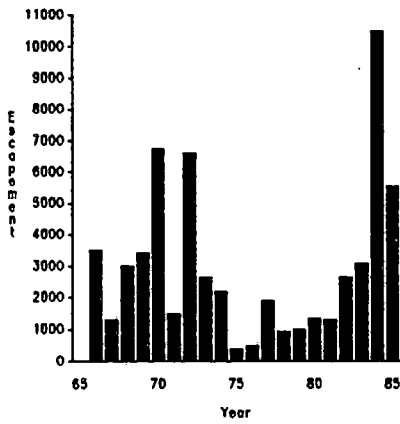
Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	1	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

# BUSH CREEK (92-4600) Escapement & Run Timing

## Chum (CM)

## Chinook (CH)

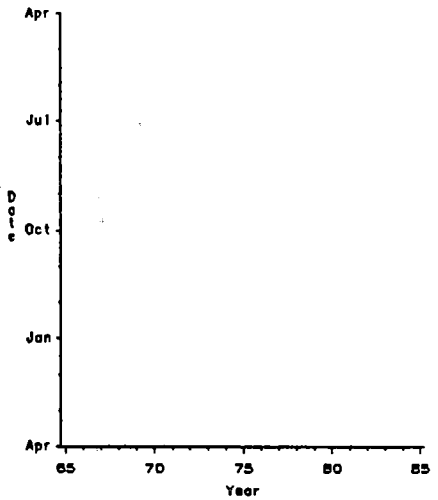
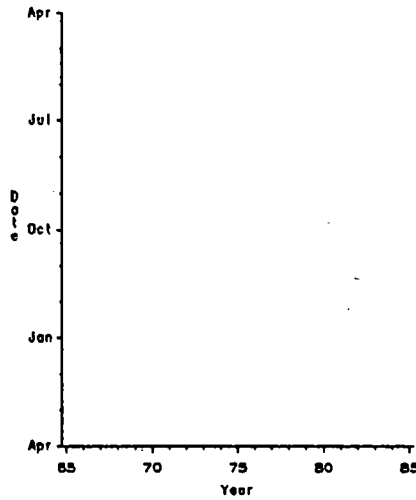
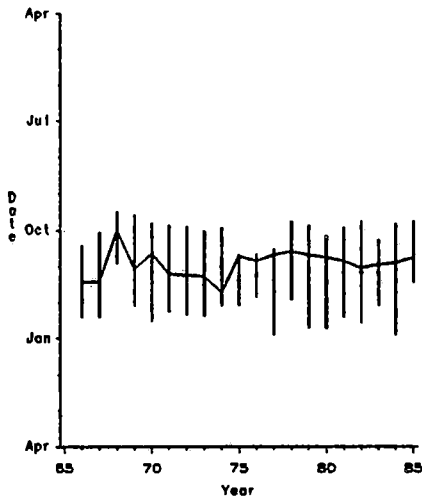
## Steelhead (ST)



## Chum

## Chinook

## Steelhead



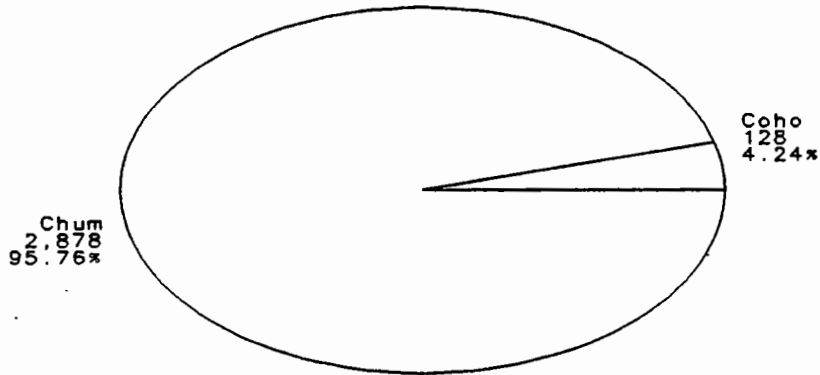
Chum				
Year	Escapement	Start	Peak	End
1966	3,500	15OCT	15NOV	15DEC
1967	1,300	04OCT	15NOV	15DEC
1968	3,000	17SEP	02OCT	30OCT
1969	3,425	18SEP	04NOV	05DEC
1970	6,750	26SEP	22OCT	18DEC
1971	1,300	28SEP	08NOV	10DEC
1972	6,600	29SEP	09NOV	13DEC
1973	2,650	03OCT	10NOV	14DEC
1974	2,200	30SEP	24NOV	05DEC
1975	380	23OCT	24OCT	05DEC
1976	475	22OCT	28OCT	28NOV
1977	1,000	18OCT	23OCT	30DEC
1978	950	25SEP	20OCT	30NOV
1979	1,010	28SEP	23OCT	24DEC
1980	1,340	07OCT	25OCT	23DEC
1981	1,300	30SEP	28OCT	15DEC
1982	2,650	25SEP	03NOV	20DEC
1983	3,100	10OCT	31OCT	05DEC
1984	10,500	27SEP	30OCT	30DEC
1985	5,350	25SEP	25OCT	15NOV

Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

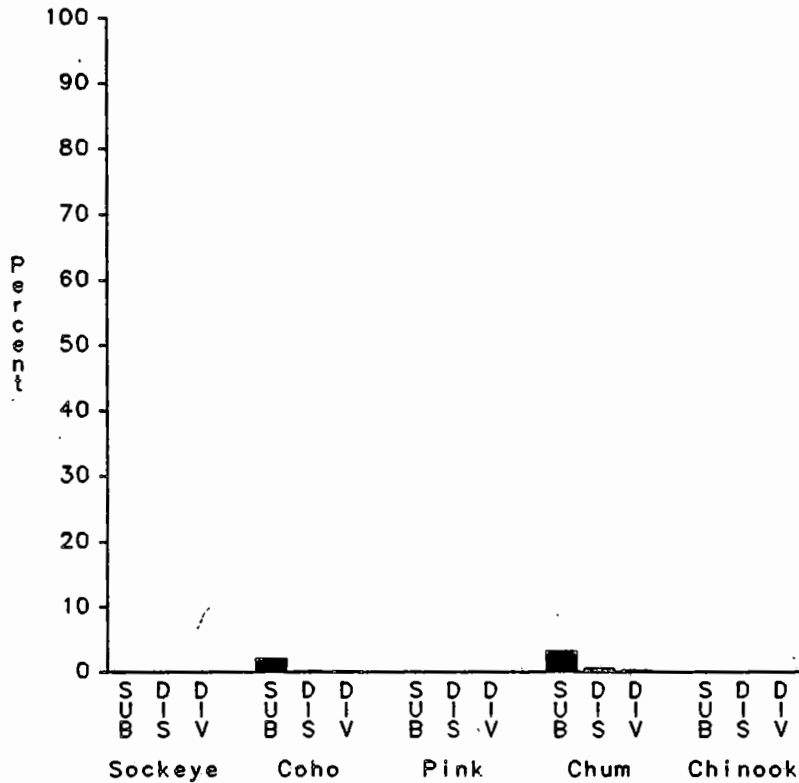
Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-



**BUSH CREEK (92-4600)**  
 10-yr Mean Escapement  
 (1976-1985)



**BUSH CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





F. LIFE HISTORY TIMING CONTINUED

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CM CHUM SALMON	Migration Spawning Incubation Rearing											X X	

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	MILLS AT BOTTOM END; CREEK ROUTED TO ALLOW FOR MILL. LOGGING IN TOP PORTION. (REF. 17-66)
UD URBAN DEVELOPMENT	IN MIDDLE REACHES. (REF. 17-66)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

MAY BE POSSIBILITY FOR HEADWATER STOCKING FOR COHO (REF. 17-66)
---

J. FISHERY OFFICER NARRATIVE

Date Prepared: / /	Prepared By:
--------------------	--------------

K. SIS COMPLETED BY

Completed by: GITA KAPANI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/05
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4610  
Stream Name: UNNAMED CREEK  
Page: 1

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REFERENCE NO: 17- 1  
-----

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: ROCKEY CREEK

WATERSHED-CODE: 92-4610

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	25	0	200	0	0
1954	0	N/O	0	200	0	0
1955	0	N/O	0	25	0	0
1956	0	N/O	0	75	0	0
1957	0	N/O	0	200	0	0
1958	0	N/O	0	25	0	0
1959	0	N/O	0	N/O	0	0
1960	0	25	0	25	0	0
1961	0	25	0	N/O	0	0
1962	0	25	0	25	0	0
1963	0	25	0	200	0	0
1964	0	25	0	N/O	0	0
1965	0	25	0	25	0	0
1966	0	0	0	200	0	0
1967	0	10	0	20	0	0
1968	0	25	0	10	0	0
1969	0	4	0	UNK	0	0
1970	0	14	0	6	0	0
1971	0	65	0	35	0	0
1972	0	6	0	30	0	0
1973	0	6	0	2	0	0
1974	0	18	0	4	0	0
1975	0	8	0	10	0	0
1976	UNK	UNK	UNK	UNK	UNK	UNK
1977	0	8	0	4	0	0
1978	0	2	0	2	0	0
1979	0	2	0	4	0	0
1980	0	15	0	0	0	0
1981	0	1	0	0	0	0
1982	UNK	N/O	UNK	UNK	UNK	0
1983	0	N/O	0	0	0	0
1984	N/O	2	N/O	10	N/O	N/O
1985	N/O	2	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

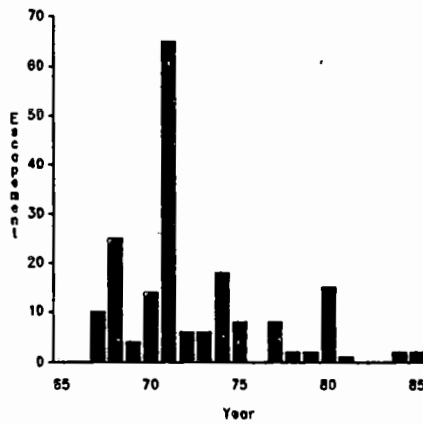
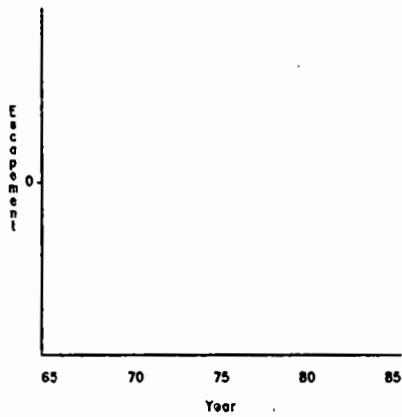
# UNNAMED C (92-4610)

## Escapement & Run Timing

Sockeye (SK)

Coho (CO)

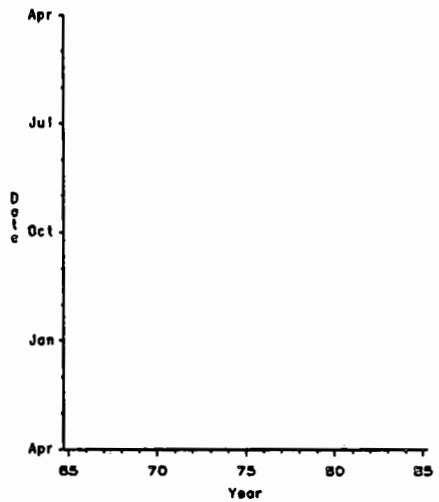
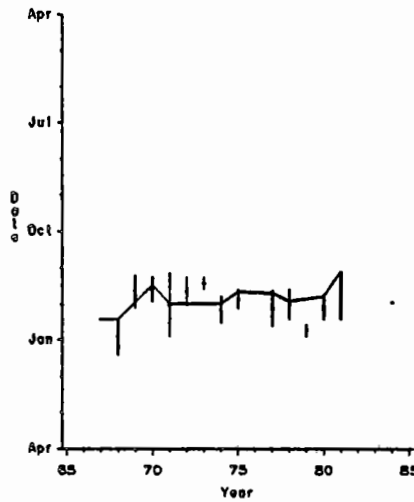
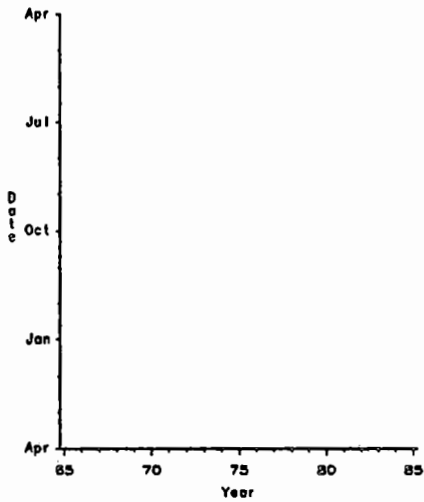
Pink (PK)



Sockeye

Coho

Pink



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	-	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	10	15DEC	15DEC	15DEC
1968	25	15DEC	15DEC	14JAN
1969	4	08NOV	-	05DEC
1970	14	10NOV	18NOV	30NOV
1971	65	08NOV	02DEC	30DEC
1972	6	10NOV	-	04DEC
1973	6	10NOV	-	20NOV
1974	18	28NOV	02DEC	18DEC
1975	8	20NOV	22NOV	08DEC
1976	-	-	-	-
1977	8	21NOV	23NOV	21DEC
1978	2	20NOV	30NOV	15DEC
1979	2	20DEC	-	30DEC
1980	15	24NOV	28NOV	15DEC
1981	1	05NOV	05NOV	15DEC
1982	-	-	-	-
1983	0	-	-	-
1984	2	-	-	01DEC
1985	2	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	-	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

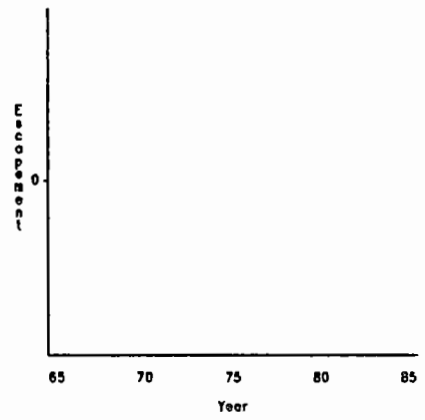
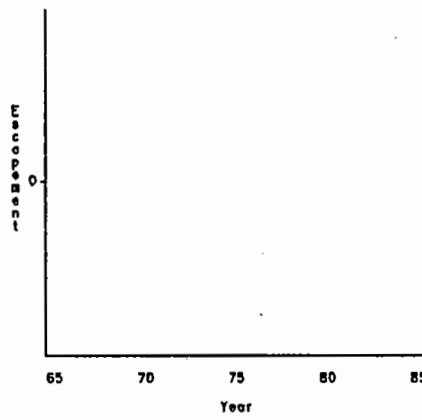
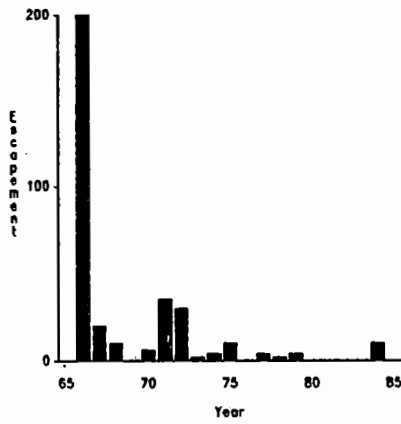
# UNNAMED C (92-4610)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

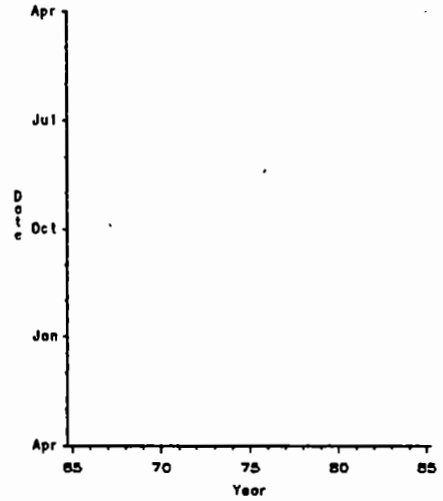
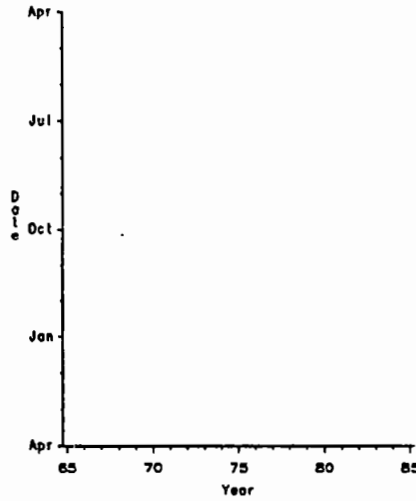
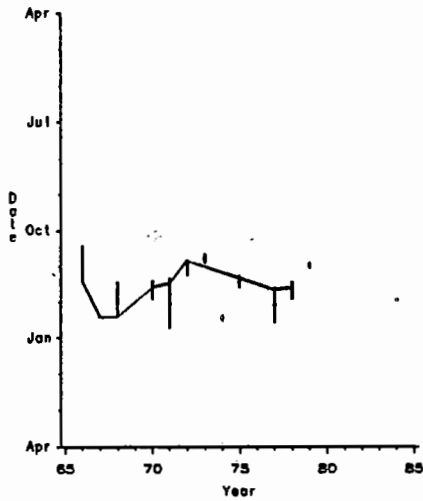
Steelhead (ST)



Chum

Chinook

Steelhead

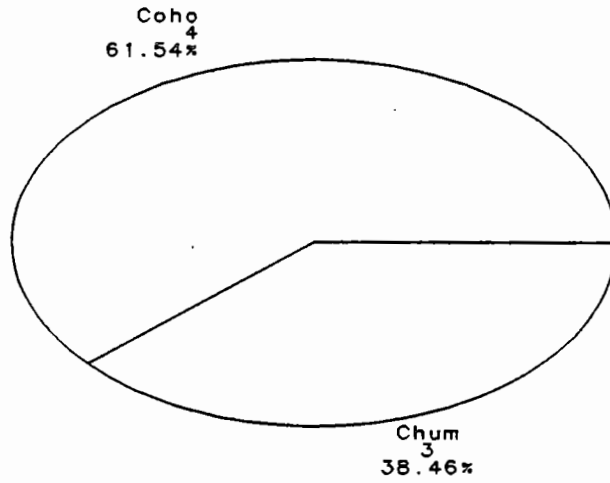


Chum				
Year	Escapement	Start	Peak	End
1966	200	15OCT	15NOV	15NOV
1967	20	15DEC	15DEC	15DEC
1968	10	15NOV	15DEC	15DEC
1969	-	-	-	-
1970	6	14NOV	20NOV	30NOV
1971	35	12NOV	18NOV	25DEC
1972	30	28OCT	28OCT	10NOV
1973	2	22OCT	-	30OCT
1974	4	14DEC	-	18DEC
1975	10	10NOV	12NOV	20NOV
1976	-	-	-	-
1977	4	20NOV	22NOV	20DEC
1978	2	15NOV	20NOV	30NOV
1979	4	30OCT	-	03NOV
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	10	-	-	01DEC
1985	0	-	-	-

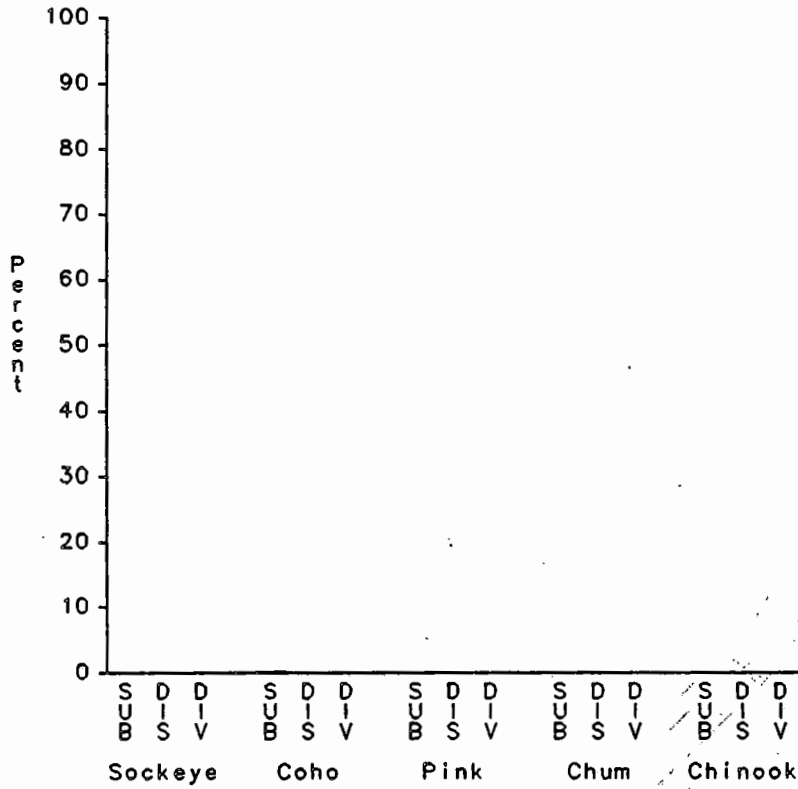
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	-	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

UNNAMED C (92-4610)  
 10-yr Mean Escapement  
 (1976-1985)



UNNAMED C : Escapement (1976-1985)  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





**A. DESCRIPTION**

Stream Name: <b>HOLLAND CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>103RD CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4625</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92B/13</b>
		B.C.G.S. (1:20k) Map: <b>091</b>
		U.T.M. Mouth: <b>1D.4412.54255</b>
		Lat./Long. Mouth: <b>48 DG. 58' 45'' 123 DG. 48' 12''</b>
		Mainstem Length: <b>3.2 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>FLows E. INTO LADYSMITH HARBOUR, S. OF LADYSMITH - OYSTER DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	14.0			<b>LOCATION UNKNOWN (REF. 17-66)</b>
F FALLS	2.5	3.0	AF ALL SPECIES	<b>(REF. 17-66)</b>

**C. FLOW**

Flow Control: W.S.C. Station No. 1:	Water Survey of Canada (WSC) Flow Gauge: No. 2:	No. 3:	No. 4:
<b>NO INFORMATION AVAILABLE</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CO COHO SALMON	<b>0.4KM TO 3.2KM (1ST FALLS) (REF. 17-66)</b>
CM CHUM SALMON	<b>TO 2.4KM (REF. 17-66)</b>
ST STEELHEAD	<b>TO 2ND FALLS (REF. 17-66)</b>
CT CUTTHROAT TROUT	<b>TO 3.2KM (1ST FALLS) (REF. 17-66)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	27	1976 - 1985	28A-18	60	28A-18		
CM CHUM SALMON	3807	1976 - 1985	28A-18	10500	28A-18		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X X	X
CH CHUM SALMON	Migration Spawning Incubation Rearing									X X	X X	X X	X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
EN ENHANCEMENT ACTS		0.0	SOME STREAM CLEARING (REF. 17-66)	1981/1984

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
WW WATER WITHDRAWAL	LADYSMITH WATER RESERVOIR. LICENSES INTO CREEK AT 2ND DAM. (REF. 17-66)
FO FORESTRY	SOME FORESTRY ACTIVITY (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

MAY BE SUITABLE FOR COHO COLONIZATION (REF. 17-66)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / / Prepared By:

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/05
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4625  
Stream Name: HOLLAND CREEK  
Page: 1

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REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPawning SK SOCKEYE

ESCAPEMENT: HOLLAND CREEK

WATERSHED-CODE: 92-4625

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	75	0	750	0	0
1954	0	25	0	7,500	0	0
1955	0	25	0	1,500	0	0
1956	0	75	0	750	0	0
1957	0	400	0	15,000	0	0
1958	0	750	0	35,000	0	0
1959	0	75	0	1,500	0	0
1960	0	75	0	3,500	0	0
1961	0	75	0	3,500	0	0
1962	0	75	0	3,500	0	0
1963	0	75	0	3,500	0	0
1964	0	75	0	7,500	0	25
1965	0	75	0	1,500	0	0
1966	0	75	0	7,500	0	25
1967	0	50	0	3,100	0	UNK
1968	0	70	0	7,621	0	UNK
1969	0	40	0	5,250	0	10
1970	0	70	2	7,500	0	6
1971	0	160	N/O	1,950	0	UNK
1972	0	70	0	10,250	0	UNK
1973	0	60	N/O	3,700	0	25
1974	0	90	0	575	0	0
1975	0	12	N/O	500	0	N/O
1976	0	30	0	600	0	0
1977	0	60	0	1,200	0	0
1978	0	30	0	520	0	0
1979	0	48	0	2,310	0	0
1980	0	25	0	1,445	0	0
1981	0	9	0	1,245	0	0
1982	0	25	0	3,750	0	0
1983	0	6	0	8,000	0	0
1984	N/O	20	N/O	8,500	N/O	N/O
1985	N/O	20	N/O	10,500	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

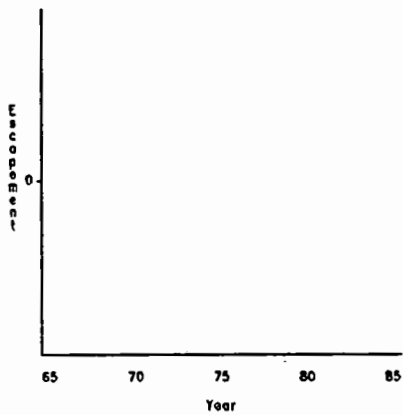
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

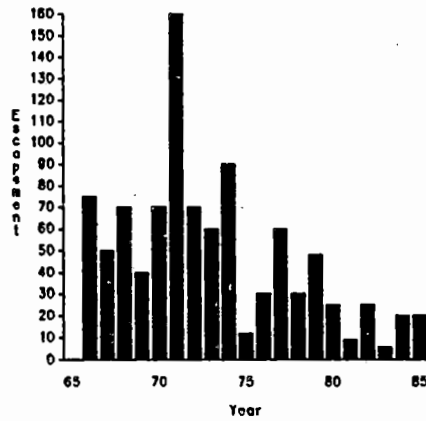
# HOLLAND CREEK (92-4625)

## Escapement & Run Timing

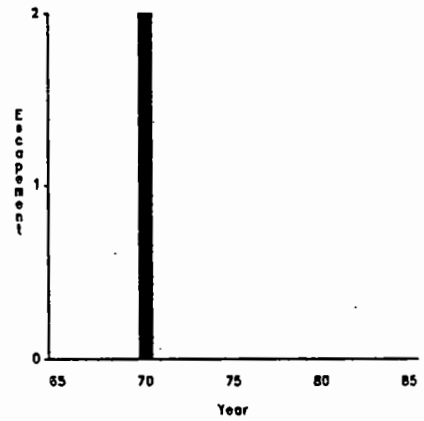
**Sockeye (SK)**



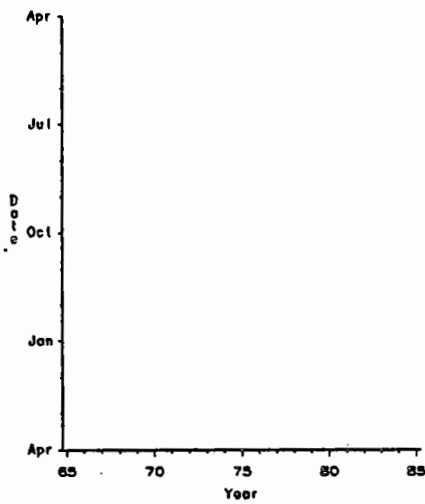
**Coho (CO)**



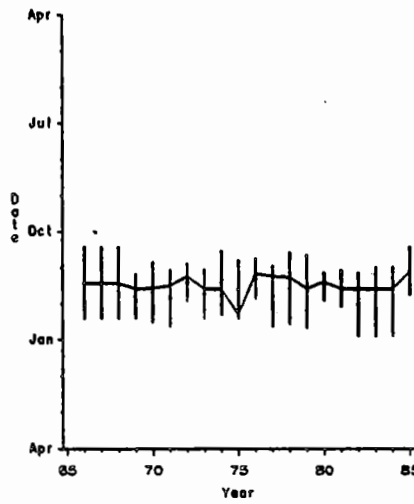
**Pink (PK)**



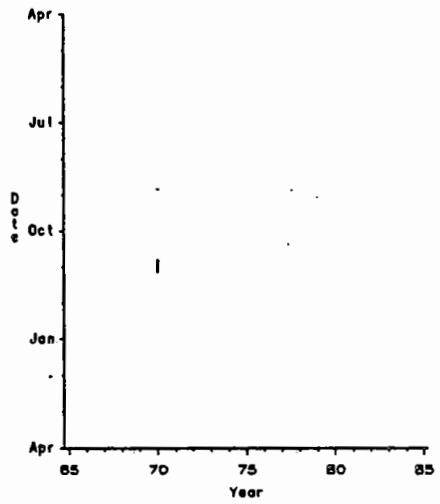
**Sockeye**



**Coho**



**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	75	15OCT	15NOV	15DEC
1967	50	15OCT	15NOV	15DEC
1968	70	15OCT	15NOV	15DEC
1969	40	07NOV	20NOV	15DEC
1970	70	28OCT	19NOV	18DEC
1971	180	03NOV	17NOV	22DEC
1972	70	29OCT	09NOV	30NOV
1973	60	03NOV	20NOV	15DEC
1974	90	18OCT	20NOV	12DEC
1975	12	28OCT	12DEC	15DEC
1976	30	25OCT	07NOV	28NOV
1977	60	31OCT	09NOV	22DEC
1978	30	20OCT	16NOV	28DEC
1979	48	22OCT	20NOV	23DEC
1980	25	08NOV	14NOV	30NOV
1981	9	04NOV	20NOV	05DEC
1982	25	06NOV	20NOV	30DEC
1983	6	01NOV	20NOV	30DEC
1984	20	01NOV	20NOV	30DEC
1985	20	15OCT	05NOV	25NOV

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	2	27OCT	30OCT	06NOV
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

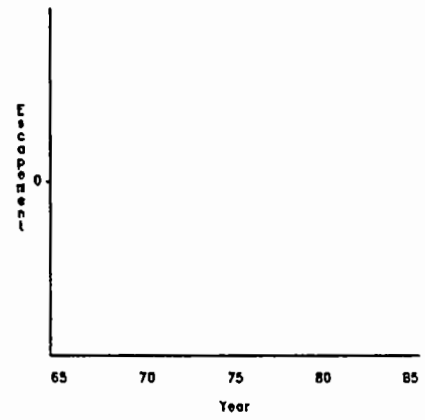
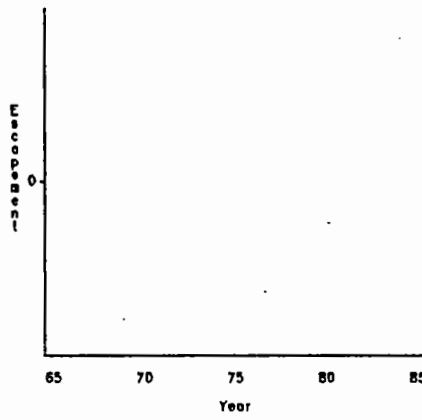
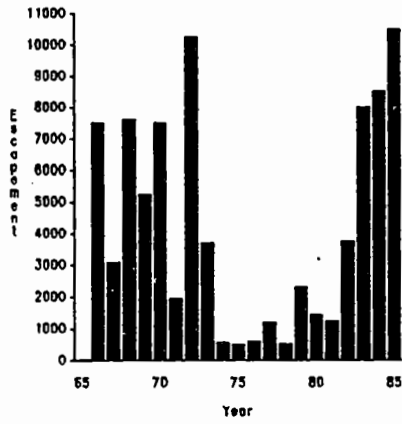
# HOLLAND CREEK (92-4625)

## Escapement & Run Timing

**Chum (CM)**

**Chinook (CH)**

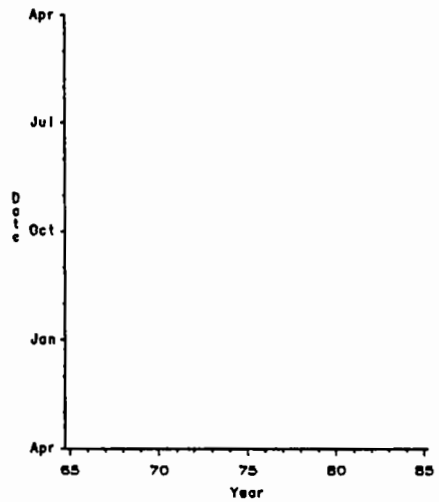
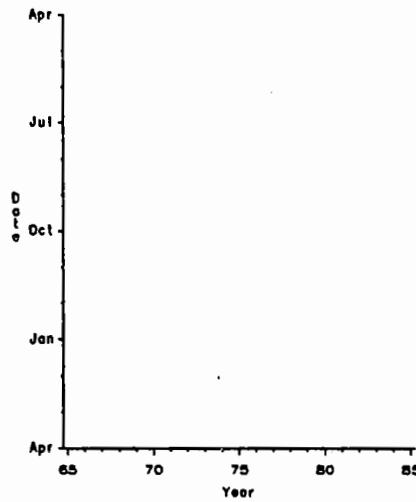
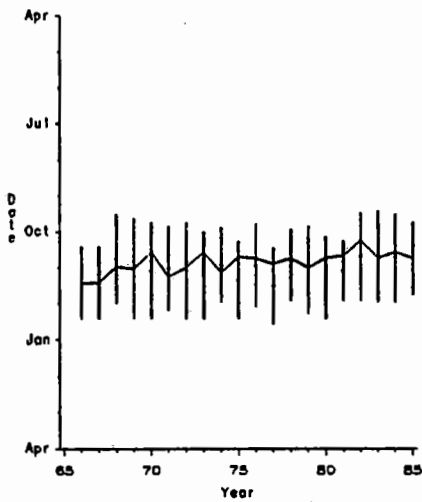
**Steelhead (ST)**



**Chum**

**Chinook**

**Steelhead**

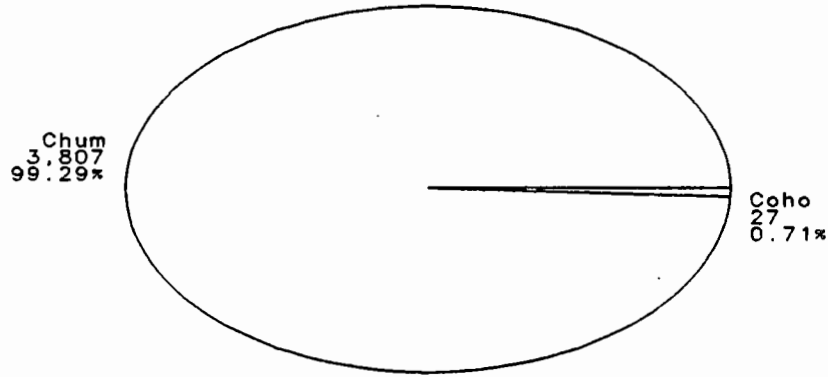


Chum				
Year	Escapement	Start	Peak	End
1966	7,500	15OCT	15NOV	15DEC
1967	3,100	15OCT	15NOV	15DEC
1968	7,621	16SEP	01NOV	02DEC
1969	5,250	21SEP	03NOV	15DEC
1970	7,500	25SEP	20OCT	15DEC
1971	1,950	26SEP	10NOV	08DEC
1972	10,250	25SEP	02NOV	15DEC
1973	3,700	03OCT	20OCT	15DEC
1974	975	29SEP	06NOV	01DEC
1975	500	11OCT	24OCT	15DEC
1976	600	26SEP	25OCT	05DEC
1977	1,200	16OCT	30OCT	20DEC
1978	520	01OCT	25OCT	30NOV
1979	2,310	28SEP	02NOV	11DEC
1980	1,445	07OCT	25OCT	15DEC
1981	1,245	10OCT	23OCT	30NOV
1982	3,750	16SEP	10OCT	30NOV
1983	8,000	19SEP	25OCT	01DEC
1984	8,500	18SEP	20OCT	01DEC
1985	10,500	25SEP	25OCT	25NOV

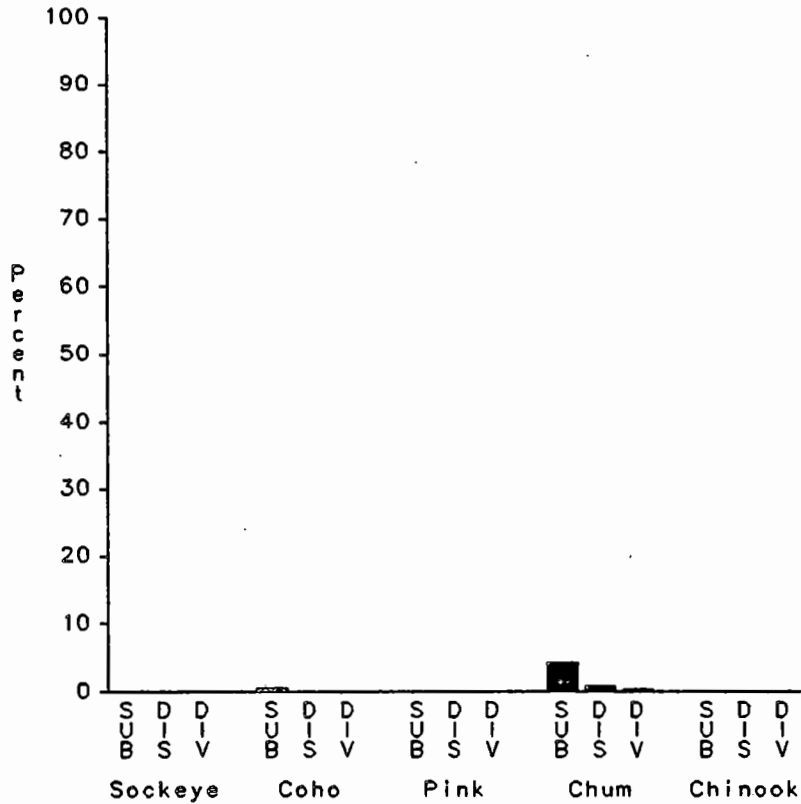
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**HOLLAND CREEK (92-4625)**  
 10-yr Mean Escapement  
 (1976-1985)



**HOLLAND CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: <b>STOCKING CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name: <b>DAVIS LAGOON C; JACKMAN CREEK</b>	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4650</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92B/13</b>
		B.C.G.S. (1:20k) Map: <b>091</b>
		U.T.M. Mouth: <b>10.4435.54233</b>
		Lat./Long. Mouth: <b>48 DG. 57' 37'' 123 DG. 46' 20''</b>
		Mainstem Length: <b>0.5 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: Ref. No.:
Location: <b>FLows E. AND N. INTO DAVIS LAGOON, S.E. OF LADYSMITH</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	
<b>NO INFORMATION AVAILABLE</b>	

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	3.0	0.5	CM CHUM SALMON CO COHO SALMON CT CUTTHROAT TROUT	IMPASSABLE FALLS AND CONCRETE IMPOUNDING DAM (REF. 17-1)

**C. FLOW**

Flow Control: Y	Water Survey of Canada (WSC) Flow Gauge: M
W.S.C. Station No. 1:	No. 2:                      No. 3:                      No. 4:
Comments: <b>DOES HAVE SOME LOW WATER PROBLEMS (REF. 17-66)</b>	

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
CO COHO SALMON	TO 0.5KM; 1ST FALLS (REF. 17-66)
CM CHUM SALMON	TO 0.5KM (REF. 17-66)
CT CUTTHROAT TROUT	RESIDENTS THROUGHOUT (REF. 17-66)

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	14	1976 - 1985	28A-18	75	28A-18		
CM CHUM SALMON	3723	1976 - 1985	28A-18	8700	28A-18		



**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing											X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	X

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	HEAVY AGRICULTURAL AREA (REF. 17-66)
FO FORESTRY	ACTIVE LOGGING (REF. 17-66)
WM WATER WITHDRAWAL	NORTH COWICHAN WATER WORKS FROM STOCKING LAKE (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

NO INFORMATION AVAILABLE
--------------------------

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPANI	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/05
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17

hab308390143  
REFERENCE LIST  
1988/06/29

Watershed Code: 92-4650  
Stream Name: STOCKING CREEK  
Page: 1

-----  
REFERENCE NO: 17- 1  
-----

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66  
-----

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18  
-----

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: STOCKING CREEK

WATERSHED-CODE: 92-4650

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	25	0	3,500	0	0
1954	0	N/O	0	3,500	0	0
1955	0	N/O	0	1,500	0	0
1956	0	25	0	3,500	0	0
1957	0	25	0	7,500	0	0
1958	0	75	0	7,500	0	0
1959	0	75	0	1,500	0	0
1960	0	25	0	750	0	0
1961	0	25	0	200	0	0
1962	0	25	0	750	0	0
1963	0	25	0	1,500	0	0
1964	0	25	0	1,500	0	0
1965	0	25	0	1,500	0	0
1966	0	25	0	3,500	0	0
1967	0	30	0	1,500	0	0
1968	0	12	0	2,868	0	0
1969	0	8	0	3,150	0	0
1970	0	16	0	6,750	0	0
1971	0	100	0	5,550	0	0
1972	0	30	0	2,200	0	0
1973	0	20	0	2,200	0	0
1974	0	65	0	1,300	0	0
1975	0	6	0	850	0	0
1976	0	75	0	1,100	0	0
1977	0	30	0	2,780	0	0
1978	0	6	0	4,120	0	0
1979	0	6	0	3,350	0	0
1980	0	8	0	3,000	0	0
1981	0	N/O	0	2,677	0	0
1982	0	8	0	1,900	0	0
1983	0	6	0	4,600	0	0
1984	N/O	2	N/O	8,700	N/O	N/O
1985	N/O	N/O	N/O	5,000	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

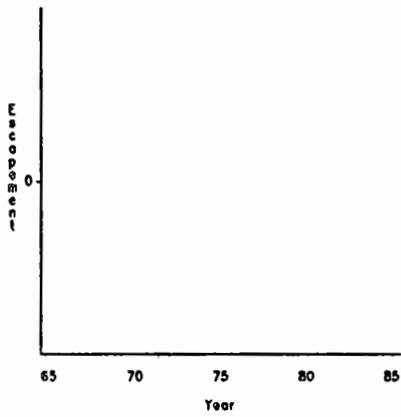
N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

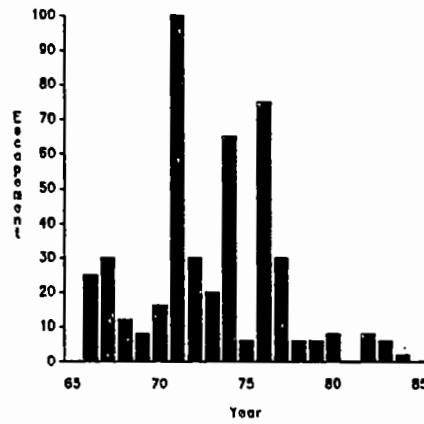
# STOCKING CREEK (92-4650)

## Escapement & Run Timing

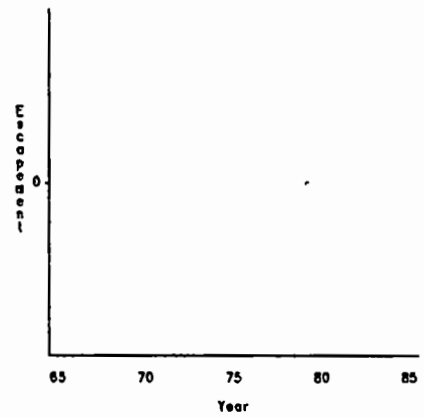
**sockeye (SK)**



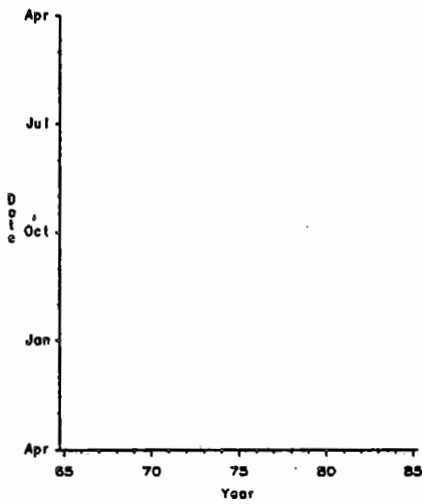
**Coho (CO)**



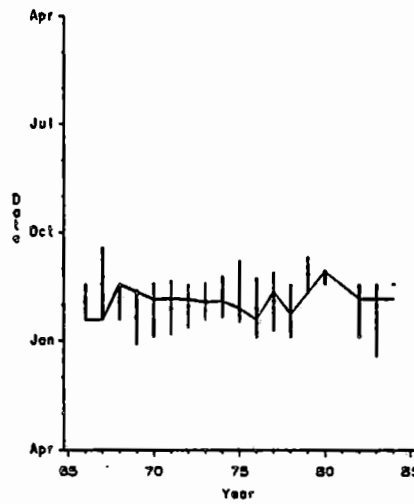
**Pink (PK)**



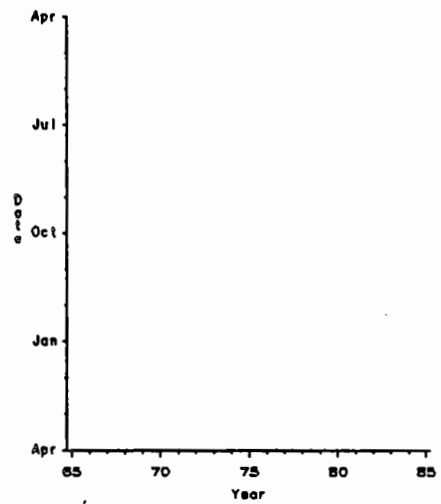
**Sockeye**



**Coho**



**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

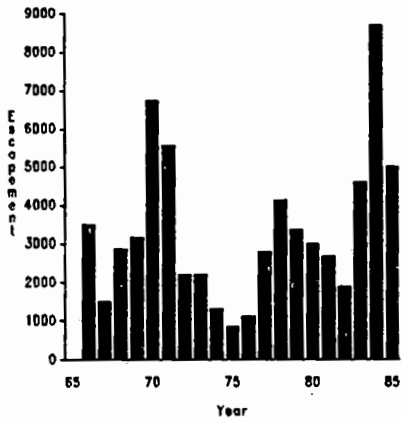
Coho				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15DEC	15DEC
1967	30	15OCT	15DEC	15DEC
1968	12	15NOV	15NOV	15DEC
1969	8	20NOV	-	05JAN
1970	16	14NOV	28NOV	30DEC
1971	100	12NOV	27NOV	28DEC
1972	30	15NOV	28NOV	22DEC
1973	20	14NOV	30NOV	15DEC
1974	65	08NOV	28NOV	15DEC
1975	6	26OCT	05DEC	17DEC
1976	75	10NOV	15DEC	30DEC
1977	30	05NOV	21NOV	24DEC
1978	6	15NOV	10DEC	30DEC
1979	6	23OCT	-	20NOV
1980	8	03NOV	04NOV	15NOV
1981	0	-	-	-
1982	8	15NOV	27NOV	30DEC
1983	6	15NOV	27NOV	15JAN
1984	2	15NOV	27NOV	-
1985	0	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

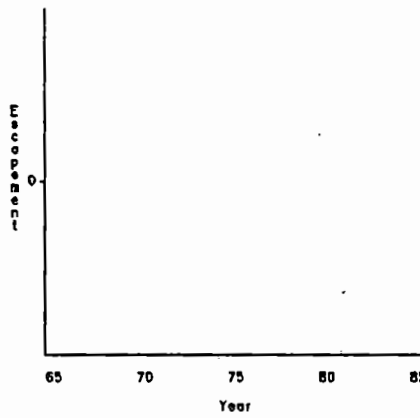
# STOCKING CREEK (92-4650)

## Escapement & Run Timing

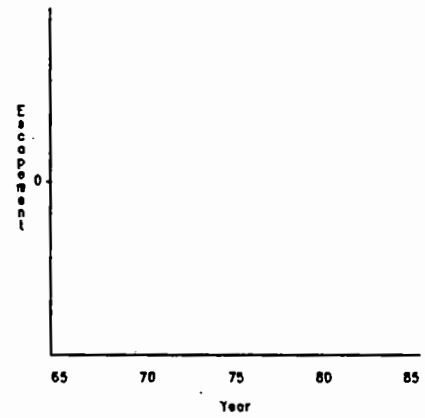
**Chum (CM)**



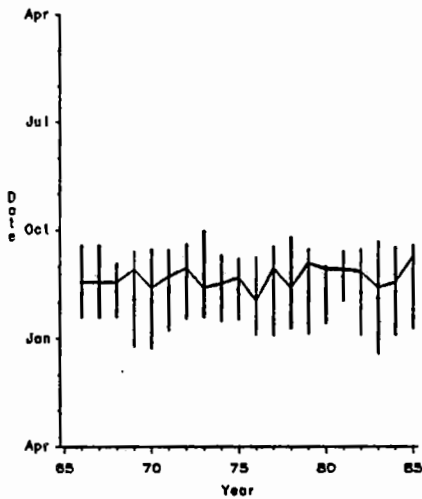
**Chinook (CH)**



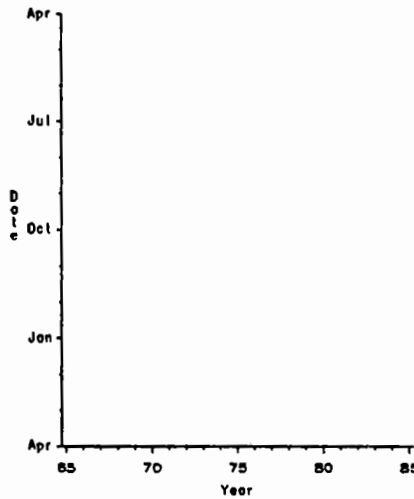
**Steelhead (ST)**



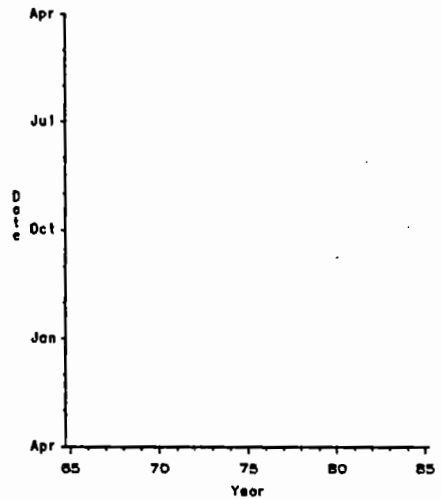
**Chum**



**Chinook**



**Steelhead**

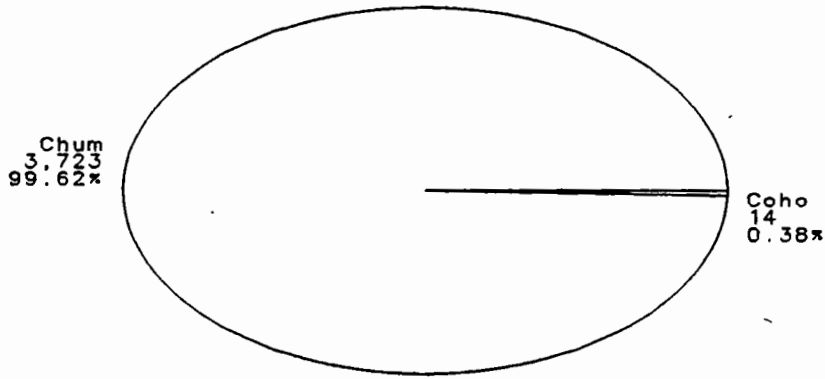


Chum				
Year	Escapement	Start	Peak	End
1966	3,500	15OCT	15NOV	15DEC
1967	1,500	15OCT	15NOV	15DEC
1968	2,888	30OCT	15NOV	15DEC
1969	3,150	20OCT	04NOV	09JAN
1970	6,750	18OCT	20NOV	10JAN
1971	5,550	19OCT	10NOV	28DEC
1972	2,200	14OCT	03NOV	16DEC
1973	2,200	03OCT	20NOV	15DEC
1974	1,300	23OCT	18NOV	18DEC
1975	850	26OCT	11NOV	17DEC
1976	1,100	25OCT	01DEC	30DEC
1977	2,780	16OCT	03NOV	30DEC
1978	4,120	08OCT	20NOV	25DEC
1979	3,350	16OCT	30OCT	29DEC
1980	3,000	01NOV	04NOV	20DEC
1981	2,677	20OCT	04NOV	01DEC
1982	1,900	18OCT	06NOV	30DEC
1983	4,500	12OCT	20NOV	15JAN
1984	8,700	17OCT	15NOV	30DEC
1985	5,000	15OCT	25OCT	25DEC

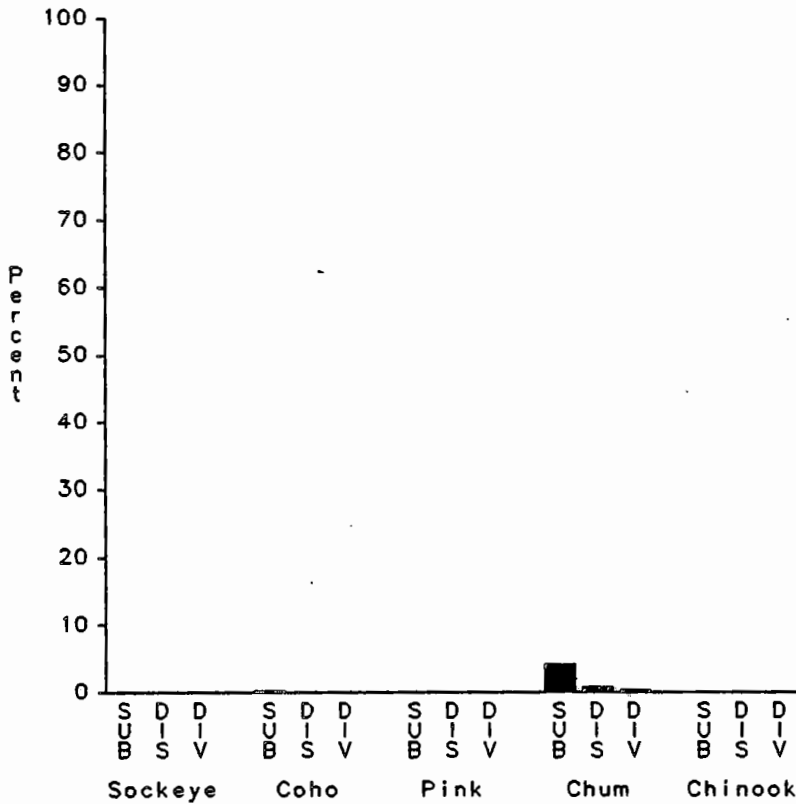
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**STOCKING CREEK (92-4650)**  
 10-yr Mean Escapement  
 (1976-1985)



**STOCKING CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
NO INFORMATION AVAILABLE				

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
WQ WATER QUALITY	HIGH NUTRIENTS CAUSING HIGH BOD'S AND FISH KILLS (REF. 17-66)
AG AGRICULTURE	HIGH AGRICULTURE AREA (REF. 17-66)
WW WATER WITHDRAWAL	SEVERAL WATER LICENCES FOR IRRIGATION AND LIVESTOCK WATERING (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

POSSIBLE HEADWATER COHO COLONIZATION (REF. 17-68)
---

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / /	Prepared By:
--------------------	--------------

**K. SIS COMPLETED BY**

Completed by: GITA KAPAH	Date: 1987/06/06
Checked by: CINDY HARLOW	Date: 1987/06/05
Last updated by: MURRAY WILLIAMS	Date: 1988/06/17



hab314102670  
REFERENCE LIST  
1988/07/18

Watershed Code: 92-4665  
Stream Name: UNNAMED CREEK  
Page: 1

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REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: PORTERS CREEK

WATERSHED-CODE: 92-4665

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	N/O	0	75	0	0
1954	0	25	0	25	0	0
1955	0	N/O	0	N/O	0	0
1956	0	N/O	0	25	0	0
1957	0	N/O	0	200	0	0
1958	0	N/O	0	25	0	0
1959	0	N/O	0	25	0	0
1960	0	25	0	0	0	0
1961	0	25	0	0	0	0
1962	0	25	0	25	0	0
1963	0	25	0	25	0	0
1964	0	25	0	0	0	0
1965	0	25	0	N/O	0	0
1966	0	25	0	25	0	0
1967	0	10	0	10	0	0
1968	0	25	0	50	0	0
1969	0	10	0	UNK	0	0
1970	0	6	0	N/O	0	0
1971	0	25	0	2	0	0
1972	0	6	0	N/O	0	0
1973	0	10	0	2	0	0
1974	0	48	0	4	0	0
1975	0	6	0	N/O	0	0
1976	0	10	0	2	0	0
1977	0	13	0	0	0	0
1978	0	2	0	0	0	0
1979	0	5	0	N/O	0	0
1980	0	32	0	N/O	0	0
1981	0	N/O	0	N/O	0	0
1982	UNK	UNK	UNK	UNK	UNK	0
1983	0	N/O	0	0	0	0
1984	UNK	UNK	UNK	UNK	UNK	UNK
1985	N/O	4	N/O	N/O	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

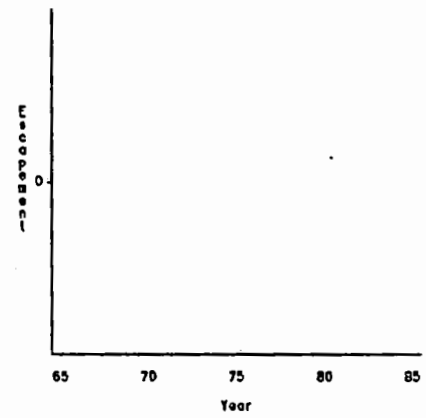
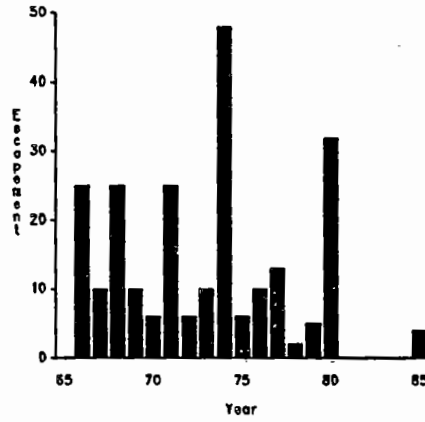
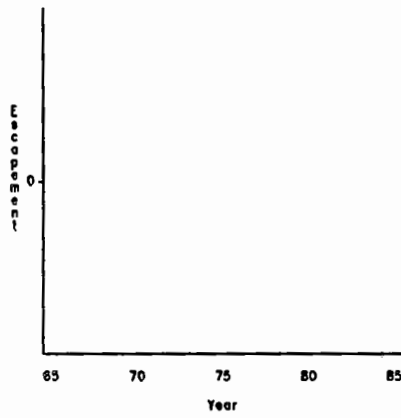
# UNNAMED C (92-4665)

## Escapement & Run Timing

Socketeye (SK)

Coho (CO)

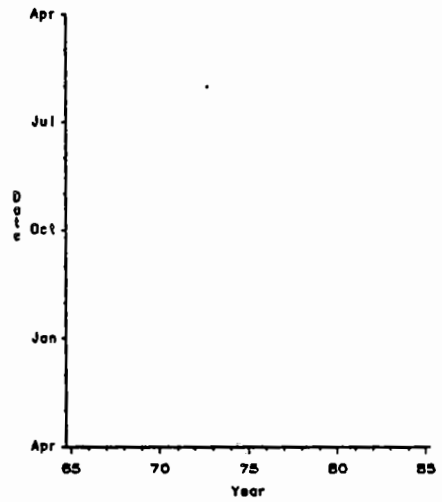
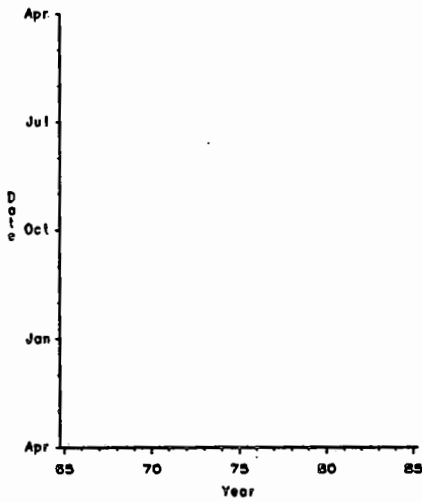
Pink (PK)



Sockeye

Coho

Pink



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	25	15NOV	15NOV	15DEC
1967	10	15DEC	15DEC	15DEC
1968	25	15DEC	14JAN	14JAN
1969	10	12NOV	-	05DEC
1970	6	02NOV	-	10DEC
1971	25	12NOV	01DEC	24DEC
1972	6	10NOV	10NOV	30NOV
1973	10	23NOV	-	10DEC
1974	48	15NOV	24NOV	08DEC
1975	6	24NOV	28NOV	08DEC
1976	10	15NOV	15NOV	15NOV
1977	13	15NOV	18DEC	28DEC
1978	2	28NOV	10DEC	20DEC
1979	5	05DEC	-	20DEC
1980	32	12NOV	03DEC	20DEC
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	4	-	-	-

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

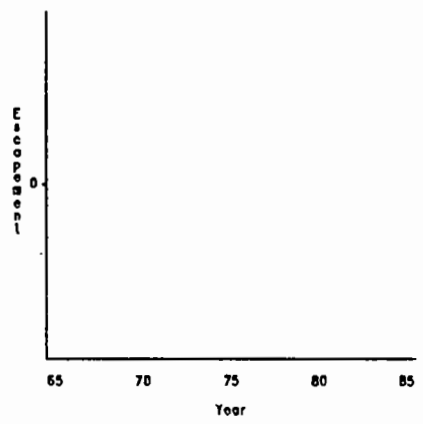
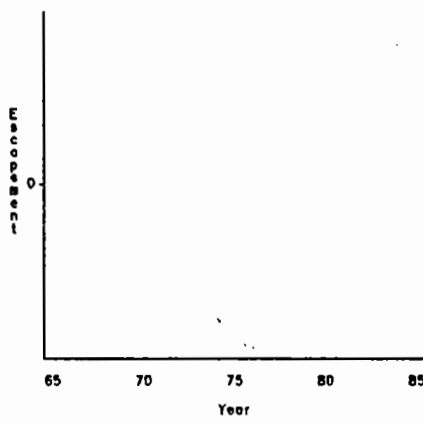
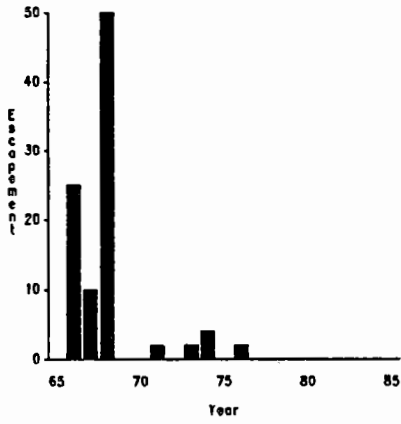
# UNNAMED C (92-4665)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

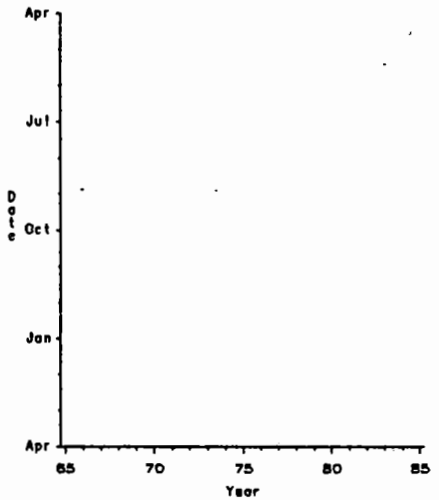
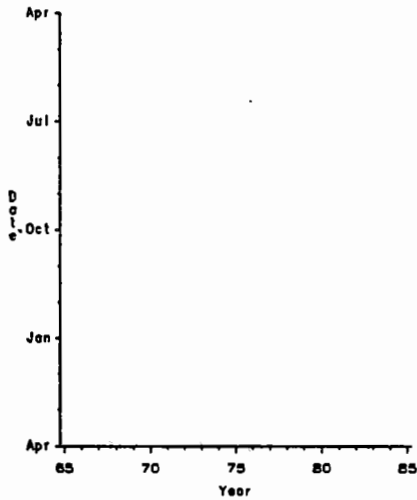
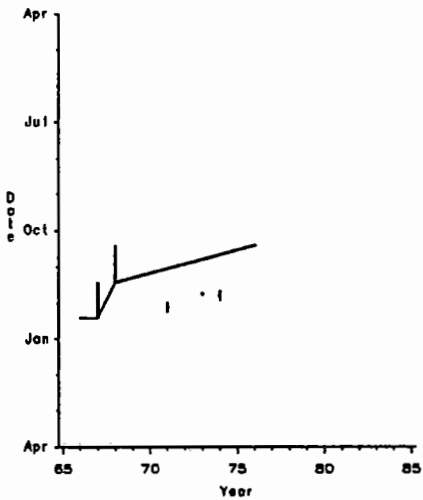
Steelhead (ST)



Chum

Chinook

Steelhead

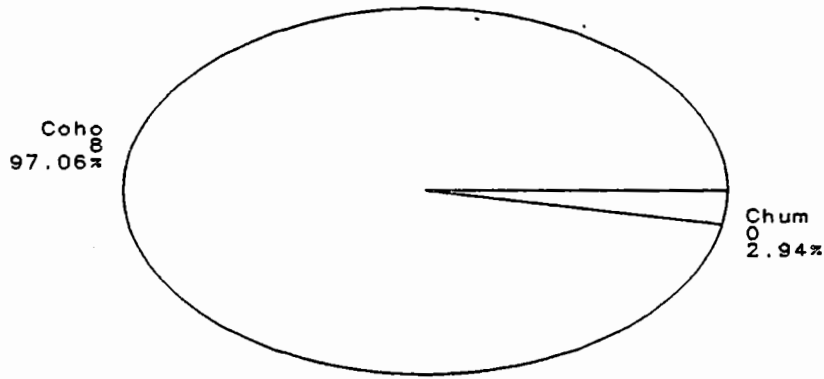


Chum				
Year	Escapement	Start	Peak	End
1966	25	15DEC	15DEC	15DEC
1967	10	15NOV	15DEC	15DEC
1968	50	15OCT	15NOV	15NOV
1969	-	-	-	-
1970	0	-	-	-
1971	2	02DEC	-	10DEC
1972	0	-	-	-
1973	2	24NOV	-	25NOV
1974	4	22NOV	-	30NOV
1975	0	-	-	-
1976	2	15OCT	15OCT	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

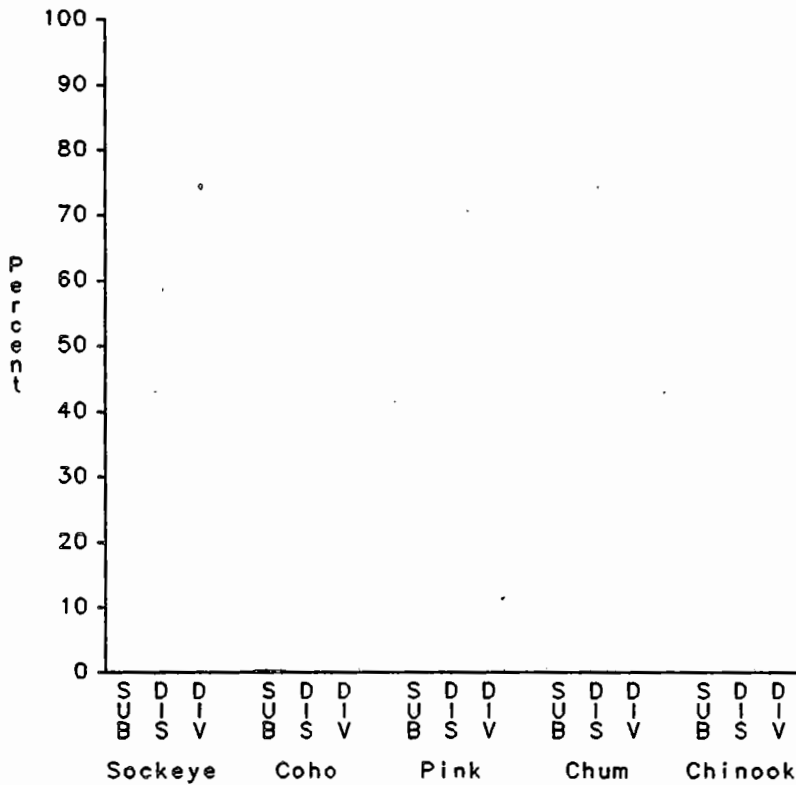
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	-	-	-	-
1983	0	-	-	-
1984	-	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

UNNAMED C (92-4665)  
 10-yr Mean Escapement  
 (1976-1985)



UNNAMED C : Escapement (1976-1985)  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)





E. ESCAPEMENT SUMMARY CONTINUED

Species	Escapement			Maximum Recorded Escapement	[Ref. No.]	Management Target Escapement	[Ref. No.]
	Mean	Period of Record	[Ref. No.]				
CM CHUM SALMON	23280	1976 - 1985	28A-18	43600	28A-18		
CH CHINOOK SALMON	451	1976 - 1985	28A-18	1750	28A-18		

F. LIFE HISTORY TIMING

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing	X									X	X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing									X	X X	X X	X X
CH CHINOOK SALMON	Migration Spawning Incubation Rearing									X	X X		

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
HY HATCHERY	CH CHINOOK SALMON CO COHO SALMON	0.0	SEP CONTRACT FOR A PRIVATE HATCHERY FACILITY (REF. 17-66)	1979/
TR TRANSPLANT	CM CHUM SALMON	0.0	SMOLT TRAPPING (ON WESTHOLME SIDE CHANNEL) (REF. 17-66)	1987/
SC SIDE CHANNEL		0.0	SIDE CHANNEL DEVELOPMENT. INDIAN BAND/SMALL PROJECTS DIVISION JOINT PROJECT (REF. 17-68)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	HEAVILY USED AREA (REF. 17-66)
AG AGRICULTURE	SOME FARMS IN LOWER END (REF. 17-66)
WW WATER WITHDRAWAL	SEVERAL WATER LICENSES. SERVES AS A FOOD FISHERY FOR 3 DIFFERENT INDIAN BANDS (REF. 17-66)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

NO INFORMATION AVAILABLE

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

---

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/05
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17



-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 39

AUTHOR: SEPTAV, TONY  
DESCRIPTION: NANAIMO RIVER MAINSTEM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. (1982)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 68

AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE

ESCAPEMENT: CHEMAINUS RIVER

WATERSHED-CODE: 92-4700

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	7,500	N/O	35,000	N/O	3,500
1954	0	7,500	N/O	35,000	25	3,500
1955	0	750	25	15,000	N/O	1,500
1956	0	1,500	N/O	7,500	200	1,500
1957	0	3,500	0	35,000	25	1,500
1958	0	3,500	N/O	35,000	N/O	3,500
1959	0	400	0	3,500	0	1,500
1960	0	400	0	3,500	0	750
1961	0	200	0	3,500	25	75
1962	0	400	N/O	3,500	25	400
1963	0	400	0	3,500	N/O	200
1964	0	400	0	3,500	25	200
1965	0	400	0	7,500	25	200
1966	0	400	0	35,000	200	400
1967	0	400	N/O	12,000	50	300
1968	0	100	0	12,000	100	300
1969	0	300	0	8,000	20	200
1970	0	400	0	3,750	16	200
1971	0	1,200	0	3,000	30	UNK
1972	0	500	0	24,500	60	UNK
1973	0	450	0	24,000	65	UNK
1974	0	1,800	0	20,500	40	UNK
1975	0	350	0	4,500	20	UNK
1976	0	200	0	3,000	60	N/O
1977	0	950	0	15,000	150	UNK
1978	0	310	0	17,000	261	0
1979	0	450	0	16,500	225	0
1980	0	300	0	15,000	90	0
1981	0	25	0	22,700	1,750	0
1982	8	520	0	43,600	750	0
1983	0	65	0	25,000	350	0
1984	N/O	300	N/O	35,000	275	N/O
1985	N/O	750	N/O	40,000	600	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

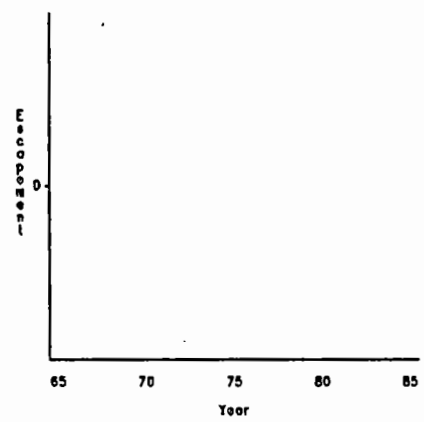
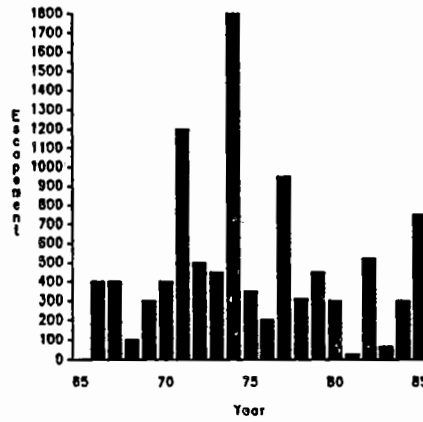
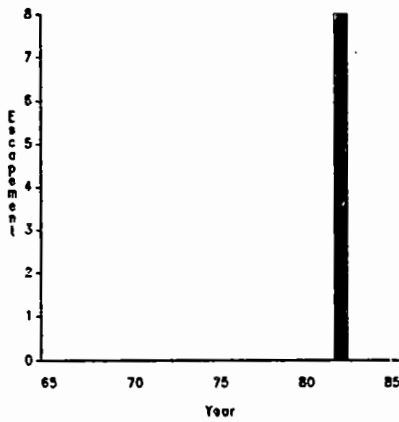
# CHEMAINUS RIVER (92-4700)

## Escapement & Run Timing

**Sockeye (SK)**

**Coho (CO)**

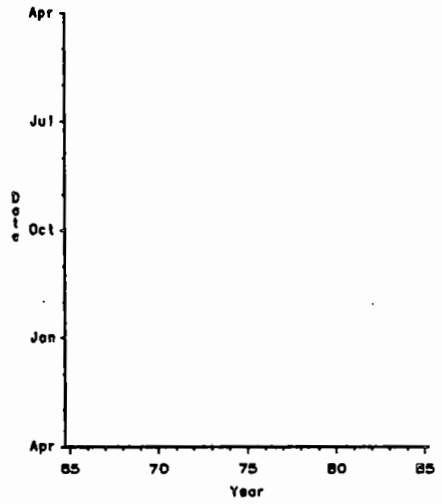
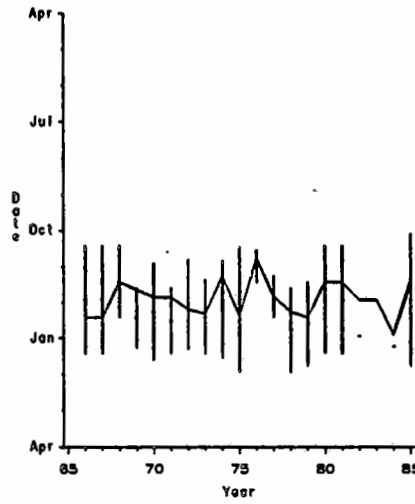
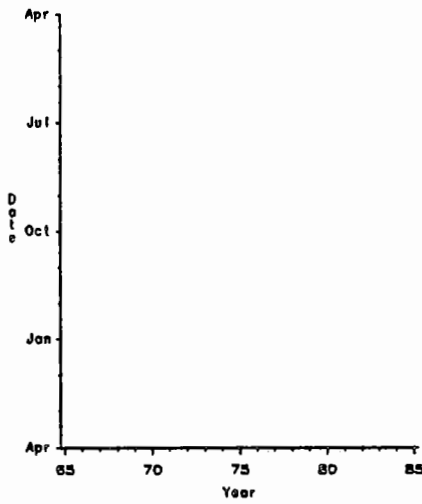
**Pink (PK)**



**Sockeye**

**Coho**

**Pink**



Sockeye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

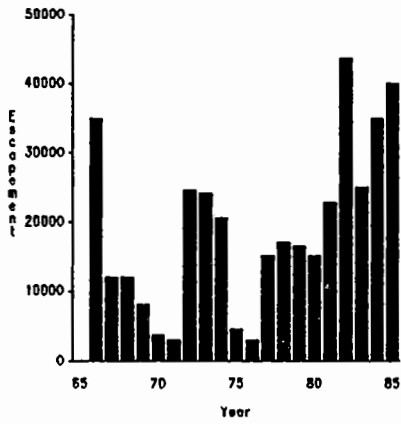
Coho				
Year	Escapement	Start	Peak	End
1966	400	15OCT	15DEC	15JAN
1967	400	15OCT	15DEC	15JAN
1968	100	15OCT	15NOV	15DEC
1969	300	20NOV	-	10JAN
1970	400	30OCT	28NOV	20JAN
1971	1,200	20NOV	28NOV	15JAN
1972	500	27OCT	08DEC	11JAN
1973	450	13NOV	12DEC	15JAN
1974	1,800	28OCT	10NOV	18JAN
1975	350	18OCT	14DEC	30JAN
1976	200	19OCT	28OCT	15NOV
1977	950	10NOV	27NOV	15DEC
1978	310	20NOV	18DEC	30JAN
1979	450	15NOV	15DEC	25JAN
1980	300	15OCT	15NOV	14JAN
1981	25	15OCT	15NOV	15JAN
1982	520	-	30NOV	31DEC
1983	65	-	30NOV	16APR
1984	300	-	30DEC	09JAN
1985	750	05OCT	15NOV	25JAN

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

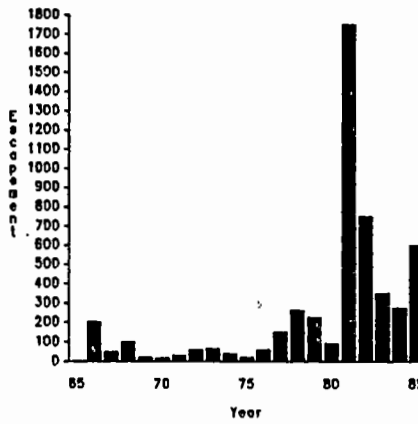
# CHEMAINUS RIVER (92-4700)

## Escapement & Run Timing

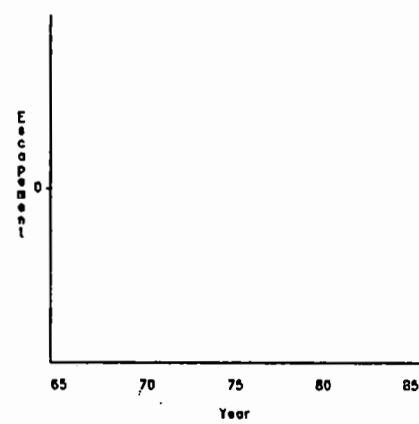
**Chum (CM)**



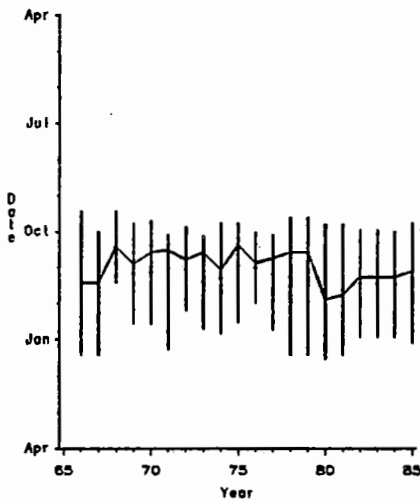
**Chinook (CH)**



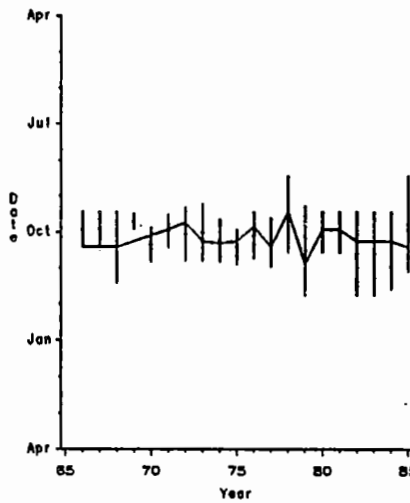
**Steelhead (ST)**



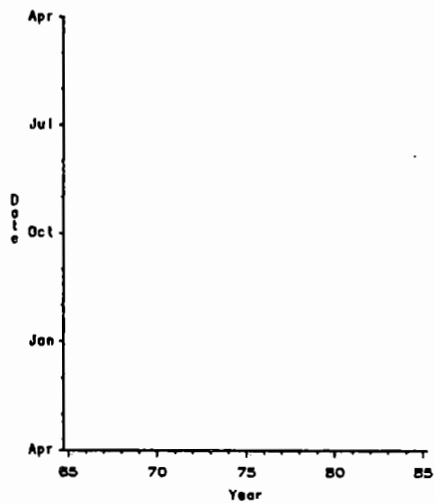
**Chum**



**Chinook**



**Steelhead**



**Chum**

Year	Escapement	Start	Peak	End
1966	35,000	15SEP	15NOV	15JAN
1967	12,000	02OCT	15NOV	15JAN
1968	12,000	15SEP	15OCT	15NOV
1969	8,000	25SEP	30OCT	20DEC
1970	3,750	23SEP	20OCT	20DEC
1971	3,000	05OCT	18OCT	10JAN
1972	24,300	28SEP	25OCT	09DEC
1973	24,000	06OCT	20OCT	24DEC
1974	20,500	25SEP	04NOV	28DEC
1975	4,500	25SEP	14OCT	18DEC
1976	3,000	03OCT	29OCT	02DEC
1977	19,000	05OCT	25OCT	29DEC
1978	17,000	20SEP	20OCT	15JAN
1979	16,500	20SEP	20OCT	15JAN
1980	19,000	28SEP	29NOV	18JAN
1981	22,700	26SEP	29NOV	15JAN
1982	43,600	01OCT	10NOV	31DEC
1983	25,000	01OCT	10NOV	31DEC
1984	35,000	02OCT	10NOV	31DEC
1985	40,000	25SEP	05NOV	05JAN

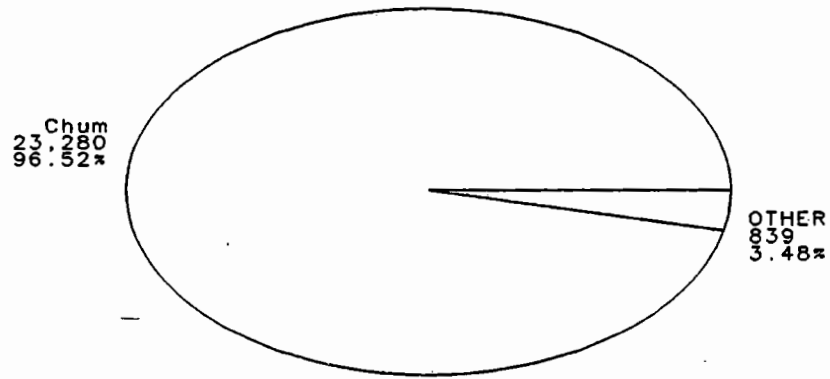
**Chinook**

Year	Escapement	Start	Peak	End
1966	200	15SEP	15OCT	15OCT
1967	50	15SEP	15OCT	15OCT
1968	100	15SEP	15OCT	15NOV
1969	20	18SEP	-	30SEP
1970	15	28SEP	-	28OCT
1971	50	17SEP	30SEP	15OCT
1972	60	11SEP	24SEP	27OCT
1973	85	08SEP	10OCT	27OCT
1974	40	21SEP	12OCT	28OCT
1975	20	30SEP	10OCT	30OCT
1976	60	15SEP	28SEP	25OCT
1977	150	20SEP	15OCT	01NOV
1978	261	15AUG	15SEP	20OCT
1979	225	10SEP	30OCT	25NOV
1980	80	15SEP	30SEP	20OCT
1981	1,750	15SEP	30SEP	20OCT
1982	750	15SEP	10OCT	25NOV
1983	350	15SEP	10OCT	25NOV
1984	275	15SEP	10OCT	20NOV
1985	600	15AUG	15OCT	05NOV

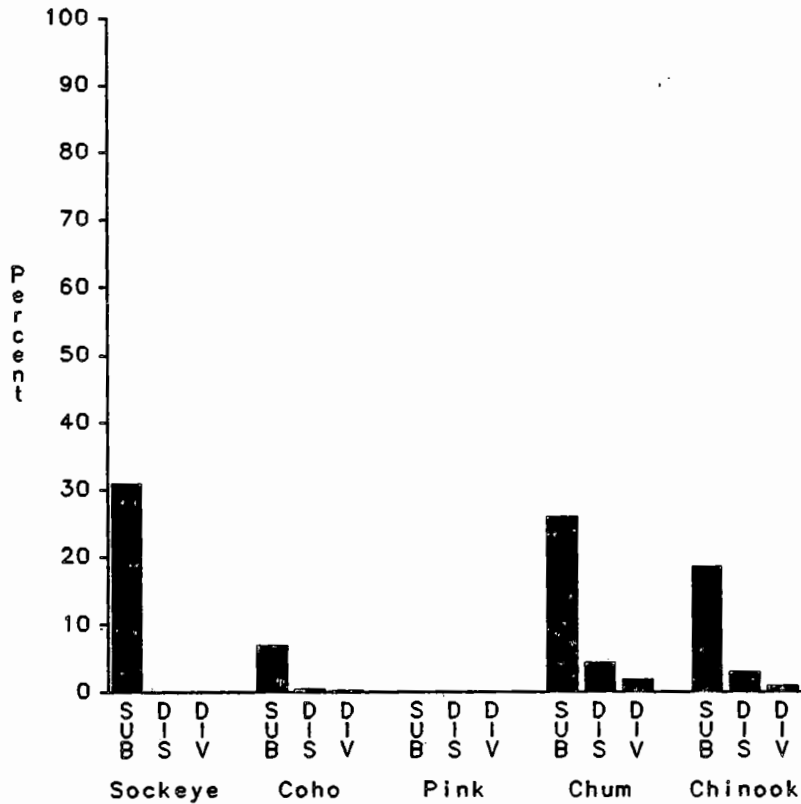
**Steelhead**

Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**CHEMAINUS RIVER (92-4700)**  
 10-yr Mean Escapement  
 (1976-1985)



**CHEMAINUS RIVER : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



**A. DESCRIPTION**

Stream Name: <b>BONSALL CREEK</b>	D.F.O. Division: <b>SOUTH COAST</b>
Local Name:	District: <b>3 NANAIMO</b>
Watershed Code: <b>92-4705</b>	Subdistrict: <b>17 NANAIMO/LADYSMITH</b>
	Statistical Subarea: <b>17-7</b>
	M.O.E.P. Region: <b>1 VANCOUVER ISLAND</b>
	Management Unit: <b>5</b>

Tributaries	Code	Topographic (1:50k) Map: <b>92B/13</b>
<b>WHITEHOUSE CREEK</b>	<b>010</b>	B.C.G.S. (1:20k) Map: <b>082</b>
		U.T.M. Mouth: <b>10.4509.54148</b>
		Lat./Long. Mouth: <b>48 06. 53' 15'' 123 06. 40' 17''</b>
		Mainstem Length: <b>8.0 km</b> Ref. No.: <b>17-1</b>
		Watershed Area: <b>13.0 km<sup>2</sup></b> Ref. No.: <b>17-39</b>
Location: <b>FLows N.E. INTO STUART CHANNEL, N.W. OF OSBORN BAY - CHEMAINUS DISTRICT.</b>		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5%    .5 - 2%    2 - 5%    5 - 10%    >10%	<b>WATERSHED HAS LITTLE OR NO GRADIENT ALONG MOST OF ITS LENGTH. 600M PAST STRATFORD CROSSING, GRADIENT INCREASES RAPIDLY. (REF. 17-3)</b>

**B. OBSTRUCTIONS TO MIGRATION**

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
<b>CV CULVERT</b>		<b>8.0</b>	<b>A0 ALL SALMON</b>	<b>(REF. 17-1)</b>

**C. FLOW**

Flow Control:	Water Survey of Canada (WSC) Flow Gauge: <b>Y</b>		
W.S.C. Station No. 1: <b>08HA022</b>	No. 2:	No. 3:	No. 4:
Comments: <b>GAUGE LOCATED ABOVE WHITEHOUSE C. (REF. 17-39)</b>			

**D. DISTRIBUTION SUMMARY**

Species	Watershed Distribution
<b>CO COHO SALMON</b>	<b>0.4KM TO 7.2KM. SPAWN ALONG MAINSTEM UP TO APPROXIMATELY 600M PAST STRATFORD CROSSING (REF. 17-1, REF. 17-3, REF. 17-4)</b>
<b>CM CHUM SALMON</b>	<b>0.4KM TO BELOW THE CULVERT. SPAWN ALONG MAINSTEM UP TO APPROXIMATELY 600M PAST THE STRATFORD CROSSING. (REF. 17-1, REF. 17-3, REF. 17-4)</b>
<b>CT CUTTHROAT TROUT</b>	<b>FOUND IN THE 1ST TRIBUTAY ON THE LEFT SIDE (FACING UPSTREAM). CO AND CM DON'T SPAWN HERE. (REF. 17-4)</b>

**E. ESCAPEMENT SUMMARY**

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
<b>CO COHO SALMON</b>	<b>1079</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>2300</b>	<b>28A-18</b>		
<b>CM CHUM SALMON</b>	<b>904</b>	<b>1976 - 1985</b>	<b>28A-18</b>	<b>3620</b>	<b>28A-18</b>		

**F. LIFE HISTORY TIMING**

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO COHO SALMON	Migration Spawning Incubation Rearing	X X									X	X X	X X
CM CHUM SALMON	Migration Spawning Incubation Rearing										X	X X	X X

Comments: COHO SPAWN TO STRATFORD CROSSING (APPROX. 8KM), AND IN WHITEHOUSE C. THEY ALSO SPAWN IN A SMALL TRIBUTARY (NOT SHOWN ON 92B/13, 3RD ED.) STARTING 200M UPSTREAM FROM STRATFORD CROSSING. (REF. 17-1, REF. 17-4)

**G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED**

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
TR TRANSPLANT	CO COHO SALMON	0.0	SMOLT TRAPPING IN 1987 (REF. 17-66)	1987/1987

**H. LAND USE/WATER USE/WATER QUALITY**

Activity	Description/Location
AG AGRICULTURE	HAS SOME ADVERSELY AFFECTS FROM AGRICULTURE (REF. 17-66)
FO FORESTRY	SOME LAND CLEARING AND LOGGING RELATED PROBLEMS (REF. 17-66)

**I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS**

HEAVILY UTILIZED FOR INDIAN FOOD FISHERY (COHO) (REF. 17-66)

**J. FISHERY OFFICER NARRATIVE**

Date Prepared: / / Prepared By:

**K. SIS COMPLETED BY**

Completed by:	GITA KAPAH	Date:	1987/06/06
Checked by:	CINDY HARLOW	Date:	1987/06/05
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

hab314102670  
REFERENCE LIST  
1988/07/18

Watershed Code: 92-4705  
Stream Name: BONSALL CREEK  
Page: 1

-----  
REFERENCE NO: 17- 1

AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 3

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP 92B/13 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 4

AUTHOR: EPPS, TED  
DESCRIPTION: PERSONAL COMMUNICATION, TED EPPS, FISHERY OFFICER NANAIMO. JUNE 14, 1983.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 39

AUTHOR: SEPTAV, TONY  
DESCRIPTION: NANAIMO RIVER MAINSTEM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. (1982)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 28A- 18

AUTHOR: DFO.  
DESCRIPTION: SALMON ESCAPEMENT DATA SYSTEM (SEDS); PACIFIC BIOLOGICAL STATION; NANAIMO.  
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO  
KEYWORDS: CH CHINOOK CM CHUM CO COHO  
PK PINK S SPAWNING SK SOCKEYE



ESCAPEMENT: BONSALL CREEK

WATERSHED-CODE: 92-4705

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	7,500	0	400	0	0
1954	0	7,500	0	750	0	0
1955	0	3,500	0	200	0	0
1956	0	3,500	0	200	0	0
1957	0	7,500	0	3,500	0	0
1958	0	3,500	0	400	0	0
1959	0	400	0	400	0	0
1960	0	400	0	25	0	0
1961	0	400	0	25	0	0
1962	0	750	0	750	0	0
1963	0	750	0	75	0	0
1964	0	750	0	75	0	0
1965	0	750	0	75	0	0
1966	0	3,500	0	750	0	0
1967	0	850	0	100	0	0
1968	0	400	0	100	0	0
1969	0	475	0	100	0	0
1970	0	1,950	0	175	0	0
1971	0	2,000	0	200	0	0
1972	0	1,150	0	450	0	0
1973	0	750	0	275	0	0
1974	0	1,950	0	600	0	0
1975	0	900	0	475	0	0
1976	0	1,000	0	700	0	0
1977	0	2,300	0	500	0	0
1978	0	1,889	0	3,620	0	0
1979	0	1,000	0	1,000	0	0
1980	0	1,182	0	1,224	0	0
1981	0	422	0	100	0	0
1982	0	1,450	0	850	0	0
1983	0	600	0	450	0	0
1984	N/O	350	N/O	250	N/O	N/O
1985	N/O	600	N/O	345	N/O	0
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						

N/O = STREAM INSPECTED, NO FISH OBSERVED

UNK = STREAM NOT INSPECTED OR NOT INSPECTED FOR SPECIES INDICATED OR SPECIES PRESENT BUT NO ESTIMATE MADE

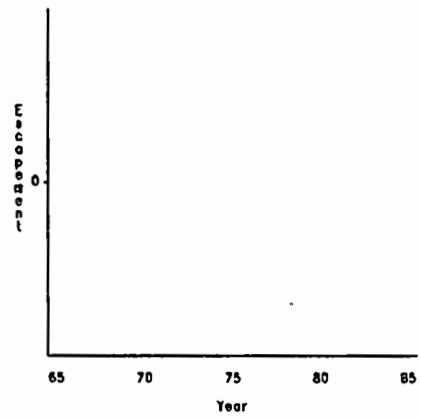
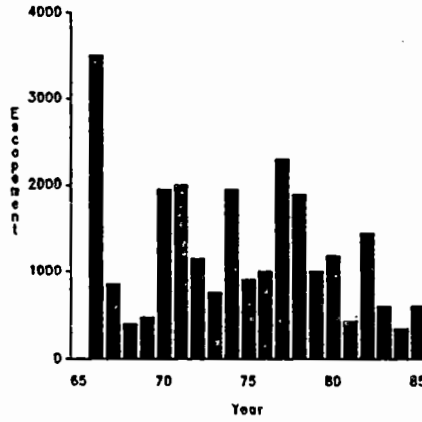
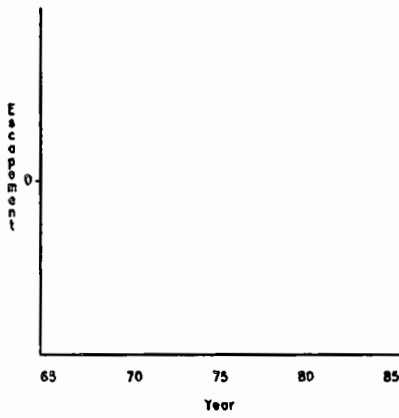
# BONSALL CREEK (92-4705)

## Escapement & Run Timing

Socketye (SK)

Coho (CO)

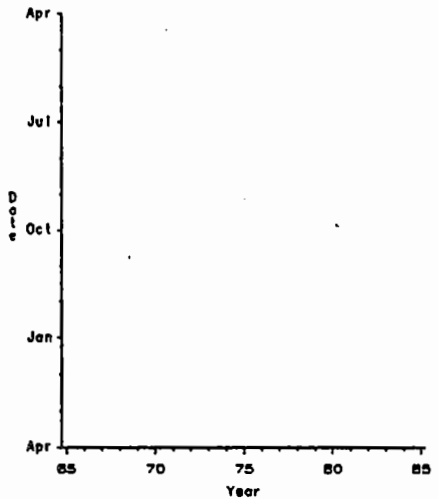
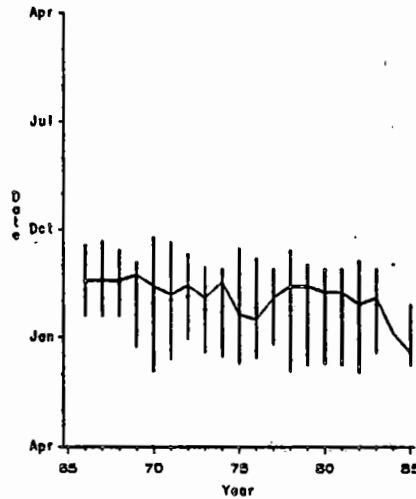
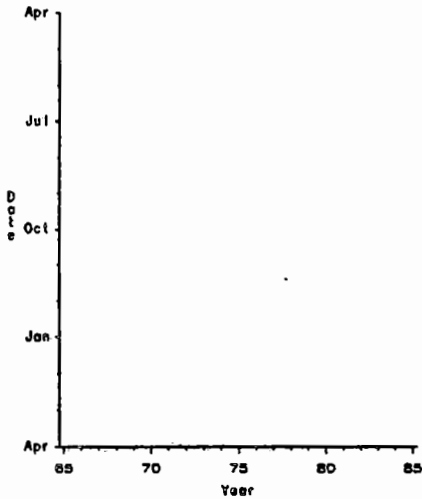
Pink (PK)



Socketye

Coho

Pink



Socketye				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	3,500	15OCT	15NOV	18DEC
1967	850	12OCT	19NOV	15DEC
1968	400	20OCT	19NOV	15DEC
1969	475	30OCT	10NOV	10JAN
1970	1,950	09OCT	20NOV	30JAN
1971	2,000	13OCT	27NOV	20JAN
1972	1,150	23OCT	18NOV	04JAN
1973	750	03NOV	30NOV	15JAN
1974	1,950	05NOV	16NOV	18JAN
1975	900	18OCT	14DEC	24JAN
1976	1,000	27OCT	18DEC	19JAN
1977	2,300	05NOV	30NOV	03JAN
1978	1,889	20OCT	20NOV	30JAN
1979	1,000	01NOV	20NOV	25JAN
1980	1,182	05NOV	23NOV	24JAN
1981	422	03NOV	29NOV	25JAN
1982	1,450	29OCT	05DEC	31JAN
1983	600	05NOV	30NOV	15JAN
1984	350	01NOV	30DEC	-
1985	600	05DEC	15JAN	25JAN

Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

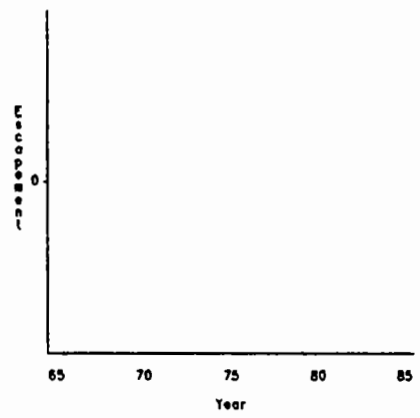
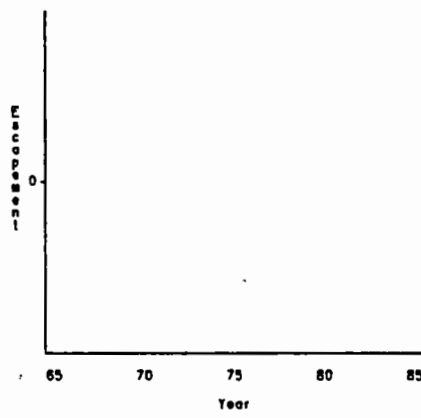
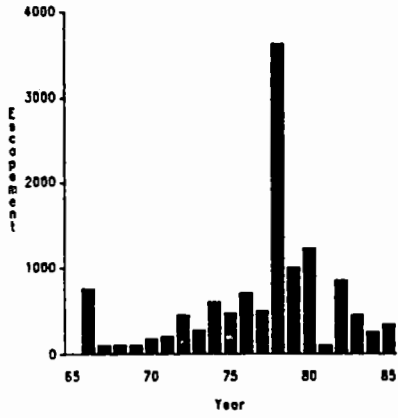
# BONSALL CREEK (92-4705)

## Escapement & Run Timing

Chum (CM)

Chinook (CH)

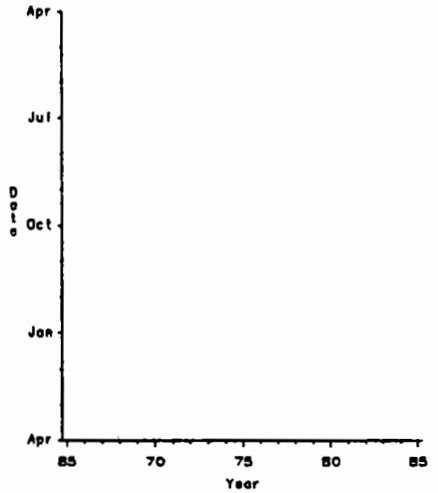
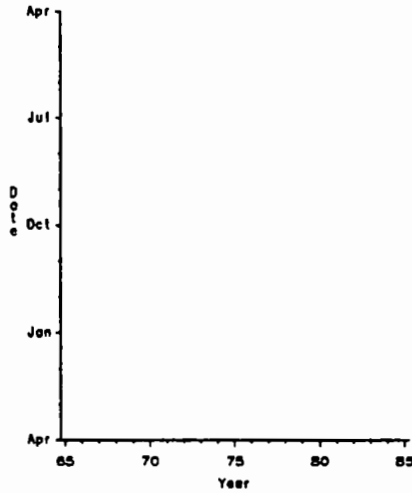
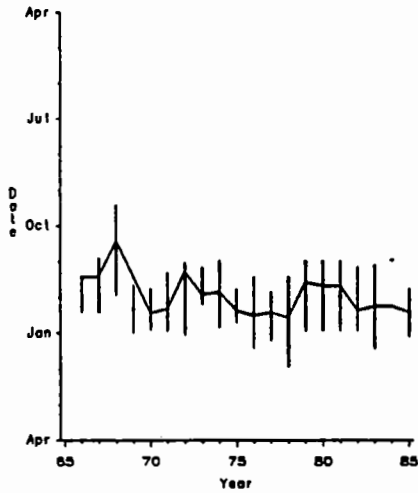
Steelhead (ST)



Chum

Chinook

Steelhead

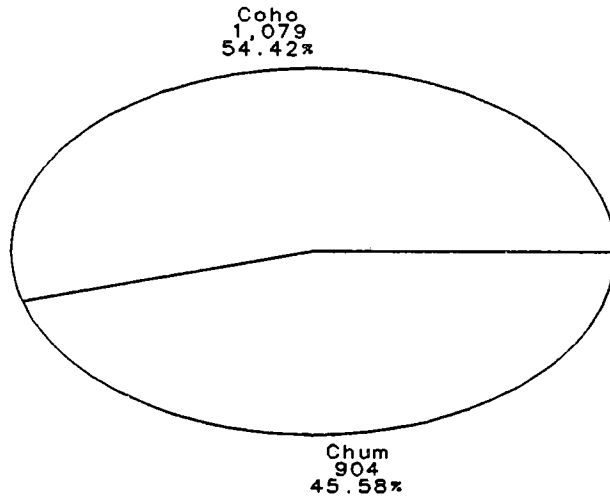


Chum				
Year	Escapement	Start	Peak	End
1966	750	15NOV	15NOV	15DEC
1967	100	30OCT	15NOV	15DEC
1968	100	15SEP	15OCT	30NOV
1969	180	22NOV	-	02JAN
1970	175	25NOV	18DEC	30DEC
1971	280	12NOV	12DEC	31DEC
1972	450	03NOV	11NOV	03JAN
1973	275	07NOV	30NOV	08DEC
1974	600	01NOV	28NOV	28DEC
1975	475	28NOV	14DEC	24DEC
1976	780	15NOV	18DEC	14JAN
1977	580	20NOV	15DEC	08JAN
1978	3,620	15NOV	20DEC	30JAN
1979	1,000	01NOV	20NOV	31DEC
1980	1,224	02NOV	23NOV	31DEC
1981	100	02NOV	23NOV	31DEC
1982	850	07NOV	14DEC	31DEC
1983	450	05NOV	10DEC	15JAN
1984	250	01NOV	10DEC	-
1985	345	25NOV	15DEC	05JAN

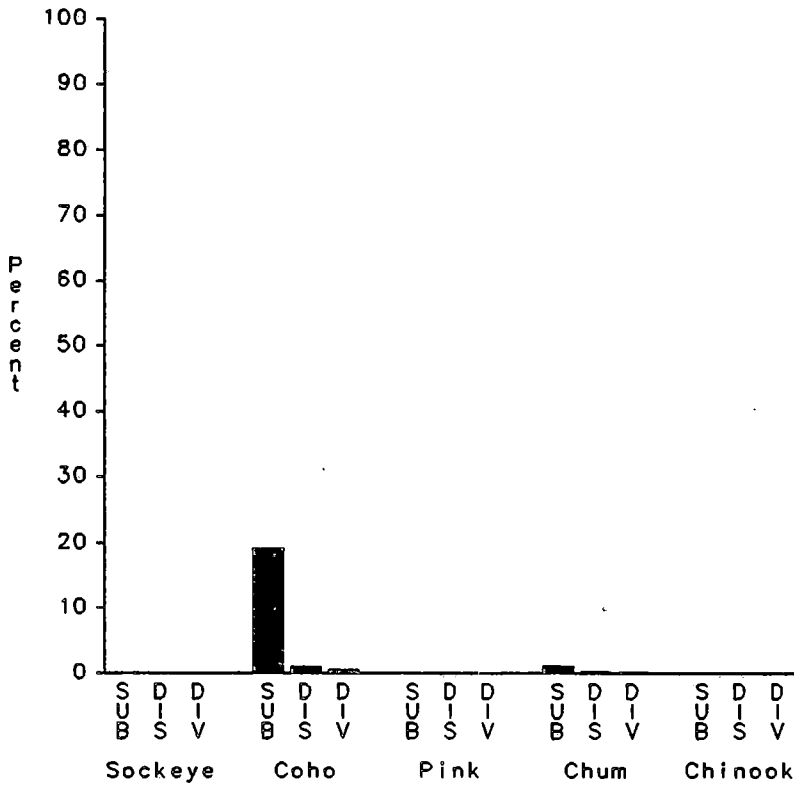
Chinook				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	0	-	-	-
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Steelhead				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	-	-	-	-
1977	-	-	-	-
1978	-	-	-	-
1979	-	-	-	-
1980	-	-	-	-
1981	-	-	-	-
1982	-	-	-	-
1983	-	-	-	-
1984	-	-	-	-
1985	-	-	-	-

**BONSALL CREEK (92-4705)**  
 10-yr Mean Escapement  
 (1976-1985)



**BONSALL CREEK : Escapement (1976-1985)**  
 Species Escapement as a Proportion of DFO Management Units  
 (ie Subdistrict, District & Division)



## 4.0 Bibliography

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1988/07/04

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REFERENCE NO: 17- 60

AUTHOR: BLACKMAN, B.  
DESCRIPTION: 1980 LAKE SURVEY REPORTS  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 17- 15

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: COHO SALMON - SMOLT PRODUCTION FROM FRY STOCKING IN A LOW ELEVATION VANCOUVER ISLAND STREAM.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: CO COHO FS FISH SAMPLING R REARING

REFERENCE NO: 17- 20

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: PERSONAL OBSERVATIONS  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 37

AUTHOR: BLACKMAN, B.G.  
DESCRIPTION: NANAIMO RIVER SALMONID ENHANCEMENT PROJECT, 1980. LAKE SURVEYS.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 65

AUTHOR: BOB, HENRY  
DESCRIPTION: HATCHERY FOREMAN, NANAIMO RIVER S.E.P. HATCHERY, (1979 - PRESENT, 1987). PERSONAL COMMUNICATION.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON

REFERENCE NO: 17- 10

AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - BLOODS CREEK. 1969 - 71, NANAIMO RIVER FILES 1 & 2 (G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 17- 35

AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - HONG KONG CREEK. 1969-1970.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 63

AUTHOR: BURNS, J.E.  
DESCRIPTION: STREAM SURVEY FORM - DEADWOOD CREEK. 1969 - 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AO ALL SALMON PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 17- 52

AUTHOR: BURNS, J.E., D.J. WILDERS  
DESCRIPTION: STREAM SURVEY FORM - THATCHER CREEK, 1969 - 1971.  
LOCATION: D MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 24

AUTHOR: BURNS, T.  
DESCRIPTION: STREAM INVENTORY FORM. JINGLE CREEK, 1970. (LOCAL INITIATIVE PROGRAM- L.I.P.)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

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REFERENCE NO: 17- 27

AUTHOR: CHAPLIN, S., C. YONER, S. MACEY  
DESCRIPTION: MILLSTONE PROJECT PROGRESS REPORT, APRIL 29, 1983. MALASPINA COLLEGE AQUACULTURE AND FISHERIES TECHNOLOGY PROGRAM.  
(BILL PENNELL FILES)  
LOCATION: EE MALASPINA COLLEGE - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 4

AUTHOR: EPPS, TED  
DESCRIPTION: PERSONAL COMMUNICATION, TED EPPS, FISHERY OFFICER NANAIMO. JUNE 14, 1983.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 8

AUTHOR: FRASER, F.J., D.T. LIGHTLY, D.D. BAILEY  
DESCRIPTION: AN INVENTORY OF EAST COAST VANCOUVER ISLAND STREAMS IMPORTANT TO CHUM SALMON. PAC/T-74-21  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: AF ALL SPECIES CM CHUM PY PHYSICAL HABITAT

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AUTHOR: GLOVA, GORDON  
DESCRIPTION: LETTER TO J.C. LYONS RE: HASLAM CREEK. AUG. 23, 1974.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: EH ENHANCEMENT

REFERENCE NO: 17- 9

AUTHOR: HARDING, I.  
DESCRIPTION: LAKE SURVEYS : LAKE KIDNEY, COTTLE LAKE, ROUND LAKE. MAY 4, 1970.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 66

AUTHOR: HARLOW, CINDY  
DESCRIPTION: FISHERY OFFICER NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 64

AUTHOR: HORNCastle, G.S.  
DESCRIPTION: DEADWOOD CREEK (NORTH NANAIMO RIVER) SNORKLE OBSERVATIONS. FILE #85-01 STREAM INVENTORY, NANAIMO RIVER. 0644, JUNE 2, 1975.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AO ALL SALMON FS FISH SAMPLING PS POPULATION SAMPLING  
PY PHYSICAL HABITAT

REFERENCE NO: 17- 5

AUTHOR: HOUSEGO, D.M.  
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS MANOOSE CREEK. 1963-1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING S SPAWNING

REFERENCE NO: 17- 11

AUTHOR: HOUSEGO, D.M.  
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS - BLOODS CREEK. 1963 - 1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 67

AUTHOR: HOUSEGO, DON  
DESCRIPTION: FISHERY OFFICER, NANAIMO OFFICE. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

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REFERENCE NO: 17- 22  
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AUTHOR: HURST, B.  
DESCRIPTION: NANAIMO RIVER SALMON ENHANCEMENT PROJECT - PERSONAL INFORMATION.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT

REFERENCE NO: 17- 18  
-----

AUTHOR: HURST, B., B. BLACKMAN  
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT, NOV. 30, 1985. G. LOGAN'S OFFICE.  
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 6  
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AUTHOR: JANZ, S.M.  
DESCRIPTION: LETTER FROM S.M. JANZ TO H.P. VANDERMOLEN RE: PROPOSED SUBDIVISION OF PART OF BLK. 668, MANOOSE DISTRICT; FILE #5903-M45. OCT. 30, 1980 (MANOOSE HARBOUR FILE)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: UD URBAN DEVELOPMENT

REFERENCE NO: 17- 38  
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AUTHOR: LILL, A.F., ROY HAMILTON  
DESCRIPTION: WATER REQUIREMENTS FOR THE FISHERIES RESOURCE OF THE NANAIMO RIVER. APRIL 24, 1973.  
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER  
KEYWORDS: FL FLOW PY PHYSICAL HABITAT

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AUTHOR: MACEY, S.  
DESCRIPTION: MILLSTONE STUDENT PROJECTS (1982, 1983). MALASPINA COLLEGE AQUACULTURE AND FISHERIES TECHNOLOGY PROGRAM. (BILL PENNELL FILES).  
LOCATION: EE MALASPINA COLLEGE - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 46  
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AUTHOR: MARSHALL, D.E., B. SNYDER  
DESCRIPTION: 1981 PROPOSED SALMONID ENHANCEMENT ACTIVITIES AND TARGET LEVELS FOR THE NANAIMO COMMUNITY DEVELOPMENT PROJECT.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON EN ENHANCEMENT

REFERENCE NO: 17- 1  
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AUTHOR: MARSHALL, D.E., R.F. BROWN, V.D. CHAHLEY ET AL  
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 AND 18 (NANAIMO - LADYSMITH - DUNCAN)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 62  
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AUTHOR: NANAIMO RIVER SEP HATCHERY FILES  
DESCRIPTION: 1982, NORTH NANAIMO RIVER. COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 14  
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AUTHOR: PICK, R.J., T.A. SEPTAV  
DESCRIPTION: A BIOPHYSICAL STUDY OF THE MILLSTONE RIVER, OCT. 1979. NANAIMO RIVER SALMONID ENHANCEMENT PROJECT, SPECIAL PROJECTS DIVISION, SEP.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 39  
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AUTHOR: SEPTAV, TONY  
DESCRIPTION: NANAIMO RIVER MAINSTEM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. (1982)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

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REFERENCE NO: 17- 68  
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AUTHOR: TUTTY, B.D.  
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, NANAIMO. PERSONAL COMMUNICATION, JUNE 1987.  
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)  
KEYWORDS: AD ALL SALMON OB OBSTRUCTIONS PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 17- 2  
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AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS: MAP 92F/1 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 3  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP 92B/13 EAST AND WEST (1971)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 7  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS, 1971. 92F/8 EAST AND WEST  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES OB OBSTRUCTIONS PY PHYSICAL HABITAT

REFERENCE NO: 17- 13  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: DEPARTURE CREEK FILE #5871-BC-2-3, ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS, 1952-1982. (TED EPPS OFFICE).  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 16  
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AUTHOR: UNKNOWN  
DESCRIPTION: MILLSTONE RIVER, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY, 1982.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 17  
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AUTHOR: UNKNOWN  
DESCRIPTION: FLOW RECORDS FROM FILES  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: FL FLOW

REFERENCE NO: 17- 19  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: RUSH CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY, 1982.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 21  
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AUTHOR: UNKNOWN  
DESCRIPTION: MILLSTONE RIVER FILE #5871-BC-2-3 ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS 1981-1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES S SPAWNING

REFERENCE NO: 17- 23  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: STREAM AND LAKE INVENTORY MAPS, M.O.E. 92G/4 EAST AND WEST. 1971.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING



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REFERENCE NO: 17- 28  
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AUTHOR: UNKNOWN  
DESCRIPTION: MILLSTONE RIVER STREAM SURVEY. DEC. 3, 1969. (MILLSTONE RIVER BYPASS; G. REID FILES)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 17- 29  
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AUTHOR: UNKNOWN  
DESCRIPTION: CONSTRUCTION OF A FISHWAY ON THE MILLSTONE RIVER, 1974. (MILLSTONE RIVER BYPASS REPORT, G. REID FILES)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT

REFERENCE NO: 17- 30  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS, NANAIMO AND NANAIMO LAKES. MAP 92F/1 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 31  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: CHASE RIVER COMPUTER PRINTOUT OF REACH TABLE AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 32  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: AQUATICS BIOPHYSICAL MAPS NANAIMO AND NANAIMO LAKES. MAP NO. 92G/4 EAST AND WEST.  
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 33  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER ELECTROFISHING . MAY - OCT. 1979. (NANAIMO RIVER FILES 1 & 2; G. REID)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 34  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: BECK CREEK (ALIAS HONG KONG CREEK), COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 36  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: M.O.E. STREAM AND LAKE INVENTORY MAPS; MAP NO. 92G/4 EAST AND WEST.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 17- 41  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: NOTES ON HASLAM CREEK CHANNELING. 11/2/70.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: EN ENHANCEMENT

REFERENCE NO: 17- 42  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: HASLAM CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY. 1982.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPANNING

-----  
REFERENCE NO: 17- 43  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: HASLAM CREEK FILE #5871-BC-2-3. ENVIRONMENT CANADA FISHERIES AND OCEANS ANNUAL REPORT OF SALMON STREAM AND SPAWNING  
GROUNDS. 1974, 1981-1982. (TED EPPS OFFICE)  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 44  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: NANAIMO RIVER SALMON ENHANCEMENT PROJECT ELECTROFISHING STUDIES.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING

REFERENCE NO: 17- 45  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, NAPOLEON CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 47  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: HOLDEN CREEK FILE #5871-BC-2-3, ENVIRONMENT CANADA, FISHERIES AND OCEANS ANNUAL REPORT OF SALMON STREAM AND SPAWNING  
GROUNDS. 1969 - 1982.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON S SPAWNING

REFERENCE NO: 17- 48  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, HOLDEN CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON S SPAWNING

REFERENCE NO: 17- 49  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, CAT STREAM, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 50  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: CHASE RIVER - CAT STREAM FILE # 5903-C128. ENVIRONMENT CANADA FISHERIES AND OCEANS, ANNUAL REPORT OF SALMON STREAM  
AND SPAWNING GROUNDS, 1982. (IN TED EPPS OFFICE).  
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO  
KEYWORDS: AO ALL SALMON S SPAWNING

REFERENCE NO: 17- 51  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, THATCHER CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 53  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, NORTH HASLAM CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 54  
-----

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, STARK LAKE CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: OD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

-----  
REFERENCE NO: 17- 55

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, MCKAY LAKE CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 56

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, BERKELY CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 57

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, BOULDER CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 58

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, MANSON CREEK, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 59

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, SOUTH NANAIMO RIVER, COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 17- 61

AUTHOR: UNKNOWN  
DESCRIPTION: 1982, WOLF CREEK COMPUTER PRINTOUT OF REACH TABLE AND AQUATICS INVENTORY SYSTEM AGGREGATE FISH SUMMARY.  
LOCATION: DD SEP - HATCHERY - NANAIMO  
KEYWORDS: AD ALL SALMON PS POPULATION SAMPLING PY PHYSICAL HABITAT  
S SPAWNING

REFERENCE NO: 17- 25

AUTHOR: UNKNOWN (MILLSTONE RIVER BYPASS, G. REID FILES)  
DESCRIPTION: AMENDMENT TO GRANT APPLICATION (AUG. 23,1982) FROM NANAIMO AND DIST. FISH AND GAME TO FISH AND WILDLIFE FOR BOWEN PARK FALLS FISHWAY.  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT

REFERENCE NO: 17- 12

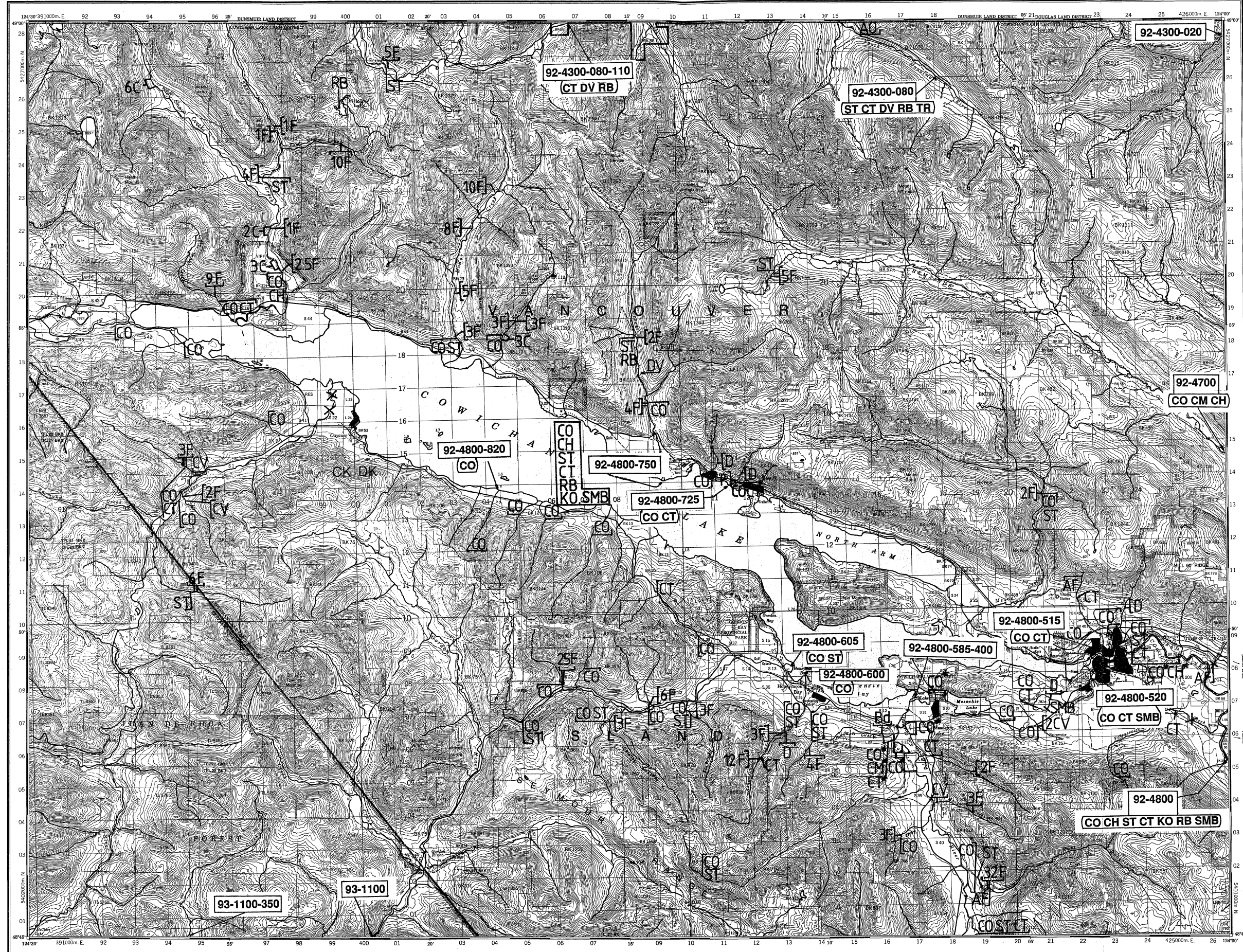
AUTHOR: VARIOUS AUTHORS AND YEARS  
DESCRIPTION: CHAIN LAKE FILE (IN G. REID'S LAKE FILES)  
LOCATION: O MOE - REGION 1 - NANAIMO  
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

5.0 MAPS

This section contains the following Stream Information Summary Maps:

92B/13 Duncan  
92C/16 Cowichan Lake  
92F/1 Nanaimo Lakes  
92F/8 Parksville  
92G/4 Nanaimo





Military users, refer to this map as: **MAP 92 C/16**  
 Série militaire de cette carte: **EDITION 2 MCE** ÉDITION

**DFO/MOEF FISH HABITAT INVENTORY AND INFORMATION PROGRAM  
 STREAM INFORMATION SUMMARY**

**91-2900 Watershed Code and Species Summary**  
**CO CM ST**

**SPECIES INFORMATION**

- SK CO PK CM CH** species present
- CO ST** lower limit of distribution
- CO ST** upper limit of distribution
- PK\*** specific site of spawning
- SK\*** major spawning zone
- CM\*** upper limit of spawning

**OBSTRUCTIONS** (measurements included where known)

- 3F** log jam (persistent)
- D** = dam
- F** = falls (3 m high)
- CV** = culvert
- BD** = beaver dam
- 2C100** cascade, chute or canyon (height = 2 m, length = 100 m)

**ENHANCEMENT / MANAGEMENT ACTIVITIES**

- HY** = hatchery
- FW** = fishway
- SC** = side channel
- CH** = spawning channel

**WSC08FB003** Water Survey of Canada Gauging Station

**300 CO** tributary watershed code

**SPECIES ABBREVIATION LIST**

SK - Sockeye	BS - Bass (general)
CO - Coho	CT - Cutthroat
PK - Pink	DV - Dolly Varden
CM - Chum	KO - Kokanee
CH - Chinook	LT - Lake trout
ST - Steelhead	LW - Lake whitefish
AF - All fish	MW - Mountain whitefish
AO - All salmon	RB - Rainbow
	TR - Trout (general)

This Stream Information Summary map complements a companion Stream Summary Catalogue, organized by DFO Subdistrict. Maps and files are organized by watershed code.

**REFERENCE POINT** POINT DE REPÈRE: CHURCH - ÉGLISE

**CAUTION:** Read number on grid line immediately below point.

**ATTENTION:** Lire le chiffre de la ligne de quadrillage immédiatement en dessous du repère.

Estimate length of a square from this line westward to point.

Estimer la longueur de carrés de carré entre cette ligne et le repère en direction est.

**NOTHING:** Read number on grid line immediately below point.

**RIEN:** Lire le chiffre de la ligne de quadrillage immédiatement en dessous du repère.

Estimate length of a square from this line westward to point.

Estimer la longueur de carrés de carré entre cette ligne et le repère en direction ouest.

**CRC REFERENCE:** RÉFÉRENCE DU QUADRILLAGE

Read number on grid reference line 100 metres below point.

Le chiffre de référence sur la ligne est à 100 mètres en dessous du repère.

**MARCH 1988**

TABLEAU D'ADRESSEMENT DU SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

92 C/15	92 C/16	92 C/17
92 C/14	92 C/15	92 C/16
92 C/13	92 C/14	92 C/15

INDEX TO ADDRESS MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, 100, KING STREET, OTTAWA, ONTARIO K1P 6K6, CANADA. Published in 1988.

Produit par le Service des levés et de la cartographie, Ministère de l'Énergie, des Mines et des Ressources, 100, rue King, Ottawa, Ontario K1P 6K6, Canada. Publié en 1988.

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**Roads** Routes: hard surface, all weather; hard surface, all weather; loose or stabilized surface, all weather; loose surface, dry weather; unclassified streets; cart track; trail; road.

**Routes** Routes: pavée, toute saison; pavée, toute saison; gravier, aggloméré, toute saison; de gravier, temps sec; rues hors classe; de terre; sentier; piste ou passage; piste.

FOR COMPLETE REFERENCE SEE REVERSE SIDE POUR UNE LISTE COMPLÈTE DES SIGNES, VOIR LE VERSO

**COWICHAN LAKE**  
 BRITISH COLUMBIA  
 Scale 1:50 000 Échelle

**CONVERSION SCALE FOR ELEVATIONS**  
 Mètres 0 100 200 300 400 500 600 700 800 900 1000  
 Feet 0 300 600 900 1200 1500 1800 2100 2400 2700 3000

**ÉCHELLE DE CONVERSION DES ALTITUDES**  
 Mètres 0 100 200 300 400 500 600 700 800 900 1000  
 Pieds 0 300 600 900 1200 1500 1800 2100 2400 2700 3000

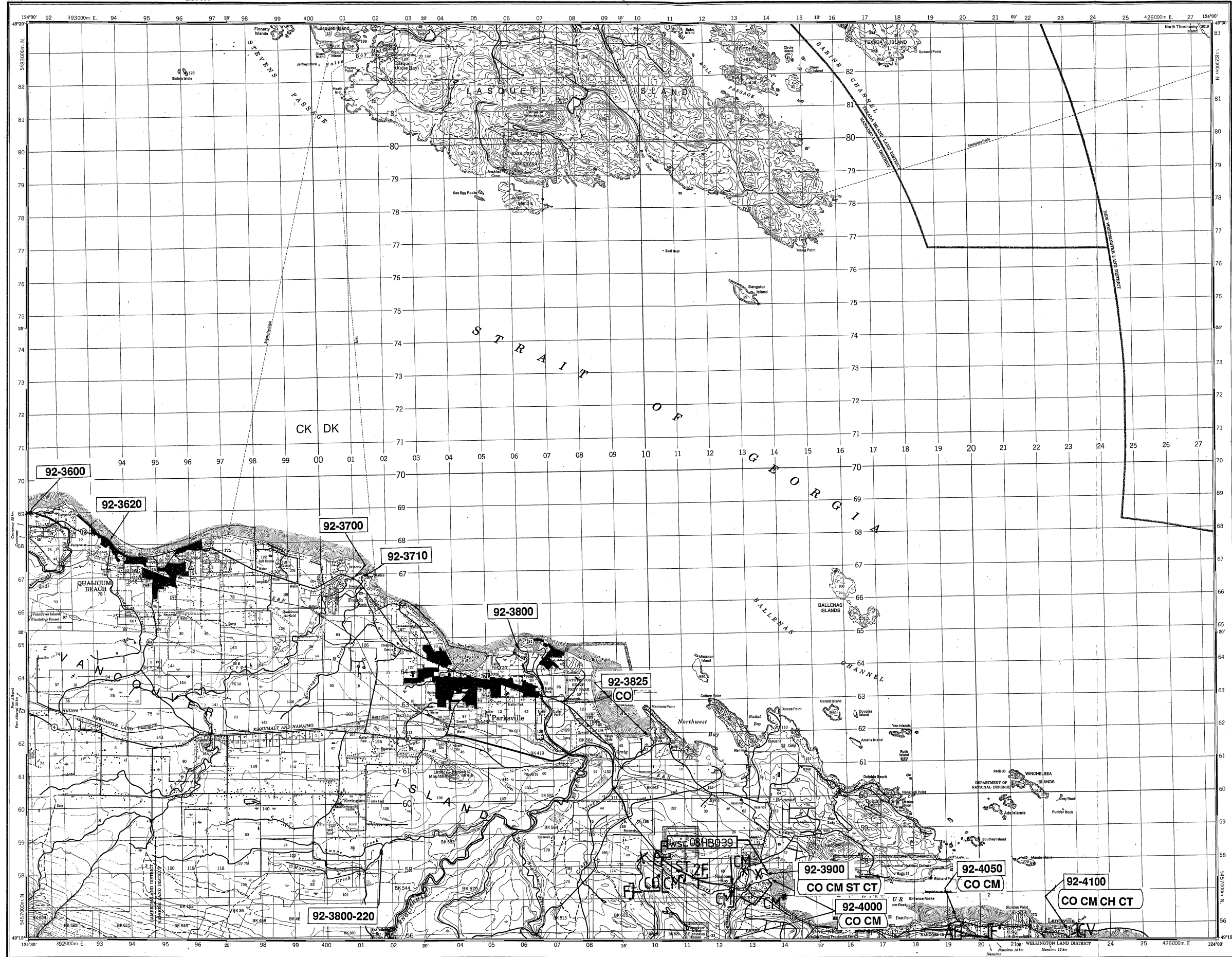
Double up the DIRECTION DES LIGNES ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, 100, RUE KING, OTTAWA, ONTARIO K1P 6K6, CANADA.

Les cartes sont en vente au Bureau des Cartes du Canada, Ministère de l'Énergie, des Mines et des Ressources, Ottawa, ou chez le revendeur le plus près.

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**COWICHAN LAKE**  
 92 C/16  
 ÉDITION 2

Military users, refer to this map as: **MAP 92 F/8 CARTE**  
 Références de cette carte pour usage militaire: **EDITION 3 MCE EDITION**



**DFO/MOEP FISH HABITAT INVENTORY AND INFORMATION PROGRAM**  
**STREAM INFORMATION SUMMARY**

**91-2900** Watershed Code and Species Summary  
**CO CM ST**

**SPECIES INFORMATION**

**SK CO PK CM CH** species present  
**CO ST** lower limit of distribution  
**CO ST** upper limit of distribution  
**PK \*** specific site of spawning

**SK \*** major spawning zone  
**CO**  
**CO**  
**CM \*** upper limit of spawning

**FLOW**

**OBSTRUCTIONS** (measurements included where known)

D = dam  
 F = falls (3 m high)  
 CV = culvert  
 BD = beaver dam  
**2C100** cascade, chute or canyon (height = 2m, length = 100m)

**ENHANCEMENT/MANAGEMENT ACTIVITIES**

**HY** hatchery  
 FW = fishway  
 SC = side channel  
 CH = spawning channel

**WSC08FB03** Water Survey of Canada Gauging Station

**300** tributary watershed code

**SPECIES ABBREVIATION LIST**

SK - Sockeye	BS - Bass (general)
CO - Coho	CT - Cutthroat
PK - Pink	DV - Dolly Varden
CM - Chum	KO - Kokanee
CH - Chinook	LT - Lake trout
ST - Steelhead	LW - Lake whitefish
AF - All fish	MW - Mountain whitefish
AO - All salmon	RB - Rainbow
	TR - Trout (general)

This Stream Information Summary map complements a companion Stream Summary Catalogue, organized by DFO Subdistrict. Maps and files are organized by watershed code.

**REFERENCE POINT** CHURCH - EGLISE (see sheet 92-0000)

**EASTING:** Read number on grid line immediately to left of point.

**NORTHING:** Read number on grid line immediately below point.

**COORDINATES:** Note the column of the figure of the quadrangle immediately to the left of the point.

**SCALE:** 1:50 000

**MARCH 1988**

**TABLIER D'ASSURANCE DU PROJET NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE**

92 F/8	92 F/9	92 F/12
92 F/7	92 F/10	92 F/11
92 F/6	92 F/13	92 F/14

INDEX TO ADJOINING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

**PARKSVILLE**  
 92 F/8  
 EDITION 3

**PARKSVILLE BRITISH COLUMBIA**  
 Scale 1:50 000 Echelle

**CONVERSION SCALE FOR ELEVATIONS**  
 Mètres 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

**CONVERSION DES HAUTEURS**  
 Mètres 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

**ROADS:** Routes: hard surface, all weather; paved, toute saison; hard surface, all weather; gravel, aggloméré, toute saison; loose surface, dry weather; gravel, temp. sec.; unclassified streets; rail line; cart track; trail cut line; portage; for complete reference see reverse side / pour une liste complète des renseignements voir le verso

**Information concerning location and precise elevation of bench marks can be obtained by writing to the British Survey, Survey and Mapping Branch, Ottawa.**

**Do not obtain the measurements on the line of a contour exactly as indicated by the contour line. The contour line is a smoothed line and does not represent the actual ground surface.**

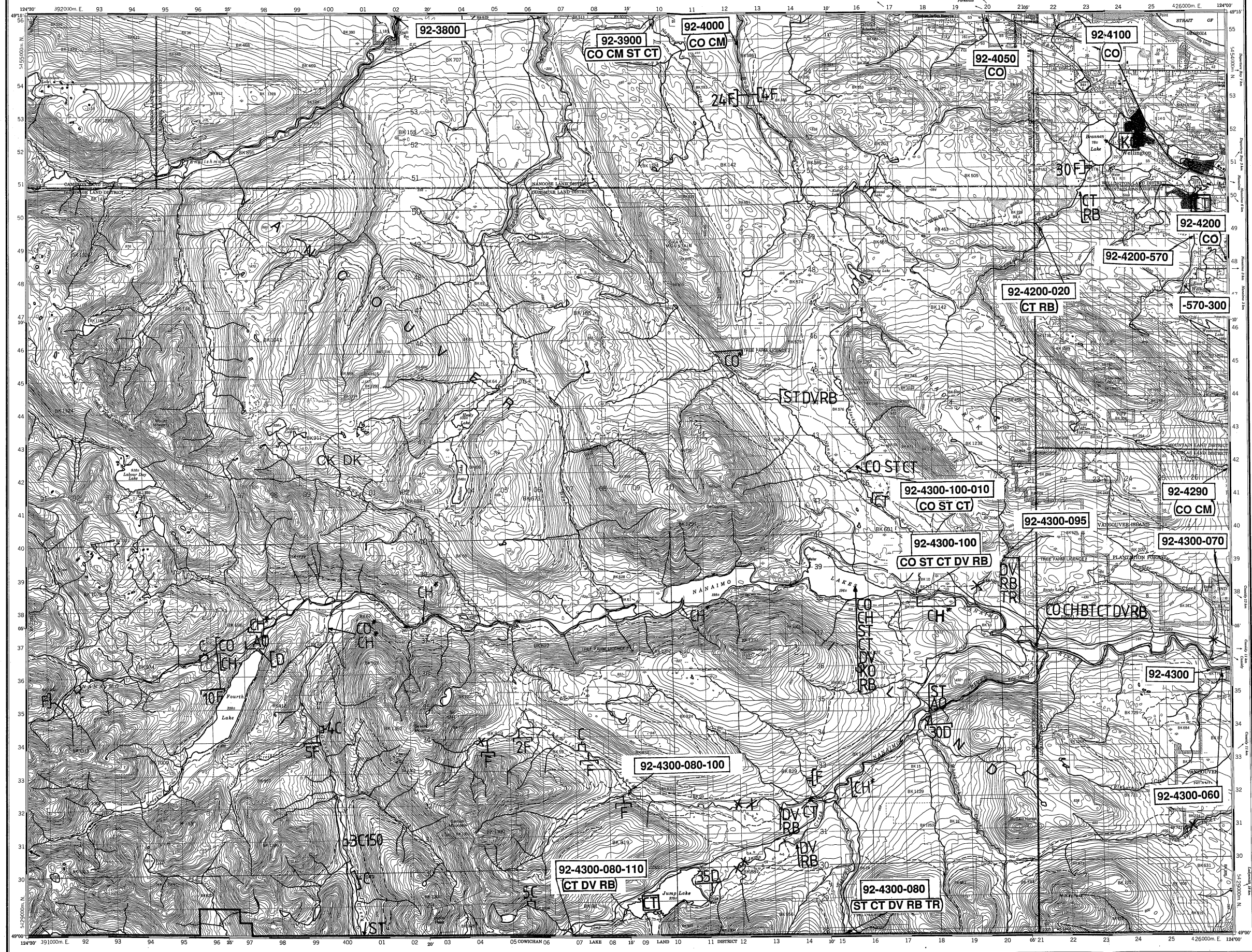
**Do not obtain the measurements on the line of a contour exactly as indicated by the contour line. The contour line is a smoothed line and does not represent the actual ground surface.**

**Tableau sur le DIRECTION DES LIGNES ET DE LA CARTOGRAPHIQUE: MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, à l'Échelle de 1:50 000, les données sont en 1978, l'échelle des courbes est de 1:50 000.**

**Ce tableau sur le DIRECTION DES LIGNES ET DE LA CARTOGRAPHIQUE: MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, à l'échelle de 1:50 000, les données sont en 1978, l'échelle des courbes est de 1:50 000.**

**© 1988, la propriété de la Couronne du Canada. Ministère de l'Énergie, des Mines et des Ressources.**

Military users, refer to this map as: **MAP 92 F/1 CANADA**  
 Références de cette carte pour usage militaire: **EDITION 4 MCE CANADA**



**DFO/MOEF FISH HABITAT INVENTORY AND INFORMATION PROGRAM STREAM INFORMATION SUMMARY**

**91-2900 Watershed Code and CO CM ST**  
**SPECIES INFORMATION**

- SK CO PK CM CH species present
- CO ST lower limit of distribution
- CO ST upper limit of distribution
- PK \* specific site of spawning
- SK \* major spawning zone
- CO \* upper limit of spawning

**OBSTRUCTIONS** (measurements included where known)

- log jam (persistent)
- D = dam
- F = falls (3m high)
- CV = culvert
- BD = beaver dam
- cascade, chute or canyon (height = 2m, length = 100m)

**ENHANCEMENT / MANAGEMENT ACTIVITIES**

- HY = hatchery
- FW = fishway
- SC = side channel
- CH = spawning channel

**Water Survey of Canada Gauging Station**

**tributary watershed code**

**SPECIES ABBREVIATION LIST**

SK - Sockeye	BS - Bass (general)
CO - Coho	CT - Cutthroat
PK - Pink	DV - Dolly Varden
CM - Chum	KO - Kokanee
CH - Chinook	LT - Lake trout
ST - Steelhead	LW - Lake whitefish
AF - All fish	MW - Mountain whitefish
AO - All salmon	RB - Rainbow
	TR - Trout (general)

This Stream Information Summary map complements a companion Stream Summary Catalogue, organized by DFO Subdistrict. Maps and files are organized by watershed code.

**REFERENCE POINT**  
 POINT DE RÉFÉRENCE: CHURCH - ECLUSE (en amont immédiatement à gauche de la page)  
 ÉCLUSE: Road number on grid line immediately to left of page  
 ÉCLUSE: Numéro de route de la ligne de quadrillage immédiatement à gauche de la page  
 Elevation (height) of a spillway from the top of spillway to pool  
 Élév. : la hauteur de la digue au point de fuite ou la hauteur de direction est

**NORTHING**: Road number on grid line immediately below point  
**ORIENTATION**: Note to the right of the sign to which the arrowhead points  
 Élévation (height) of a spillway from the top of spillway to pool  
 Comme la hauteur de la digue au point de fuite ou la hauteur de direction est

**GRID REFERENCE**: 979884  
 Numéro de la grille de référence: 979884 (voir l'index de la carte pour les coordonnées)

**MARCH 1988**

TABLIÉAU D'IDENTIFICATION DU SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

92 F/1	92 F/2	92 G/1
92 F/3	92 F/4	92 G/2
92 G/3	92 G/4	92 H/1
92 H/2	92 H/3	92 H/4

SEEK TO ASSIGNED MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND TECHNOLOGY, from aerial photographs taken in 1976. Culture check 1978. Published in 1988.

Élaboré par le BUREAU DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, à partir de photographies aériennes prises en 1976. Vérification de la culture en 1978. Publié en 1988.

**Roads**

hard surface, all weather	Route	Route
hard surface, all weather	Route	Route
loose or stabilized surface, all weather	Route	Route
loose surface, dry weather	Route	Route
unimproved stream	Route	Route
cart track	Route	Route
trail, cut line or portage	Route	Route

**NANAIMO LAKES**  
 BRITISH COLUMBIA

Scale 1:50 000 Échelle

Meters 0 1000 2000 3000 4000 Mètres  
 Feet 0 1000 2000 3000 4000 Pieds

**CONVERSION TABLE FOR ELEVATIONS**  
 ÉCHELLE DE CONVERSION DES ALTITUDES

Meters to Feet: 1 Meter = 3.28 Feet  
 Feet to Meters: 1 Foot = 0.3048 Meters

**GRID REFERENCE**  
 North American Datum 1927  
 Système de référence géodésique nord-américain, 1927  
 Projection: Transverse Mercator

Information concerning location and precise elevation of bench marks can be obtained by writing to the Geomatics Survey, Surveys and Mapping Branch, Ottawa.

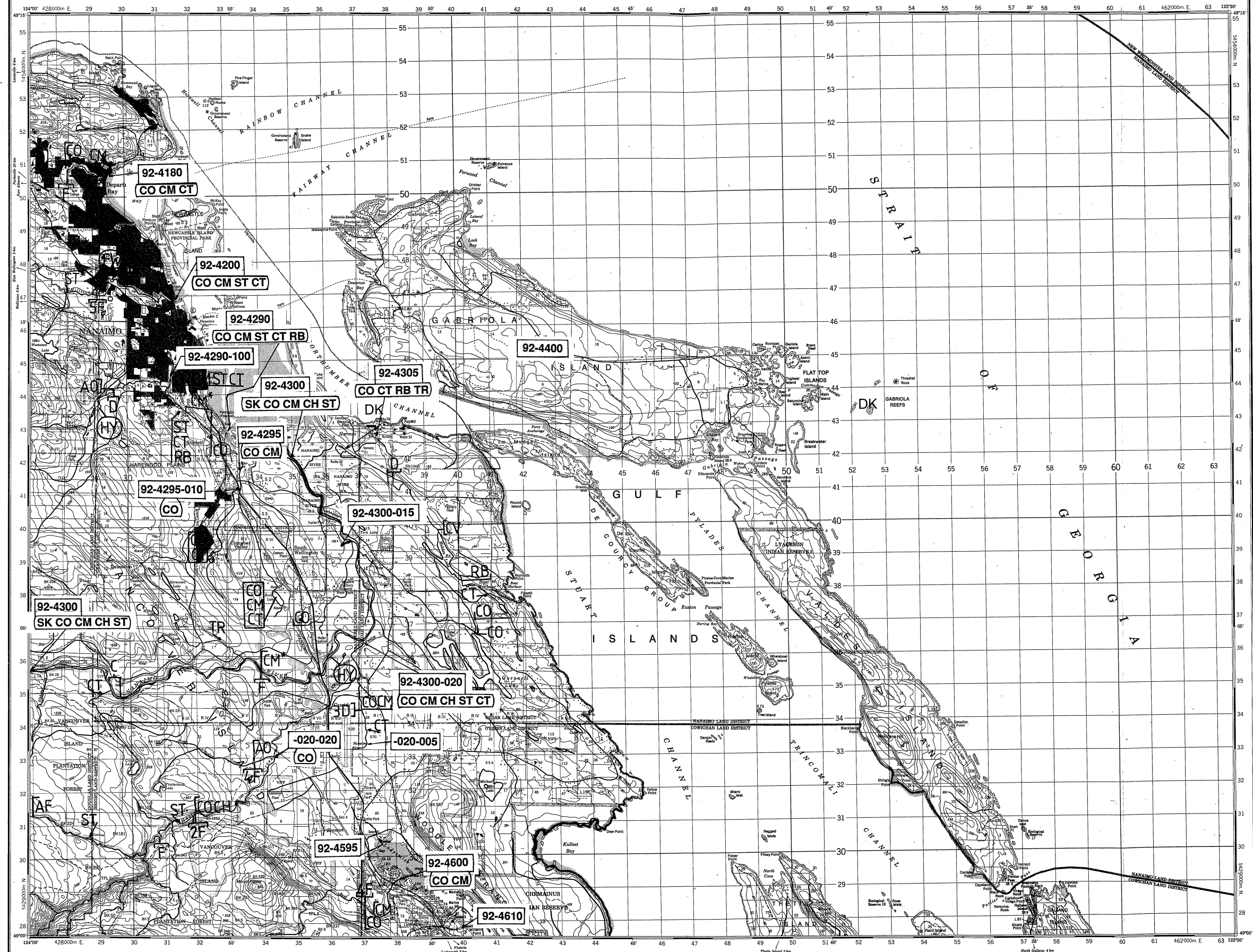
On peut obtenir des renseignements sur le lieu et l'altitude exacte des points de nivellement en écrivant au Service des levés, Direction des levés et de la cartographie, Ottawa.

Élaboré par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, à partir de photographies aériennes prises en 1976. Vérification de la culture en 1978. Publié en 1988.

Élaboré par le Bureau des levés et de la cartographie, Ministère de l'énergie, des mines et des ressources, Ottawa.

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Military users refer to this map as: **MAP 92 G/4 CANE**  
 Références de cette carte pour usage militaire: **CARTON 3 MCE CANE**

**DFO/MOEP FISH HABITAT INVENTORY AND INFORMATION PROGRAM  
 STREAM INFORMATION SUMMARY**

**91-2900 Watershed Code and Species Summary**  
**CO CM ST**

**SPECIES INFORMATION**  
**SK CO PK CM CH** species present  
**CO ST** lower limit of distribution  
**CO ST** upper limit of distribution  
**PK \*** specific site of spawning  
**SK \*** major spawning zone  
**CO**  
**CM \*** upper limit of spawning

**OBSTRUCTIONS** (measurements included where known)  
**3F** log jam (persistent)  
**D** = dam  
**F** = falls (3m high)  
**CV** = culvert  
**BD** = beaver dam  
**2C100** cascade, chute or canyon (height = 2m, length = 100m)

**ENHANCEMENT / MANAGEMENT ACTIVITIES**  
**HY** = hatchery  
**FW** = fishway  
**SC** = side channel  
**CH** = spawning channel

**WSC08FB003** Water Survey of Canada Gauging Station  
**300** tributary watershed code

- SPECIES ABBREVIATION LIST**
- SK - Sockeye
  - CO - Coho
  - PK - Pink
  - CM - Chum
  - CH - Chinook
  - ST - Steelhead
  - AF - All fish
  - AO - All salmon
  - BS - Bass (general)
  - CT - Cutthroat
  - DV - Dolly Varden
  - KO - Kokanee
  - LT - Lake trout
  - LW - Lake whitefish
  - MW - Mountain whitefish
  - RB - Rainbow
  - TR - Trout (general)

This Stream Information Summary map complements a companion Stream Summary Catalogue, organized by DFO Subdistrict. Maps and files are organized by watershed code.

**REFERENCE POINT** CHURCH - EGLISE  
 POINT DE RÉFÉRENCE ÉGLISE - ÉGLISE

**CAUTION:** Read number on grid line immediately below point.  
**ATTENTION:** Lire le chiffre de la ligne de quadrillage immédiatement en dessous du point.

**WARNING:** Read number on grid line immediately below point.  
**ATTENTION:** Lire le chiffre de la ligne de quadrillage immédiatement en dessous du point.

**CAUTION:** Read number on grid line immediately below point.  
**ATTENTION:** Lire le chiffre de la ligne de quadrillage immédiatement en dessous du point.

**REFERENCE AL QUADRICULO:** 925084  
 Référence au quadrillage: 925084

**MARCH 1988**

TABLEAU D'ASSIGNATION DU SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

92 F/8	92 G/5	92 G/6
92 F/1	92 G/4	92 G/3
92 G/4	92 G/3	92 G/4

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**NANAIMO  
 BRITISH COLUMBIA**  
 Scale 1:50 000 Échelle

Information concerning location and position elevation of bench marks can be obtained by writing to the Geodetic Survey, Surveys and Mapping Branch, Ottawa.

Des renseignements sur l'emplacement et l'altitude exacte des repères de nivellement se trouvent au Service des levés et de la cartographie, Ottawa.

**CONVERSION SCALE FOR ELEVATIONS**  
 Metres 30 40 50 100 200 300 400 500 600 700 800 900 1000  
 Feet 100 130 160 330 660 990 1320 1650 1980 2310 2640 2970 3300

**ECHÉLLE DE CONVERSION DES ALTITUDES**  
 Mètres 30 40 50 100 200 300 400 500 600 700 800 900 1000  
 Pieds 100 130 160 330 660 990 1320 1650 1980 2310 2640 2970 3300

Scale for the DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, SERVICE DES LEVÉS ET DE LA CARTOGRAPHIE, DES MINES ET DES RESSOURCES, à partir de photographies aériennes prises en 1978. Vérification des données en 1978. Imprimé en 1988.

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