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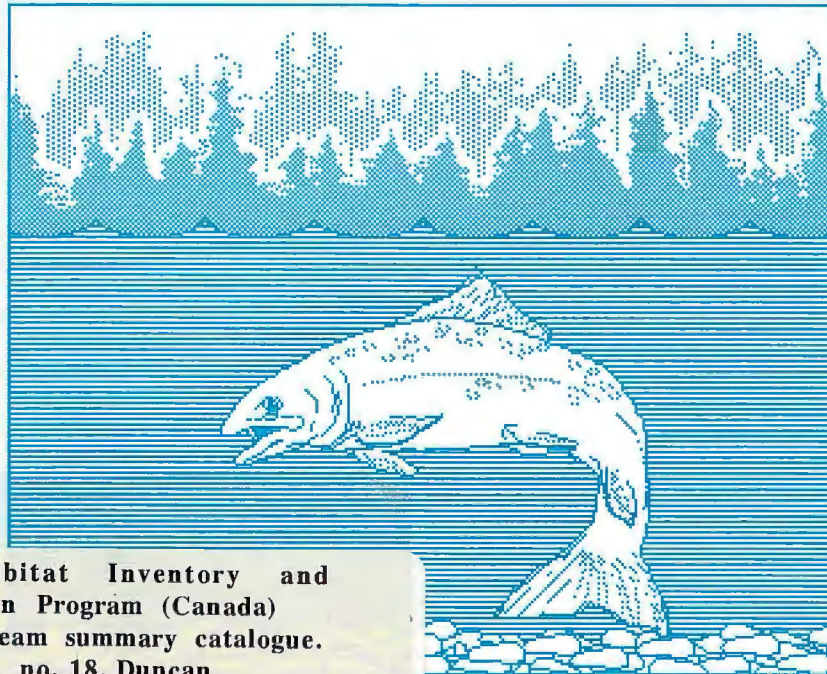


01000782

Fish Habitat Inventory & Information Program

**STREAM SUMMARY
CATALOGUE**

**SUBDISTRICT # 18
DUNCAN**



**Fish Habitat Inventory and
Information Program (Canada)
Stream summary catalogue.
Subdistrict no. 18, Duncan**

SH349
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no.18

c#2



Fisheries
and Oceans



Ministry of Environment and Parks

Canada

Fish Habitat
Inventory & Information Program

**STREAM SUMMARY
CATALOGUE**

**SUBDISTRICT # 18
DUNCAN**

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**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 49 streams in DFO Subdistrict #18, Duncan. 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.

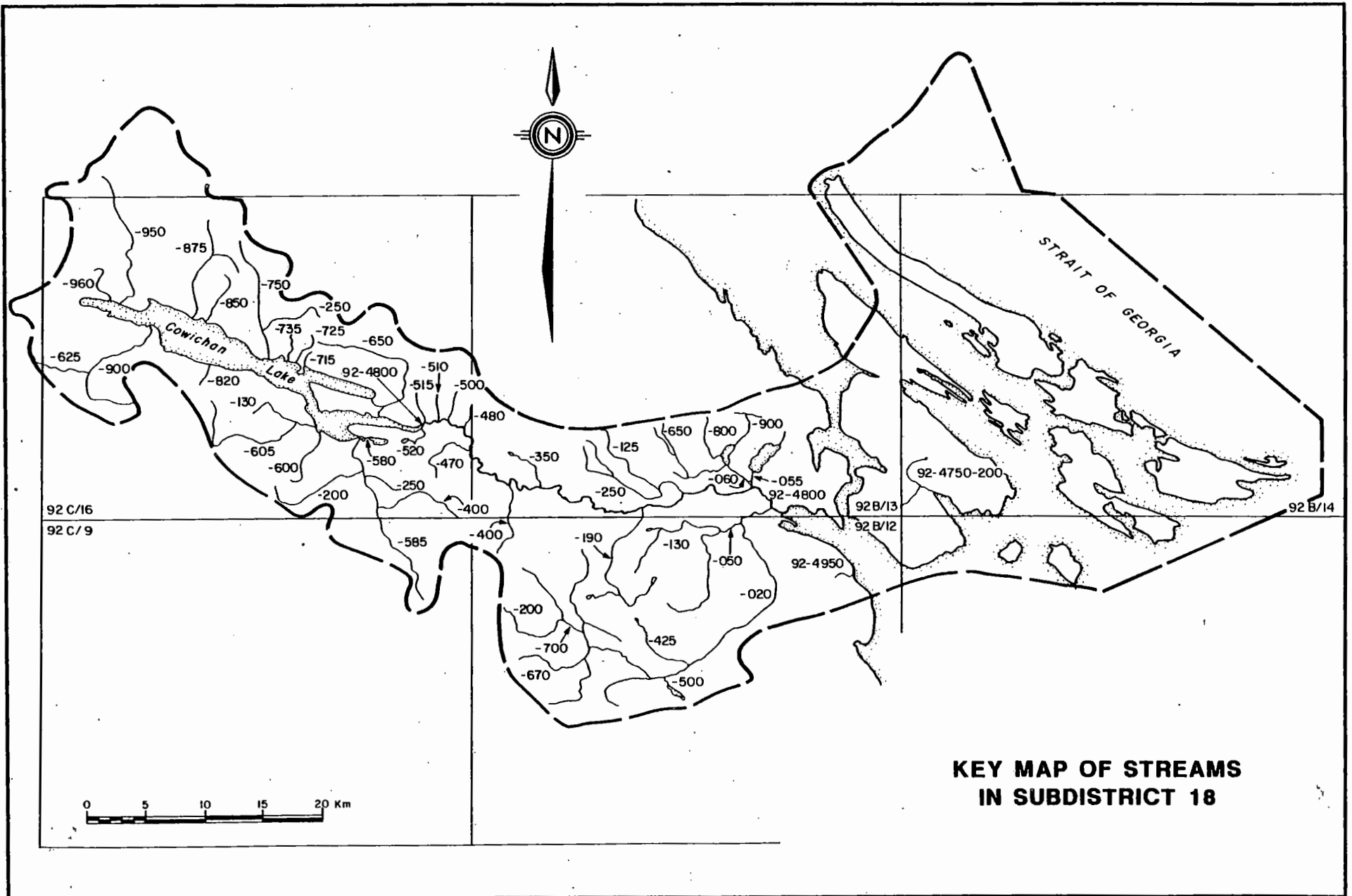
Stream Information Summaries and escapement records are arranged by watershed code. Cross indices of watershed codes and stream names are included in section 1.0 of this catalogue.

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 T. Fields and R. Tupniuk 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 18**

WATERSHED CODE LISTING OF STREAM NAMES - SUBDISTRICT # 18

WATERSHED CODE	GAZETTED NAME	LOCAL NAME
92-4750-200	FULFORD C	FULFORD HARBOUR C
92-4800	COWICHAN R	
92-4800-020	KOKSILAH R	
92-4800-020-050	KELVIN C	
92-4800-020-050-130	GLENORA C	
92-4800-020-425	WILD DEER C	
92-4800-020-500	GRANT LAKE OUTFLOW C	
92-4800-020-670	WEST KOKSILAH R	
92-4800-020-700	FELLOWS C	
92-4800-020-700-200	MCPHERSON C	
92-4800-055	QUAMICHAN C	
92-4800-060	SOMENOS C	
92-4800-060-650	BINGS C	
92-4800-060-800	AVERILL C	
92-4800-060-900	RICHARDS C	
92-4800-070	UNNAMED C	ROTARY PARK C
92-4800-125	INWOOD C	
92-4800-125-250	CURRIE C	
92-4800-190	HOLT C	
92-4800-350	UNNAMED C	MAYO LAKE C
92-4800-400	BEAR C	
92-4800-470	FAIRSERVICE C	
92-4800-480	JOSIAH C	
92-4800-500	STANLEY C	
92-4800-510	BEADNELL C	
92-4800-515	HATCHERY C	OLIVER C
92-4800-520	BEAVER C	
92-4800-580	MESACHIE C	
92-4800-585	ROBERTSON R	
92-4800-585-200	NINETEEN C	
92-4800-585-250	MARCH C	
92-4800-585-400	EAST ROBERTSON R	
92-4800-600	ASHBURNHAM C	
92-4800-605	SUTTON C	
92-4800-605-130	MILLAR C	
92-4800-650	MEADE C	
92-4800-715	UTILITY C	
92-4800-725	COONSKIN C	
92-4800-735	YUBOU C	
92-4800-750	COTTONWOOD C	
92-4800-750-250	WIDOW C	
92-4800-820	CROFT C	
92-4800-850	WARDROPER C	
92-4800-875	MCKAY C	
92-4800-900	NIXON C	
92-4800-900-625	UNNAMED C	RAYMOND C
92-4800-950	SHAW C	
92-4800-960	LITTLE SHAW C	
92-4950	GARNETT C	

ALPHABETICAL LISTING OF STREAM NAMES AND WATERSHED CODES - SUBDISTRICT # 18

WATERSHED CODE	GAZETTED NAME	LOCAL NAME
92-4800-600	ASHBURNHAM C	
92-4800-060-800	AVERILL C	
92-4800-510	BEADNELL C	
92-4800-400	BEAR C	
92-4800-520	BEAVER C	
92-4800-060-650	BINGS C	
92-4800-725	COONSKIN C	
92-4800-750	COTTONWOOD C	
92-4800	COWICHAN R	
92-4800-820	CROFT C	
92-4800-125-250	CURRIE C	
92-4800-585-400	EAST ROBERTSON R	
92-4800-470	FAIRSERVICE C	
92-4800-020-700	FELLOWS C	
92-4750-200	FULFORD C	FULFORD HARBOUR C
92-4950	GARNETT C	
92-4800-020-050-130	GLENORA C	
92-4800-020-500	GRANT LAKE OUTFLOW C	
92-4800-515	HATCHERY C	OLIVER C
92-4800-190	HOLT C	
92-4800-125	INWOOD C	
92-4800-480	JOSIAH C	
92-4800-020-050	KELVIN C	
92-4800-020	KOKSILAH R	
92-4800-960	LITTLE SHAW C	
92-4800-585-250	MARCH C	
92-4800-875	MCKAY C	
92-4800-020-700-200	MCPHERSON C	
92-4800-650	MEADE C	
92-4800-580	MESACHIE C	
92-4800-605-130	MILLAR C	
92-4800-585-200	NINETEEN C	
92-4800-900	NIXON C	
92-4800-055	QUAMICHAN C	
92-4800-060-900	RICHARDS C	
92-4800-585	ROBERTSON R	
92-4800-950	SHAW C	
92-4800-060	SOMENOS C	
92-4800-500	STANLEY C	
92-4800-605	SUTTON C	
92-4800-350	UNNAMED C	MAYO LAKE C
92-4800-070	UNNAMED C	ROTARY PARK C
92-4800-900-625	UNNAMED C	RAYMOND C
92-4800-715	UTILITY C	
92-4800-850	WARDROPER C	
92-4800-020-670	WEST KOKSILAH R	
92-4800-750-250	WIDOW C	
92-4800-020-425	WILD DEER C	
92-4800-735	YOUBOU C	

DISTRICT/
Subdistrict

Address

DISTRICT #1

- Kamloops
202 - 317 Seymour St., Kamloops, V2C 2E9
Salmon Arm (29K) Box 1160, Salmon Arm, V0E 2T0
Prince George (29I) 2392 Ospika Blvd., Prince George, V2N 3N5
Clearwater (29J) Box 610, Clearwater, V0E 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

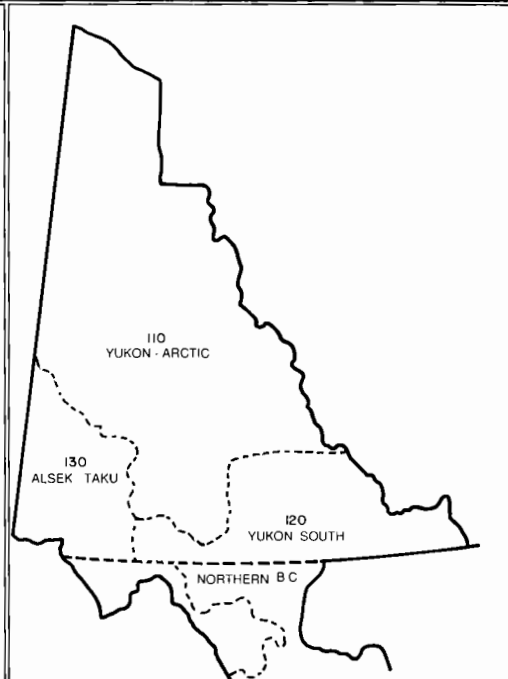
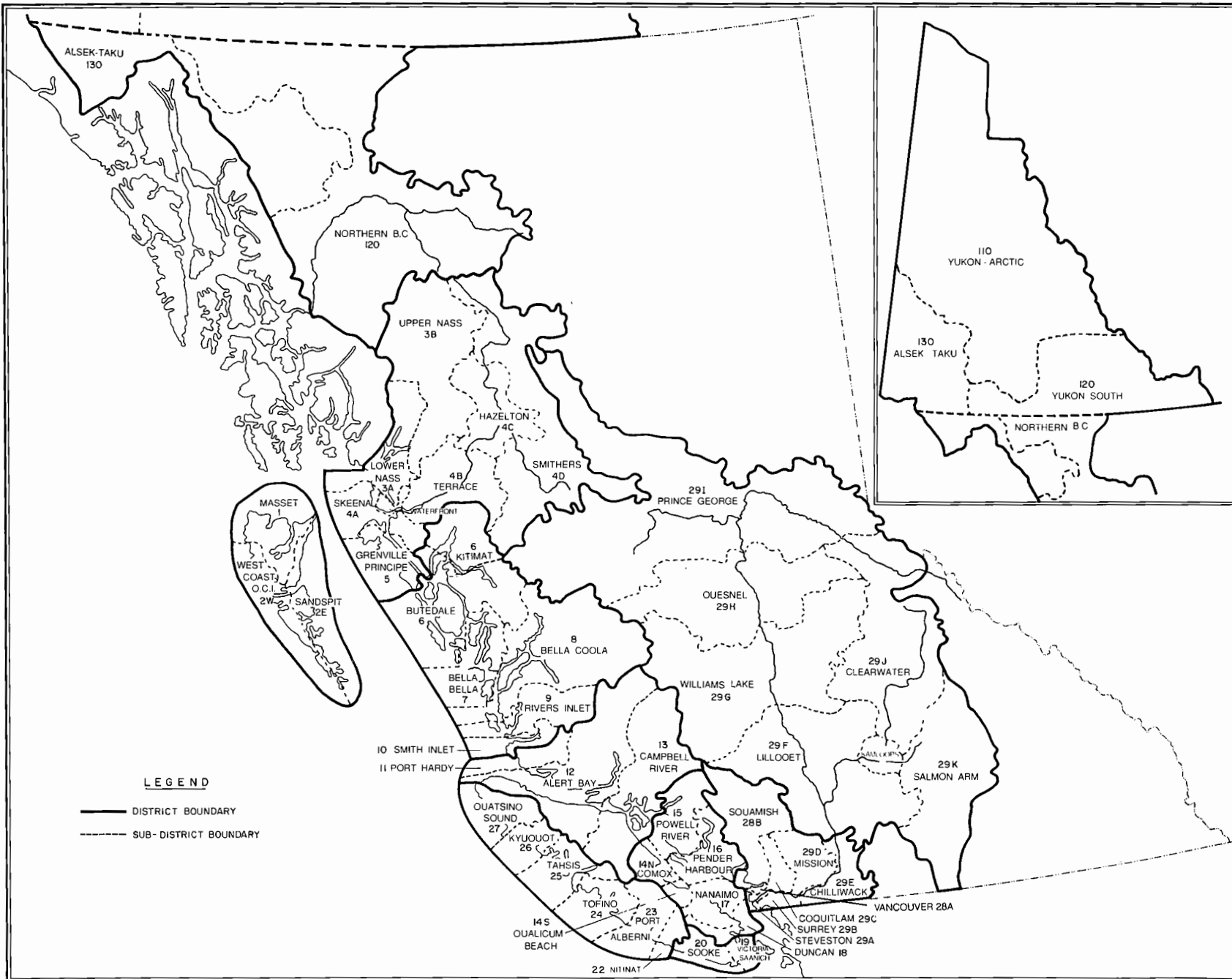
- Prince Rupert
109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8
Waterfront 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8
Lower Skeena (4A) 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8
Grenville Princeps(5) 109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8
Lower Nass (3A) 109 - 417 2nd Ave. West, Prince 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 - Lilloet
 - 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

LEGEND

———— DISTRICT BOUNDARY

- - - - - SUB-DISTRICT BOUNDARY

DFO PACIFIC REGION SUBDISTRICTS AND DISTRICTS

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
106-5th Ave. S.,
Cranbrook, B.C.
V1C 2G2

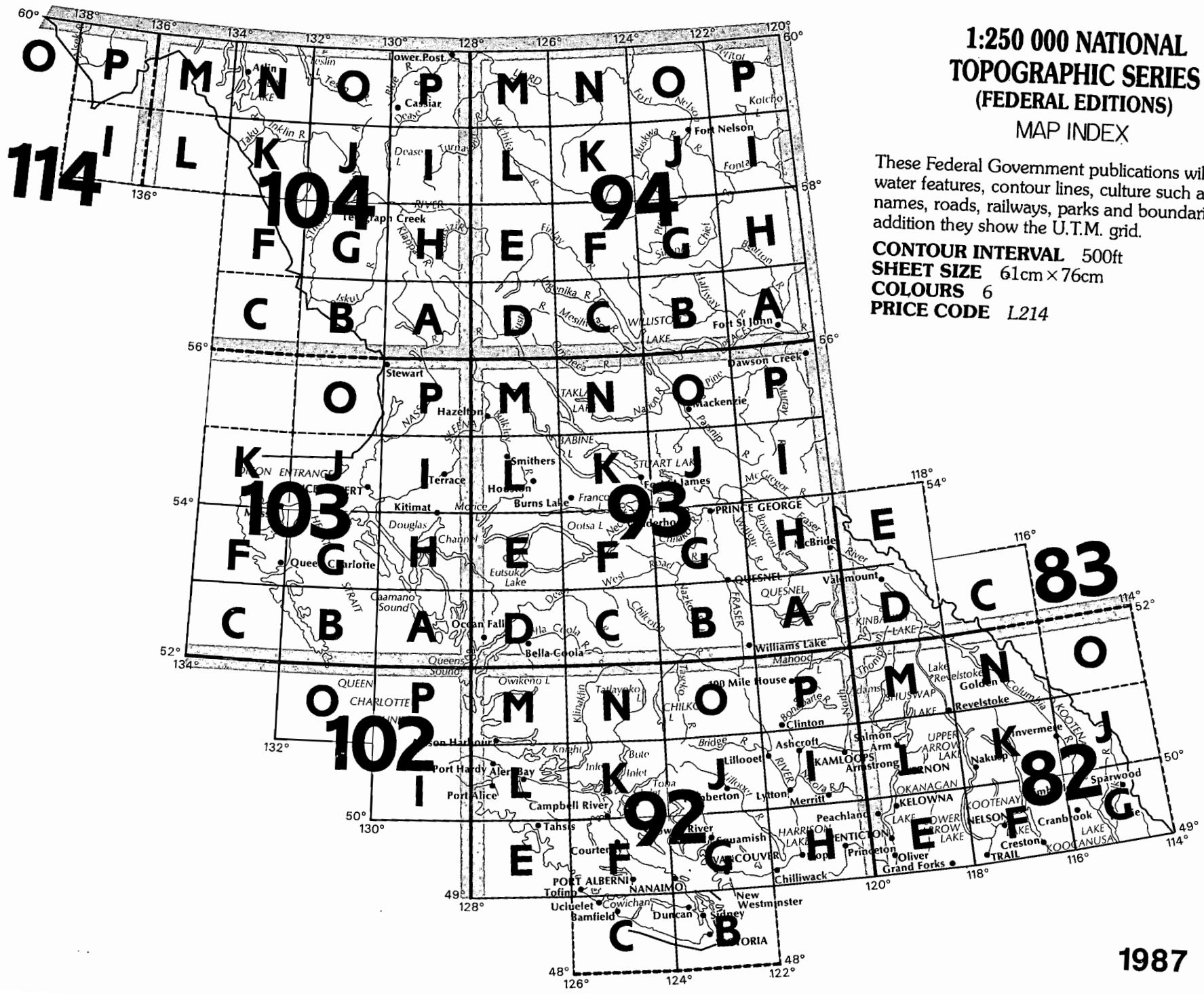
Region 5: NORTHERN

Regional Headquarters: Prince George
1011-4th 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
10142-101st Ave.,
Fort St. John, B.C.
V1J 2B3





**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

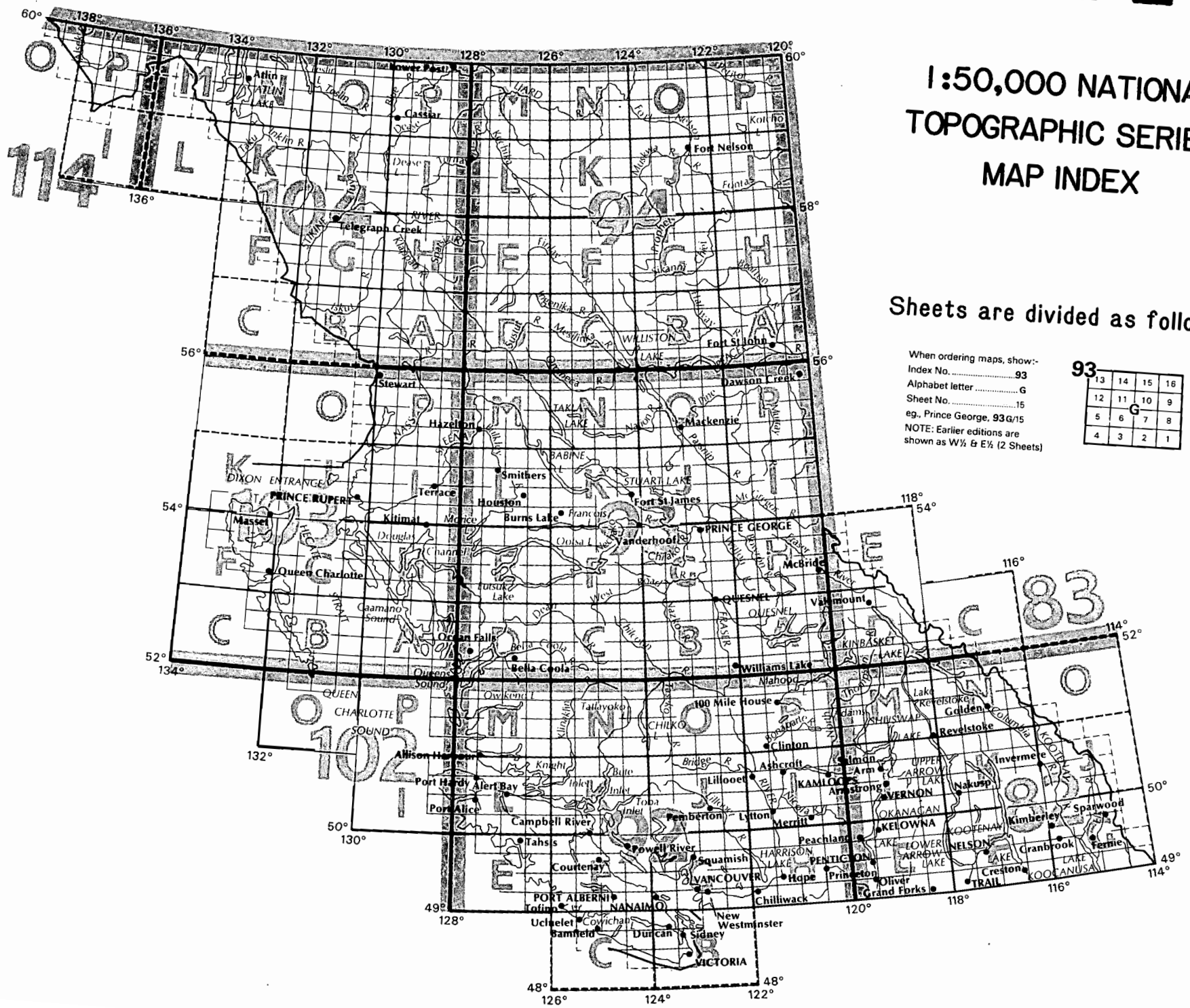
1:50,000 NATIONAL TOPOGRAPHIC SERIES MAP INDEX

Sheets are divided as follows:

When ordering maps, show:-
 Index No. 93
 Alphabet letter G
 Sheet No. 15
 eg. Prince George. 93G/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

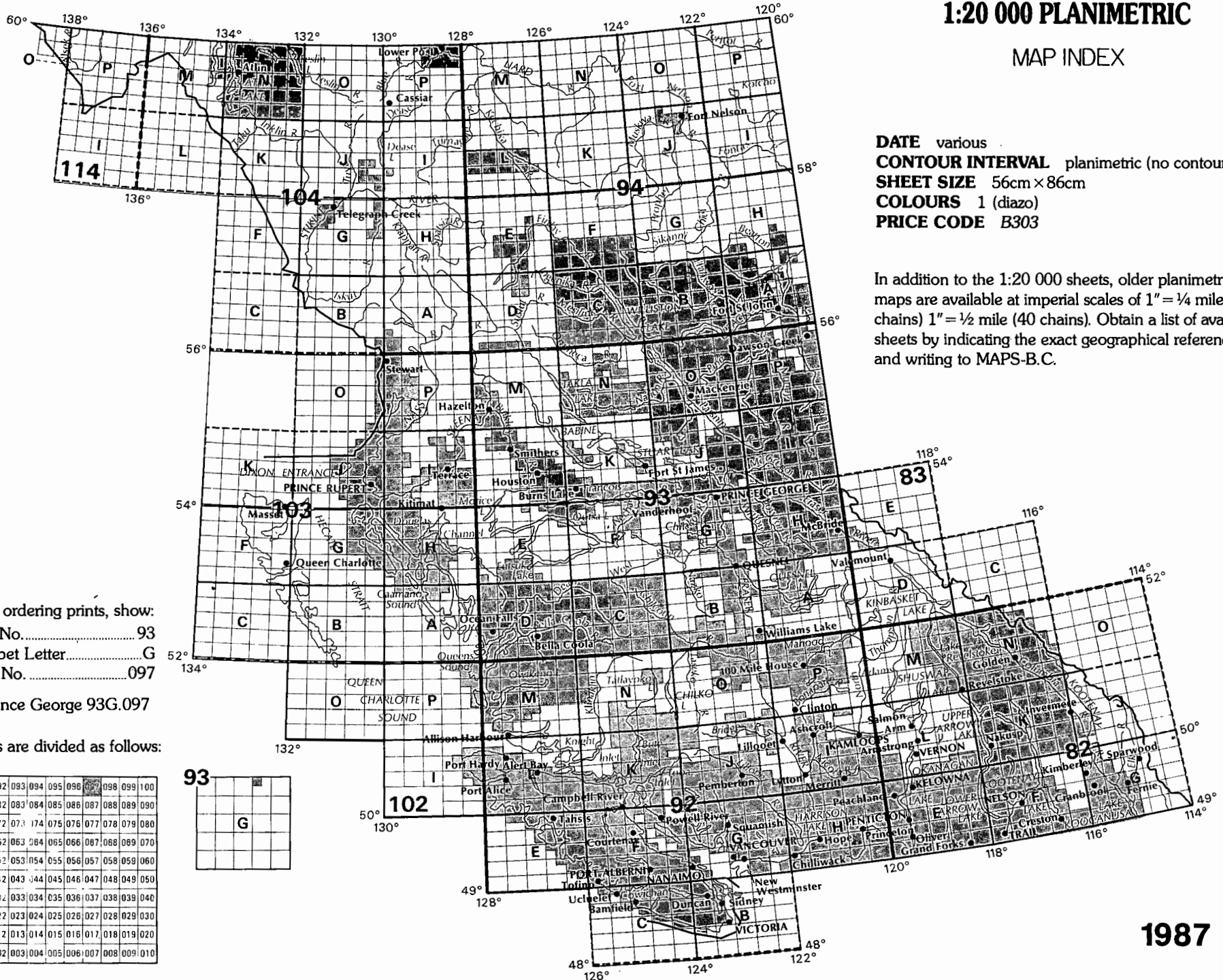


1:20 000 PLANIMETRIC

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

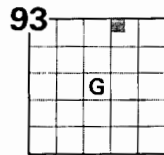
Alphabet Letter G

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 MOUTAIN 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

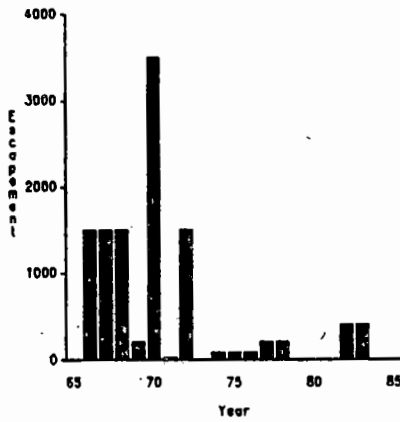
YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
53	0	1,500	0	750	400	400
54	0	3,500	1,500	1,500	400	400
55	0	3,500	0	400	200	750
56	0	7,500	1,500	200	25	750
57	0	7,500	N/O	750	200	750
58	0	15,000	750	1,500	200	750
59	0	7,500	N/O	750	200	750
60	75	15,000	400	1,500	1,500	400
61	75	35,000	N/O	400	400	750
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

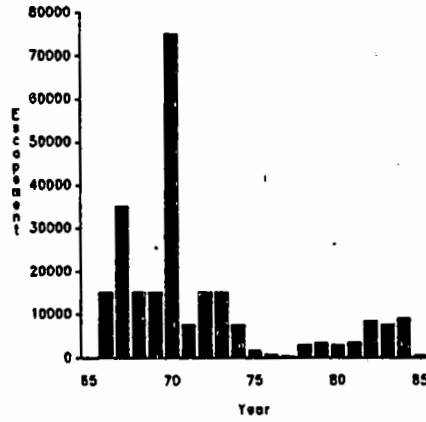
UNK = STREAM NOT INSPECTED, OR NOT INSPECTED FOR SPECIES INDICATED, OR SPECIES PRESENT
BUT NO ESTIMATE MADE.

EXAMPLE RIVER (93-1000)
Escapement & Run Timing

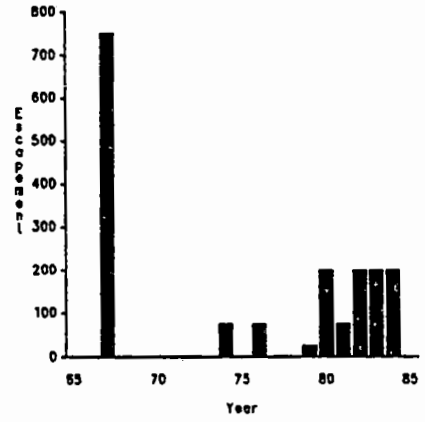
Sockeye (SK)



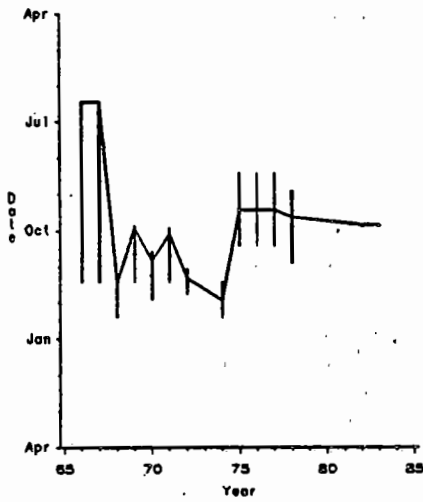
Coho (CO)



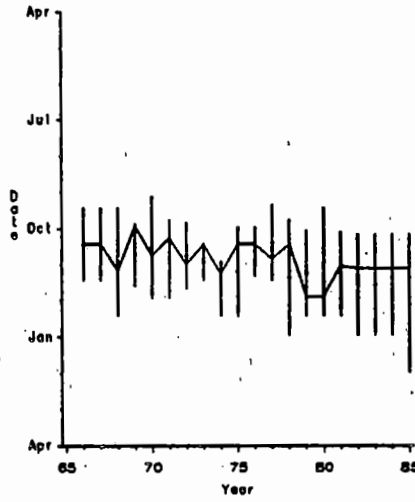
Pink (PK)



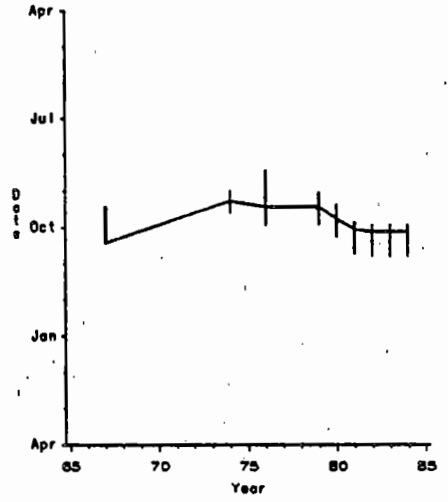
Sockeye



Coho



Pink



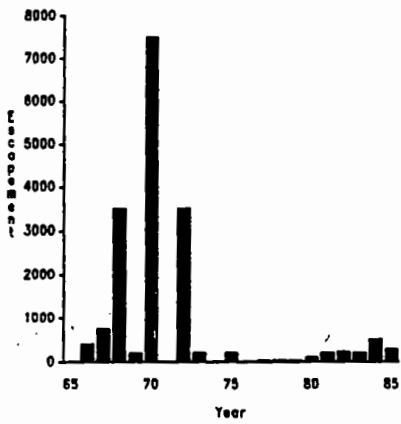
Sockeye				
Year	Escapement	Start	Peak	End
1966	1,500	15 JUN	15 JUN	15 NOV
1967	1,500	15 JUN	15 JUN	15 NOV
1968	1,500	12 NOV	16 NOV	15 DEC
1969	200	28 SEP	30 SEP	15 NOV
1970	3,500	20 OCT	28 OCT	30 NOV
1971	25	30 SEP	05 OCT	15 NOV
1972	1,500	04 NOV	12 NOV	25 NOV
1973	0	-	-	-
1974	75	15 NOV	01 DEC	15 DEC
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	30 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	33,000	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	22 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	19 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	9,000	07 OCT	05 NOV	31 DEC
1985	500	07 OCT	05 NOV	31 JAN

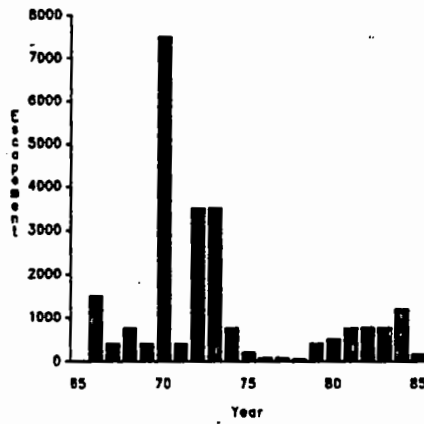
Pink				
Year	Escapement	Start	Peak	End
1966	0	-	-	-
1967	750	15 SEP	15 OCT	15 OCT
1968	0	-	-	-
1969	0	-	-	-
1970	0	-	-	-
1971	0	-	-	-
1972	0	-	-	-
1973	0	-	-	-
1974	75	01 SEP	10 SEP	20 SEP
1975	0	-	-	-
1976	75	15 AUG	15 SEP	30 SEP
1977	0	-	-	-
1978	0	-	-	-
1979	25	03 SEP	15 SEP	30 SEP
1980	200	13 SEP	25 SEP	10 OCT
1981	75	28 SEP	04 OCT	25 OCT
1982	200	30 SEP	06 OCT	27 OCT
1983	200	30 SEP	06 OCT	27 OCT
1984	200	30 SEP	06 OCT	27 OCT
1985	0	-	-	-

EXAMPLE RIVER (93-1000)
Escapement & Run Timing

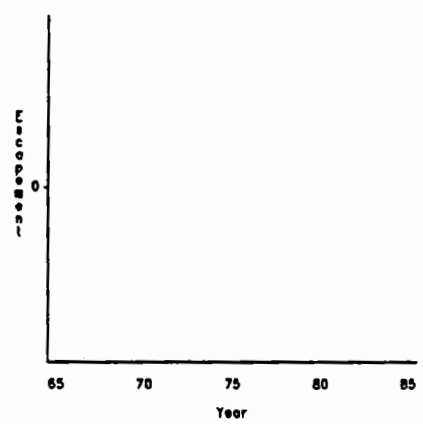
Chum (CM)



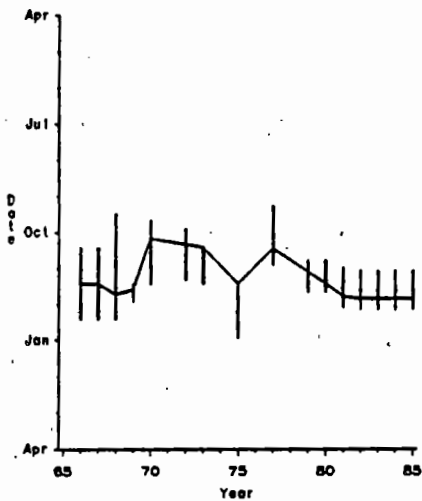
Chinook (CH)



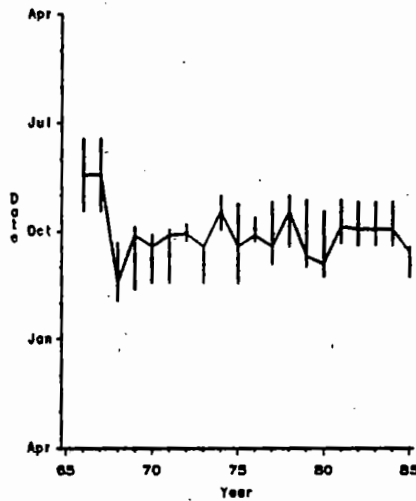
Steelhead (ST)



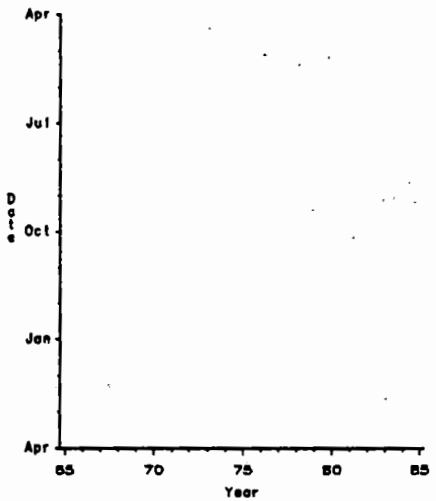
Chum



Chinook



Steelhead

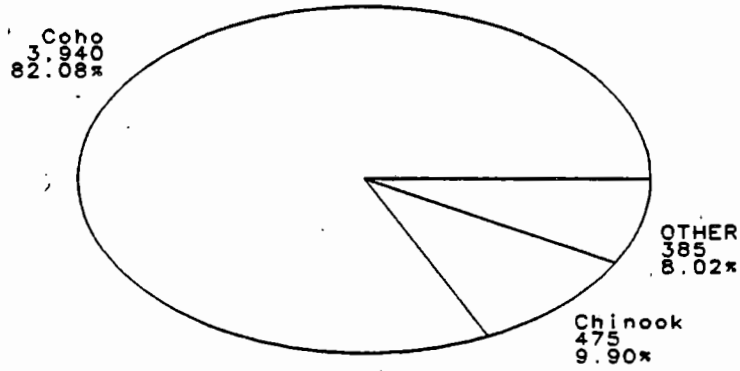


Chum				
Year	Escapement	Start	Peak	End
1966	400	15OCT	15NOV	15DEC
1967	750	15OCT	15NOV	15DEC
1968	3,500	10SEP	24NOV	15DEC
1969	200	15NOV	20NOV	30NOV
1970	7,500	22SEP	07OCT	15NOV
1971	0	-	-	-
1972	3,500	29SEP	-	12NOV
1973	200	15OCT	15OCT	15NOV
1974	0	-	-	-
1975	200	17NOV	15NOV	31DEC
1976	0	-	-	-
1977	25	10SEP	16OCT	30OCT
1978	25	-	-	-
1979	25	29OCT	05NOV	22NOV
1980	100	26OCT	15NOV	22NOV
1981	200	02NOV	26NOV	05DEC
1982	225	04NOV	26NOV	07DEC
1983	200	04NOV	26NOV	07DEC
1984	500	04NOV	26NOV	07DEC
1985	300	04NOV	26NOV	07DEC

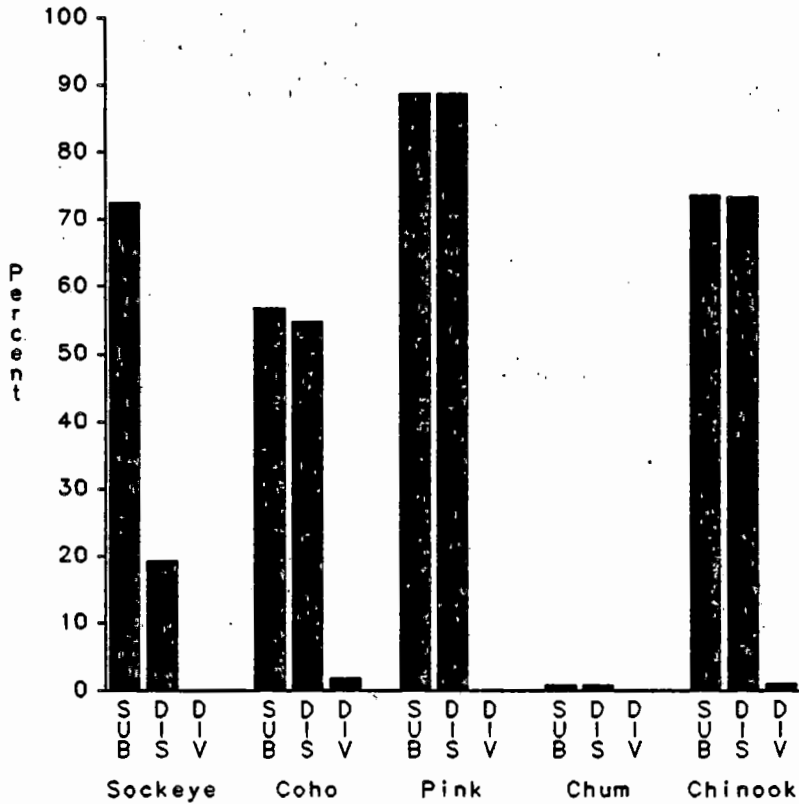
Chinook				
Year	Escapement	Start	Peak	End
1966	1,500	13JUL	15AUG	15SEP
1967	400	15JUL	15AUG	15SEP
1968	750	12OCT	15NOV	30NOV
1969	400	20SEP	05OCT	21NOV
1970	7,500	05OCT	15OCT	15NOV
1971	400	30SEP	05OCT	15NOV
1972	3,500	28SEP	04OCT	10OCT
1973	3,500	15OCT	15OCT	15NOV
1974	750	01SEP	15SEP	01OCT
1975	200	08SEP	15OCT	15NOV
1976	75	20SEP	05OCT	10OCT
1977	75	07SEP	15OCT	30OCT
1978	50	01SEP	15SEP	15OCT
1979	400	05SEP	23OCT	01NOV
1980	500	15SEP	30OCT	10NOV
1981	750	05SEP	20SEP	12OCT
1982	775	07SEP	30SEP	14OCT
1983	775	07SEP	30SEP	14OCT
1984	1,200	07SEP	30SEP	14OCT
1985	150	15OCT	20OCT	10NOV

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	-	-	-	-

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: FULFORD CREEK	D.F.O. Division: SOUTH COAST
Local Name: FULFORD HARBOUR CREEK	District: 3 NANAIMO
Watershed Code: 92-4750-200	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-10
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 1

Tributaries	Code	Topographic (1:50k) Map: 92B/14
		B.C.G.S. (1:20k) Map: 073
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 46' 18'' 123 DG. 27' 35''
		Mainstem Length: 1.0 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: FLOWS S.E. INTO HEAD OF FULFORD HARBOUR - SALTSRING ISLAND DIST.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	
0.0- 3.0 3.0- 3.5	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	30.0	3.5	AF ALL SPECIES	FIVE FALLS FROM 2 TO 5M HIGH. (REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: RESERVOIR (IRRIGATION) AT 3500M. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	1.0 TO 2.0MI (REF. 18-1)
CM CHUM SALMON	IN THE INTERTIDAL ZONE. (REF. 18-1)
CT CUTTHROAT TROUT	THROUGHOUT AND IN SOUL, JONES ROAD AND REID CREEKS. (REF. 18-76)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	131	1976 - 1985	28A-18	200	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

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN).ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16,1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
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: FULFORD CREEK

WATERSHED-CODE: 92-4750-200

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	0	200	0	25	0	0
1969	UNK	UNK	UNK	UNK	UNK	UNK
1970	0	200	0	UNK	0	UNK
1971	UNK	UNK	UNK	UNK	UNK	UNK
1972	0	200	0	100	0	UNK
1973	UNK	UNK	UNK	UNK	UNK	UNK
1974	UNK	UNK	UNK	UNK	UNK	UNK
1975	UNK	UNK	UNK	UNK	UNK	UNK
1976	0	50	0	0	0	0
1977	0	200	0	0	0	0
1978	0	200	0	0	0	0
1979	0	200	0	0	0	0
1980	0	200	0	N/O	0	0
1981	0	100	0	0	0	0
1982	0	100	0	0	0	0
1983	0	50	0	0	0	0
1984	0	UNK	0	0	0	0
1985	N/O	75	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
BUT NO ESTIMATE MADE

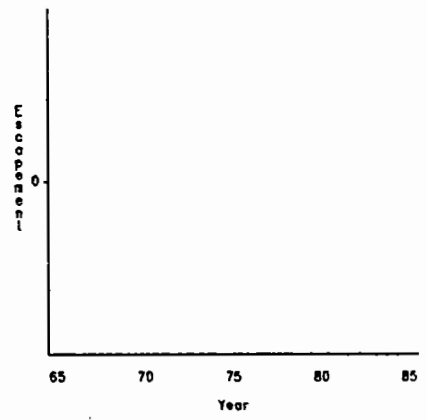
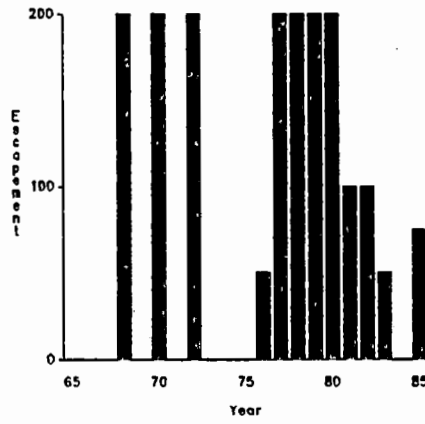
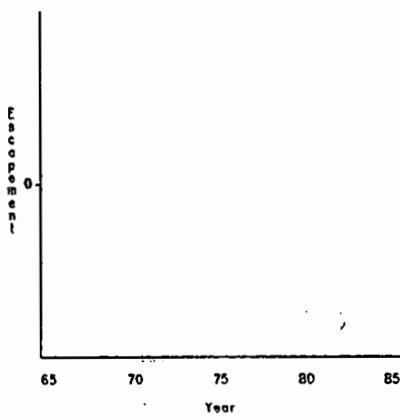
FULFORD CREEK (92-4750-200)

Escapement & Run Timing

Sockeye (SK)

Coho (CO)

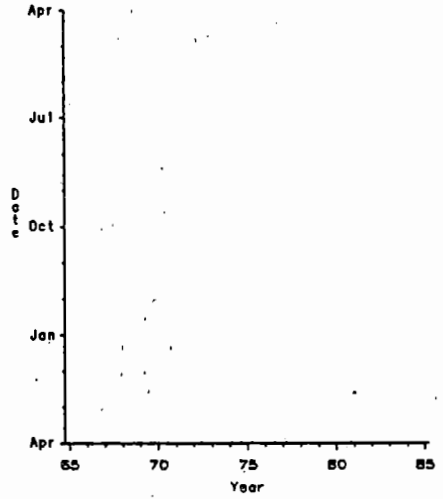
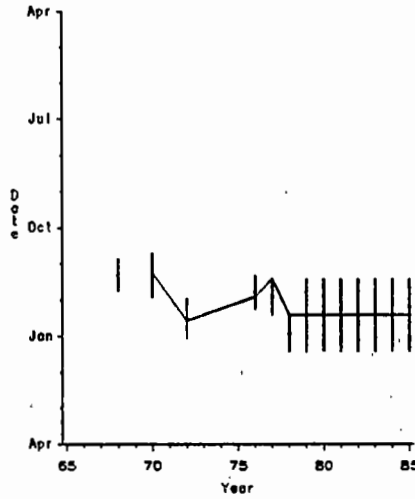
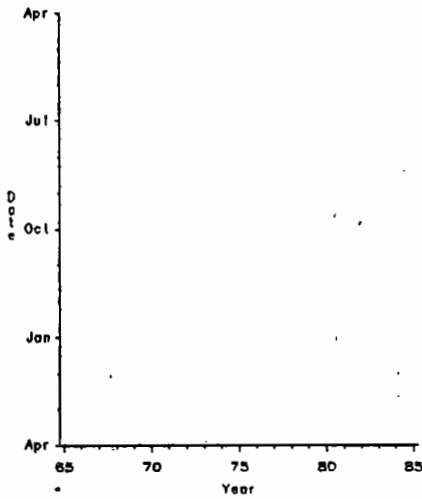
Pink (PK)



Sockeye

Coho

Pink



Sockeye				
Year	Escapement	Start	Peak	End
1965	0	-	-	-
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	0	-	-	-
1967	0	-	-	-
1968	200	28OCT	-	25NOV
1969	0	-	-	-
1970	200	24OCT	18NOV	30NOV
1971	0	-	-	-
1972	200	01DEC	20DEC	04JAN
1973	0	-	-	-
1974	0	-	-	-
1975	0	-	-	-
1976	50	12NOV	30NOV	10DEC
1977	200	15NOV	15NOV	15DEC
1978	200	15DEC	15DEC	15JAN
1979	200	15NOV	15DEC	15JAN
1980	200	15NOV	15DEC	14JAN
1981	100	15NOV	15DEC	15JAN
1982	100	15NOV	15DEC	15JAN
1983	50	15NOV	15DEC	15JAN
1984	0	15NOV	15DEC	14JAN
1985	75	15NOV	15DEC	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	-	-	-

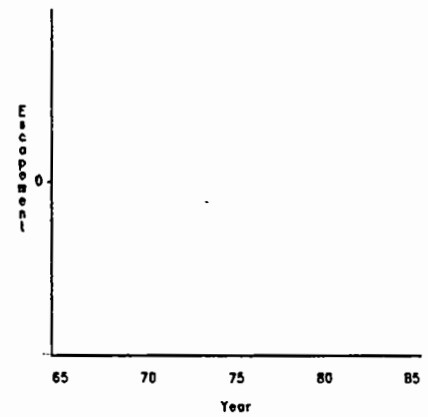
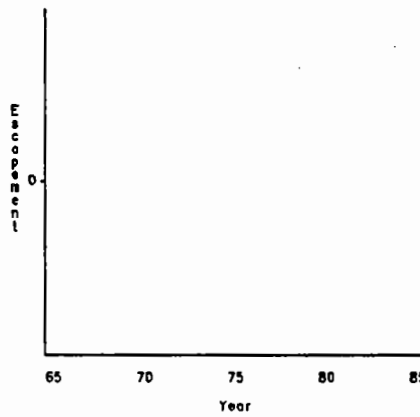
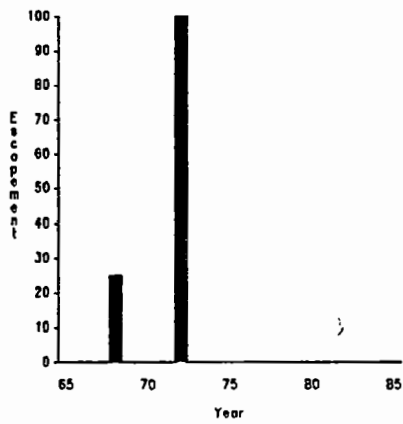
FULFORD CREEK (92-4750-200)

Escapement & Run Timing

Chum (CM)

Chinook (CH)

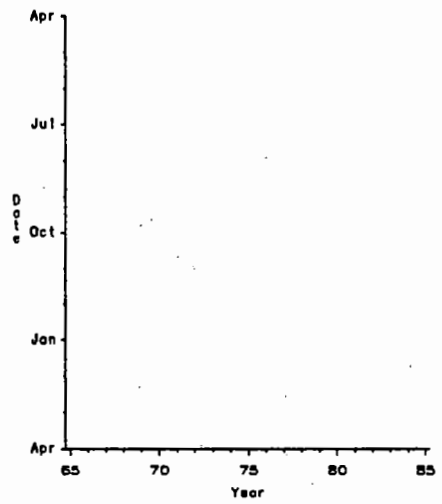
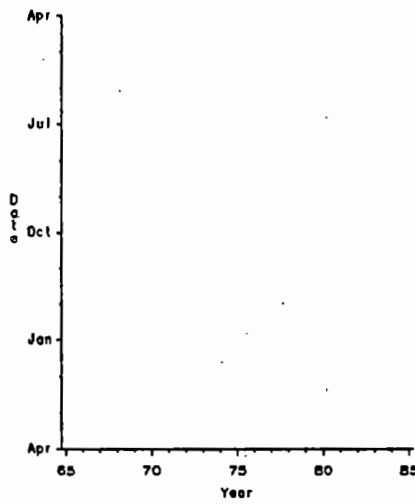
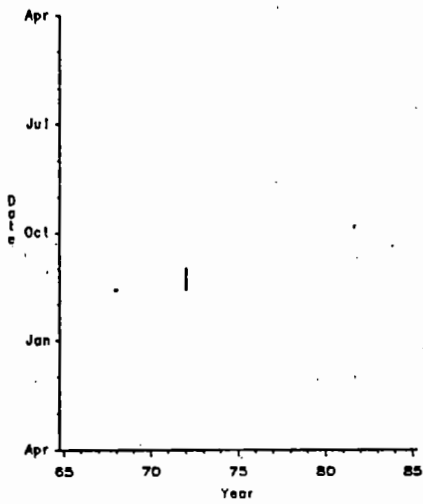
Steelhead (ST)



Chum

Chinook

Steelhead

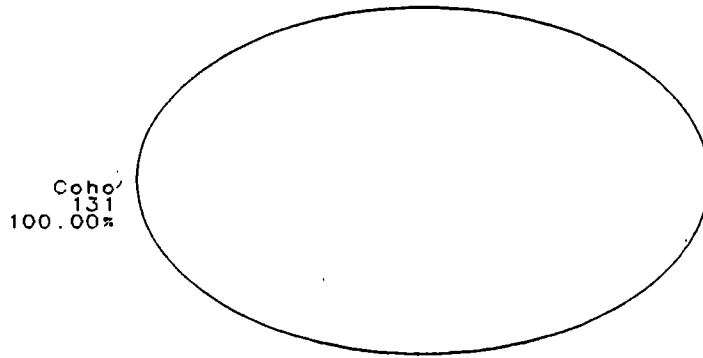


Chum				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	25	-	-	20NOV
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	100	01NOV	10NOV	20NOV
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

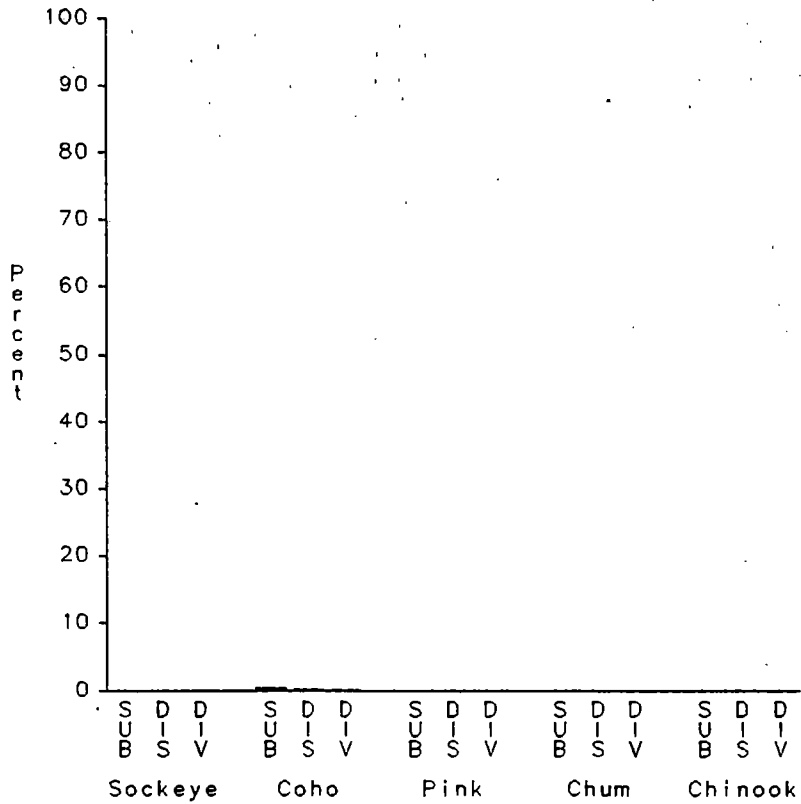
Chinook				
Year	Escapement	Start	Peak	End
1966	-	-	-	-
1967	-	-	-	-
1968	0	-	-	-
1969	-	-	-	-
1970	0	-	-	-
1971	-	-	-	-
1972	0	-	-	-
1973	-	-	-	-
1974	-	-	-	-
1975	-	-	-	-
1976	0	-	-	-
1977	0	-	-	-
1978	0	-	-	-
1979	0	-	-	-
1980	0	-	-	-
1981	0	-	-	-
1982	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-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

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	-	-	-	-

FULFORD CREEK (92-4750-200)
 10-yr Mean Escapement
 (1976-1985)



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



A. DESCRIPTION

Stream Name: COWICHAN RIVER	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
KOKSILAH RIVER	020	B.C.G.S. (1:20k) Map: 072
QUAMICHAN CREEK	055	U.T.M. Mouth: 532000
SOMENOS CREEK	060	Lat./Long. Mouth: 48 06. 45' 15" 123 06. 38' 7"
HOLT CREEK	190	Mainstem Length: 47.0 km Ref. No.: 18-1
UNNAMED CREEK	350	Watershed Area: Ref. No.:
SKULTZ CREEK	390	Location: FLOWS EAST INTO COWICHAN BAY - COWICHAN DIST.
BEAR CREEK	400	
FAIRSERVICE CREEK	470	
STANLEY CREEK	500	
BEADNELL CREEK	510	
HATCHERY CREEK	515	
BEAVER CREEK	520	
MESACHIE CREEK	580	
ROBERTSON RIVER	585	
ASHBURNHAM CREEK	600	
SUTTON CREEK	605	
MEADE CREEK	650	
UTILITY CREEK	715	
COONSKIN CREEK	725	
YUBOU CREEK	735	
COTTONWOOD CREEK	750	
CROFT CREEK	820	
WARDROPER CREEK	850	
MCKAY CREEK	875	
NIXON CREEK	900	
SHAW CREEK	950	
LITTLE SHAW CREEK	960	

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT LOW; AVE. 0.3%. (REF. 18-2)

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS				EROSION OF FALLS MAKES IT MORE EASILY ACCESSIBLE & MOST CHINOOK & COHO DO NOT USE FISHWAY. (REF. 18-10)
F FALLS		29.0		FISHWAY ALLEVIATES DIFFICULT ASCENT AREA. (REF. 18-1)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge: Y
W.S.C. Station No. 1: 08HA011	No. 2: 08HA009 No. 3: No. 4:
Comments: 08HA011 LOCATED AT LAKE COWICHAN. 08HA009 LOCATED NEAR DUNCAN. (REF. 18-10)	
ALL SIDE CHANNELS DRY DURING LOW RUNOFF PERIODS (REF. 18-3, REF. 18-5)	
WATER MANAGEMENT IMPORTANT AS FRY GET STRANDED. (REF. 18-3, REF. 18-4)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	LARGEST COHO STOCK ON VANCOUVER ISLAND. (REF. 18-11)
CO COHO SALMON	PRIEST'S POND, LOCATED ON NORTHERN FORK AT MOUTH OF COWICHAN, IS EXCELLENT COHO REARING HABITAT. (REF. 18-10)
CO COHO SALMON	SPAWNING AND REARING IN VIRTUALLY ALL ACCESSIBLE WATERS, CONCENTRATING MORE IN MAINSTEM ABOVE SKUTZ FALLS AND TRIBUTARIES OF COWICHAN LAKE. (REF. 18-7)
CM CHUM SALMON	ABOVE SKUTZ FALLS: 1.3% OF TOTAL ESCAPEMENT.; SKUTZ FALLS TO BIBLE CAMP = 10.7%; BIBLE CAMP TO COWICHAN ESTATE (6.4KM) = 13.7% ; COWICHAN ESTATE TO WHITE BRIDGE(5.6KM) = 3.7% ; WHITE BRIDGE TO ESTUARY (9.6KM) = 70.5%. (REF. 18-8)
CM CHUM SALMON	LATE CHUM - RUN SPAWN IN SIDE CHANNELS AT MARIE CANYON, BIBLE CAMP (SEE FORM), BEFORE OR AT CONFLUENCE OF HOLT CREEK. (REF. 18-9)
CM CHUM SALMON	MOST IMPORTANT MAINSTEM CM SPAWNING AREA IS FROM SILVER BRIDGE (ISLAND HWY) TO NORTH & SOUTH FORK CONFLUENCE. THIS AREA CONTAINS THE GREATEST AMOUNT OF SUITABLE SPAWNING. (REF. 18-8)
CH CHINOOK SALMON	SKUTZ FALLS TO COWICHAN LAKE: 50% OF THIS AREA CONTAINS PRIME SPAWNING GROUNDS FOR CHINOOK; 33% OF THIS AREA CONTAINS HOLDING POOLS. (REF. 18-6)
CH CHINOOK SALMON	THERE IS EVIDENCE OF A SMALL SPRING RUN OF CHINOOK WHICH MATURE IN DEEP POOLS OF THE UPPER RIVER AS WELL AS IN COWICHAN LAKE UNTIL THE FALL. THEY HAVE SPAWNED IN SHAW C. FALL RUN CH SPAWN THROUGHOUT THE MAINSTEM SIDE CHANNELS OR SLOUGHS. (REF. 18-7)
ST STEELHEAD	LARGE WINTER RUN, AND A FEW SUMMERS. SPAWNING AND REARING THROUGHOUT ENTIRE MAINSTEM. (REF. 18-6)
KO KOKANEE	SMALL KOKANEE ALSO FOUND IN COWICHAN LAKE. (REF. 18-11)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	28270	1976 - 1985	28A-18	75000	28A-18		
CM CHUM SALMON	81550	1976 - 1985	28A-18	150000	28A-18		
CH CHINOOK SALMON	5650	1976 - 1985	28A-18	9000	28A-18		
Comments: CHINOOK ESCAPEMENT NUMBERS ARE FOR ADULTS ONLY. (REF. 18-10)							
NOTE THAT ESCAPEMENTS ARE FOR THE ENTIRE COWICHAN SYSTEM, INCLUDING ALL TRIBUTARIES. (REF. 18-82)							
VERY LARGE NUMBERS OF SPRING SALMON JACKS (1974). (N.B.- ALL YEARS: REF. 10). (REF. 18-1)							

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 X
CM CHUM SALMON	Migration Spawning Incubation Rearing	X										X X	X X
CH CHINOOK SALMON	Migration Spawning Incubation Rearing							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	CD COHO SALMON	0.0	300K. (REF. 18-75)	1985/
HY HATCHERY	CM CHUM SALMON	0.0	400K. (REF. 18-75)	1985/
HY HATCHERY	CH CHINOOK SALMON	0.0	500K. EGG TAKE BEGUN OCT/85; WILL TAKE MORE EGGS IF THEY CAN OBTAIN MORE BROODSTOCK. PLAN TO RELEASE AS 5 GRAM SMOLTS. (REF. 18-75)	1985/
CO COLONIZATION	CD COHO SALMON	0.0	COWICHAN WATERSHED FRY SALVAGE AND COHO COLONIZATION. (REF. 18-85, REF. 18-86)	1986/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
NO INFORMATION AVAILABLE	

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

DOWNTOWN DUNCAN SIDE CHANNELS AND SLOUGHS ARE IMPORTANT REARING AND SPAWNING GROUNDS. OVERSPAWNING IN THESE AREAS IS VERY APPARENT. SPAWNING GROUNDS SHOULD BE INCREASED BY IMPROVEMENTS TO SIDE CHANNELS. (SEE ALSO SUMMARY FORMS FOR TRIBUTARIES.) (REF. 18-9)
POTENTIAL FOR SIDE CHANNEL DEVELOPMENT FOR COHO REARING. (REF. 18-10)
REARING POTENTIAL FOR JUVENILE CHINOOK APPEARS TO BE GREATEST IN THE FLOOD PLAIN AREA, WHERE LOW GRADIENTS AND NUMEROUS RIVER BIFURCATIONS AND MEANDERINGS CREATE IDEAL HABITAT. BARRIER HABITAT HAS BEEN IDENTIFIED BY S.H.I.P. AND WAS GROUND TRUTHED. (B.D. TUTTY) (REF. 18-11, REF. 18-84)
UTILIZATION IS HIGHEST IN THE FLOOD PLAIN AREA. (REF. 18-7)
DETAILED SITE SPECIFIC HABITAT MEASUREMENTS, DIAGRAMS, CROSS-SECTIONS AND FLOW MEASUREMENTS AVAILABLE IN THIS REPORT. THIS REPORT IS A HABITAT EVALUATION OF THE COWICHAN-KOKSILAH WATERSHED AND INCLUDES HABITAT DETAILS OF MANY OF THEIR TRIBUTARIES. (REF. 18-85)

J. FISHERY OFFICER NARRATIVE

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

K. SIS COMPLETED BY

Completed by: GITA KAPAH	Date: 1986/06/07
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: GITA KAPAH	Date: 1988/07/04

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN), ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 2

AUTHOR: HURN, D.R. 1964.
DESCRIPTION: SUMMARY OF A REPORT PRESENTED TO THE ANNUAL FISHERIES MEETING, MANNING PARK. JAN. 1964. COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS:

REFERENCE NO: 18- 3

AUTHOR: COWICHAN VALLEY WATERSHED PROJECT. 1977.
DESCRIPTION: DEPT. OF FISHERIES & OCEANS, DUNCAN OFFICE. FILE #5830-13-1-3-C.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T., T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 6

AUTHOR: KENNEDY, R. SEPT. 1982.
DESCRIPTION: ADDITIONAL UNPUBLISHED MAPS IN: CHINOOK SPAWNING AND REARING DISTRIBUTION, COWICHAN RIVER. (SUPPLIED BY B.D.TUTTY).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CH CHINOOK PY PHYSICAL HABITAT R REARING
S SPAWNING

REFERENCE NO: 18- 7

AUTHOR: ANONYMOUS. COWICHAN RIVER FILES 1 & 2.
DESCRIPTION: TEN PAGE REPORT DISCUSSING DISTRIBUTION OF CHINOOK, COHO AND CHUM IN THE COWICHAN RIVER MAINSTEM AS WELL AS THE TIDAL SPORT FISHERIES. THERE IS A MEMO PROCEEDING THE REPORT TO J.C. LYONS FROM BOB HOOTEN REQUESTING A COPY OF THIS REPORT. TITLE UNKNOWN.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: CH CHINOOK CM CHUM CO COHO
S SPAWNING

REFERENCE NO: 18- 8

AUTHOR: BROWN, R.F. 1977.
DESCRIPTION: COWICHAN RIVER ADULT CHUM SPAWNING AND EGG TAKE SURVEY FOR COWICHAN NATIVE INDIAN HATCHERY PROJECT. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: CM CHUM FS FISH SAMPLING

REFERENCE NO: 18- 9

AUTHOR: BROWN, R.F. 1977.
DESCRIPTION: COWICHAN RIVER ADULT CHUM SPAWNING SURVEY AND EGG - TAKING OPERATION. COWICHAN VALLEY WATERSHED PROJECT, D.F.O. DUNCAN.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CM CHUM FS FISH SAMPLING S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 11

AUTHOR: BELL, L.M. & R.J. KALLMAN. 1975.
DESCRIPTION: THE COWICHAN - CHEMAINUS RIVER ESTUARIES, STATUS OF ENVIRONMENTAL KNOWLEDGE TO 1975. (OBTAINED FROM J. PATTERSON'S OFFICE).
LOCATION: B DFO - HABITAT MANAGEMENT DIVISION - VANCOUVER
KEYWORDS: HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 75

AUTHOR: UNKNOWN NOV.30, 1985.
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT. (G. LOGAN'S OFFICE)
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT PY PHYSICAL HABITAT

REFERENCE NO: 18- 82

AUTHOR: SERBIC, G.
DESCRIPTION: COMPUTER PRINTOUT OF MEAN AND MAXIMUM ESCAPEMENTS FOR AREAS 17,18,19 & 20.
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO
KEYWORDS: AF ALL SPECIES S SPAWNING

REFERENCE NO: 18- 84

AUTHOR: CHAMBERLIN, T.W., E.A. HARDING, B.D. TUTTY
DESCRIPTION: SALMONID HABITAT INFORMATION PROJECT (S.H.I.P.): A STRATEGIC LEVEL INVENTORY APPROACH. CAN. MANUSCRIPT REPORT OF FISHERIES & AQUATIC SCIENCES NO. 1821. APRIL 1984.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES AO ALL SALMON PY PHYSICAL HABITAT
S SPAWNING

REFERENCE NO: 18- 85

AUTHOR: BURNS, T. AND B.D. TUTTY
DESCRIPTION: COHO COLONIZATION POTENTIAL OF THE COWICHAN-KOKSILAH WATERSHED: A HABITAT EVALUATION. CAN. MANUSCRIPT REPORT NO. 1865. MARCH 1986.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CO COHO EN ENHANCEMENT FS FISH SAMPLING

REFERENCE NO: 18- 86

AUTHOR: BURNS, T.; R.A. BAMS; T. MORRIS; T. FIELDS; B.O. TUTTY
DESCRIPTION: COWICHAN WATERSHED FRY SALVAGE AND COHO COLONIZATION OPERATIONS (1986): A REVIEW AND PRELIMINARY RESULTS. CAN. MANUSCRIPT REPORT NO. 1949. MAY 1987. V + 68 P.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CO COHO EN ENHANCEMENT FS FISH SAMPLING
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: COWICHAN RIVER

WATERSHED-CODE: 92-4800

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	38,000	0	30,000	5,500	6,500
1954	0	35,000	0	75,000	15,000	7,500
1955	0	75,000	0	35,000	7,500	3,500
1956	0	35,000	0	35,000	3,500	1,500
1957	0	35,000	0	35,000	15,000	3,500
1958	0	75,000	0	75,000	7,500	1,500
1959	0	35,000	0	75,000	3,500	3,500
1960	0	35,000	0	15,000	1,500	750
1961	0	75,000	0	35,000	3,500	400
1962	0	7,500	0	75,000	3,500	750
1963	0	75,000	0	35,000	3,500	1,500
1964	0	75,000	0	35,000	7,500	3,500
1965	0	15,000	0	35,000	7,500	1,500
1966	0	35,000	0	75,000	15,000	3,500
1967	0	35,000	0	75,000	3,500	3,500
1968	0	15,000	0	100,000	7,500	1,500
1969	0	35,000	0	75,000	7,500	0
1970	0	75,000	0	35,000	7,500	3,500
1971	0	75,000	0	15,000	7,500	7,500
1972	0	9,000	0	90,000	8,500	0
1973	0	30,000	0	75,000	8,000	0
1974	UNK	75,000	UNK	75,000	3,500	750
1975	N/O	40,000	N/O	50,000	6,000	UNK
1976	UNK	20,700	0	40,000	9,000	0
1977	UNK	75,000	UNK	75,000	7,500	UNK
1978	N/O	25,000	N/O	150,000	4,500	0
1979	0	21,500	N/O	25,500	7,000	0
1980	0	52,500	0	110,000	5,500	0
1981	0	10,000	0	70,000	5,500	0
1982	0	25,000	0	110,000	4,500	0
1983	0	5,000	0	70,000	4,500	0
1984	0	25,000	0	75,000	5,000	0
1985	N/O	23,000	N/O	90,000	3,500	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

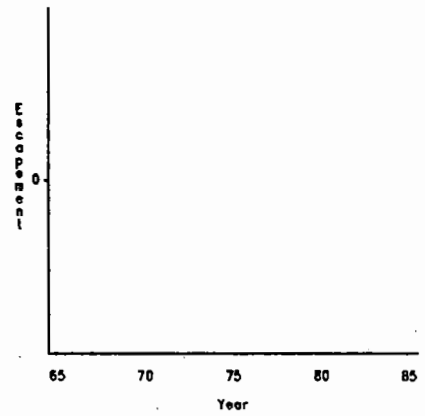
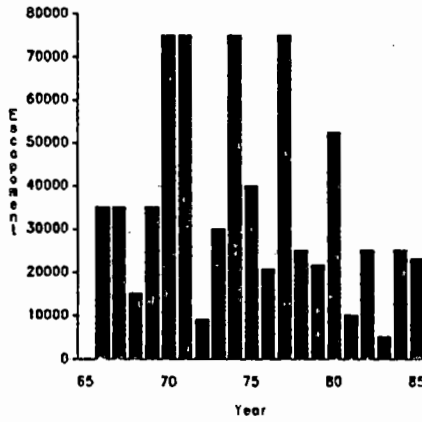
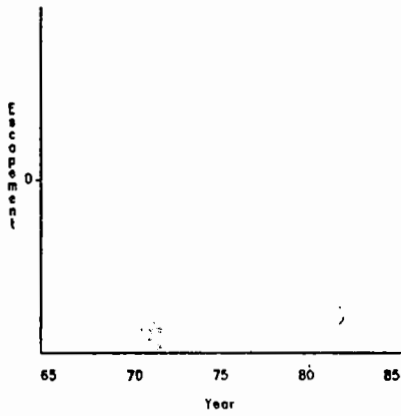
COWICHAN RIVER (92-4800)

Escapement & Run Timing

Socketeye (SK)

Coho (CO)

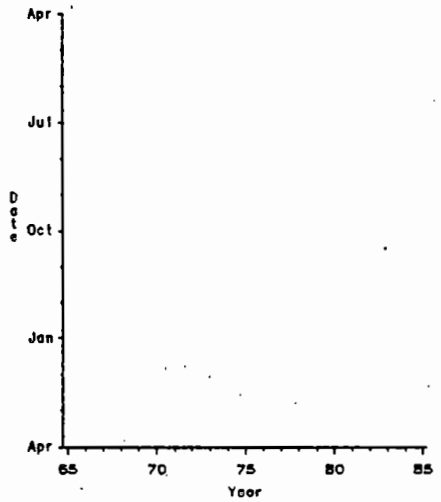
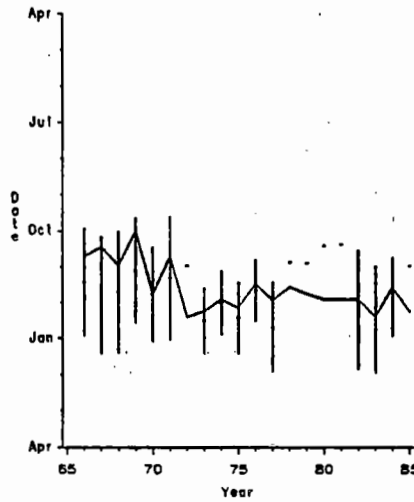
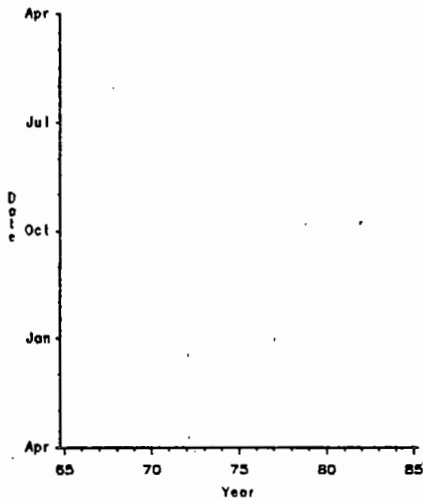
Pink (PK)



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	0	-	-	-
1983	0	-	-	-
1984	0	-	-	-
1985	0	-	-	-

Coho				
Year	Escapement	Start	Peak	End
1966	35,000	30SEP	24OCT	31DEC
1967	35,000	07OCT	16OCT	15JAN
1968	15,000	03OCT	01NOV	14JAN
1969	35,000	21SEP	02OCT	20DEC
1970	75,000	16OCT	25NOV	05JAN
1971	75,000	20SEP	25OCT	03JAN
1972	9,000	01NOV	15DEC	-
1973	30,000	20NOV	10DEC	15JAN
1974	75,000	05NOV	30NOV	30DEC
1975	40,000	15NOV	07DEC	15JAN
1976	20,700	27OCT	18NOV	18DEC
1977	75,000	15NOV	01DEC	30JAN
1978	25,000	29OCT	18NOV	-
1979	21,500	30OCT	25NOV	-
1980	52,500	15OCT	30NOV	-
1981	10,000	14OCT	30NOV	-
1982	25,000	19OCT	30NOV	28JAN
1983	5,000	01NOV	15DEC	31JAN
1984	25,000	25OCT	20NOV	31DEC
1985	23,000	01NOV	10DEC	-

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	-	-	-

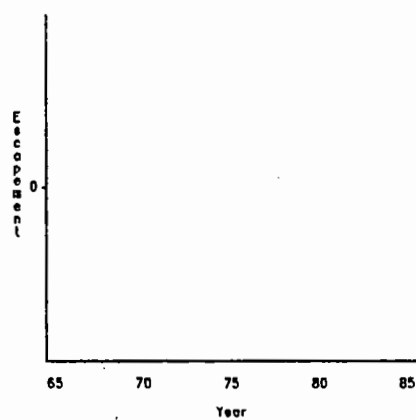
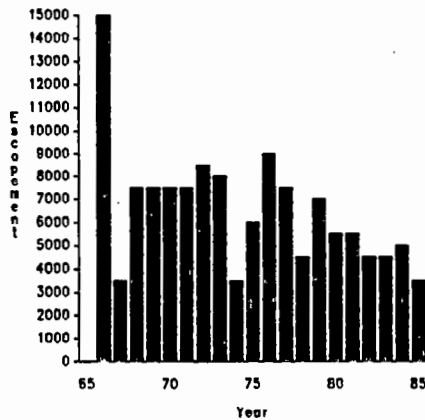
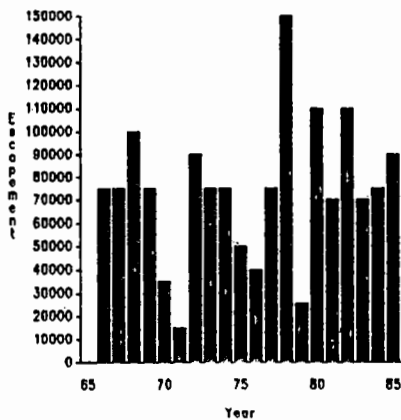
COWICHAN RIVER (92-4800)

Escapement & Run Timing

Chum (CM)

Chinook (CH)

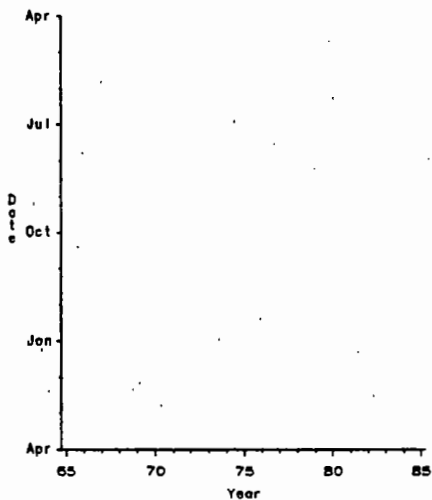
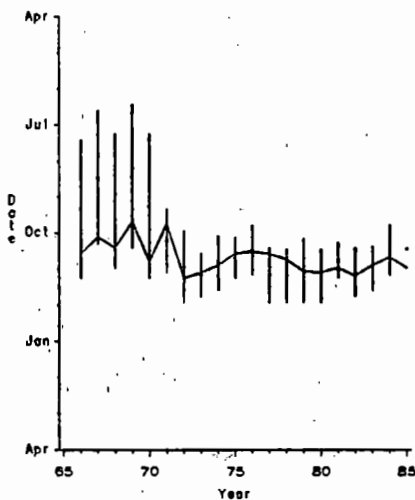
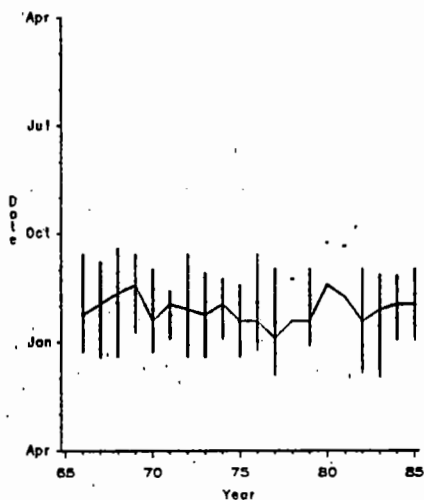
Steelhead (ST)



Chum

Chinook

Steelhead



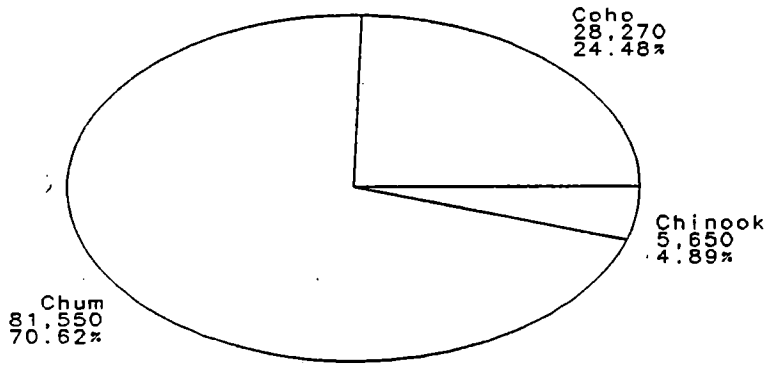
Chum				
Year	Escapement	Start	Peak	End
1966	75,000	20OCT	10DEC	10JAN
1967	75,000	26OCT	01DEC	15JAN
1968	100,000	15OCT	22NOV	14JAN
1969	75,000	20OCT	15NOV	25DEC
1970	35,000	01NOV	15DEC	10JAN
1971	15,000	20NOV	01DEC	30DEC
1972	90,000	20OCT	05DEC	14JAN
1973	75,000	05NOV	10DEC	15JAN
1974	75,000	10NOV	01DEC	30DEC
1975	50,000	15NOV	15DEC	15JAN
1976	40,000	20OCT	15DEC	09JAN
1977	75,000	01NOV	30DEC	30JAN
1978	150,000	10NOV	15DEC	-
1979	25,500	01NOV	15DEC	05JAN
1980	110,000	10OCT	15NOV	-
1981	70,000	13OCT	25NOV	-
1982	110,000	01NOV	15DEC	28JAN
1983	70,000	06NOV	08DEC	31JAN
1984	75,000	07NOV	01DEC	31DEC
1985	90,000	01NOV	01DEC	31DEC

Chinook				
Year	Escapement	Start	Peak	End
1966	15,000	15JUL	20OCT	10NOV
1967	3,500	20JUN	06OCT	12OCT
1968	7,500	10JUL	15OCT	01NOV
1969	7,500	15JUN	23SEP	15OCT
1970	7,500	10JUL	27OCT	10NOV
1971	7,500	12SEP	25SEP	05NOV
1972	8,500	01OCT	10NOV	30NOV
1973	8,000	20OCT	05NOV	25NOV
1974	3,500	05OCT	30OCT	20NOV
1975	6,000	08OCT	20OCT	10NOV
1976	9,000	25SEP	18OCT	07NOV
1977	7,500	15OCT	20OCT	30NOV
1978	4,500	16OCT	25OCT	30NOV
1979	7,000	07OCT	04NOV	30NOV
1980	5,500	16OCT	05NOV	30NOV
1981	5,500	11OCT	01NOV	10NOV
1982	4,500	15OCT	05NOV	25NOV
1983	4,500	14OCT	30OCT	20NOV
1984	3,000	25SEP	23OCT	07NOV
1985	3,500	16OCT	01NOV	-

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	-	-	-	-

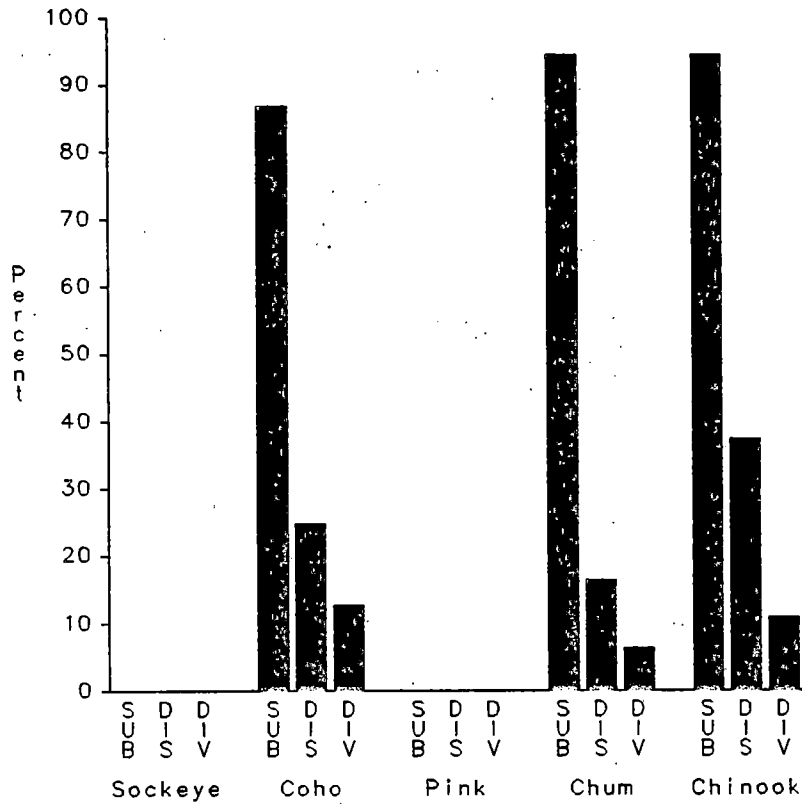
COWICHAN RIVER (92-4800)

10-yr Mean Escapement
(1976-1985)



COWICHAN RIVER : Escapement (1976-1985)

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



A. DESCRIPTION

Stream Name: KOKSILAH RIVER	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-7
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13 B.C.G.S. (1:20k) Map: 072 U.T.M. Mouth: 523015 Lat./Long. Mouth: 48 DG. 45' 40'' 123 DG. 39' 0'' Mainstem Length: 45.0 km Ref. No.: 18-15 Watershed Area: 210.0 km2 Ref. No.: 18-16
		Location: FLWS N.E. INTO COWICHAN BAY - COWICHAN DIST. ENTERS COWICHAN BAY FROM THE S.W. GENTLE TERRAIN TO COWICHAN STATION WHERE THE BASIN STARTS TO NARROW AND STEEPEN. (REF.76)

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT VERY SLIGHT FOR APPROXIMATELY 5KM, MODERATE FOR THE REMAINDER. (REF. 18-15)
0.0- 8.5 8.5- 35.0 35.0- 38.0 38.0- 45.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
X LOG JAMS			AF ALL SPECIES	SEVERAL LOG JAMS FROM CONFLUENCE OF FELLOWS C. UP TO HEAD WATERS OF KOKSILAH. (REF. 18-17)
F FALLS	5.0	16.0		MARBLE FALLS, 5M OVER 25. A FISHWAY WAS INSTALLED IN 1980. HASN'T IMPROVED CD OR CH PASSAGE. (REF. 18-76)
C CASCADE	1.0	19.0		SERIES OF 1M CASCADES. (REF. 18-5, REF. 18-17)
F FALLS	30.0	35.0	AF ALL SPECIES	30M OVER 50. HUGE BOULDERS JAMMED IN A STEEP, NARROW CANYON. (REF. 18-76)
F FALLS	2.2	38.0		2.2M OVER 4. (REF. 18-76)

C. FLOW

Flow Control: W.S.C. Station No. 1: 08HA003	Water Survey of Canada (WSC) Flow Gauge: Y No. 2: 08HA045	No. 3:	No. 4:
Comments: 08HA045 IS BELOW KELVIN C. 9/9/85 AT VALLEY MAIN BRIDGE: 0.085CMS. (REF. 18-76)			
DISCHARGE: MAX. - 187.6CMS (1/15/61); MIN. 0.056CMS (10/10/61) AT 08HA003; AT COWICHAN STATION. (REF. 18-1, REF. 18-76)			
ESTIMATED DISCHARGE RATE: 0.14 - 189.72CMS. (REF. 18-15)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SOME ARE ABLE TO NAVIGATE MARBLE FALLS AND THE FISHWAY BUT NOT ENOUGH TO ADEQUATELY POPULATE THE UPPER SYSTEM. (REF. 18-76)
CM CHUM SALMON	ABOVE MARBLE FALLS, NO CHUM PRESENT. (REF. 18-14)

D. DISTRIBUTION SUMMARY CONTINUED

Species	Watershed Distribution
CM CHUM SALMON	TO MARBLE FALLS; COULD GO THROUGH FISHWAY. (REF. 18-1, REF. 18-10)
CH CHINOOK SALMON	TO MARBLE FALLS. (REF. 18-1)
ST STEELHEAD	TO BOULDER FALLS AT 35KM. (REF. 18-76)
AF ALL SPECIES	FISHWAY PASSABLE TO ALL SPECIES. (REF. 18-10)
CT CUTTHROAT TROUT	TO MOUNTAIN ROAD CREEK AND THE BRIGHT ANGEL PARK AREA. (REF. 18-1)
RB RAINBOW TROUT	THROUGHOUT. (REF. 18-15)
RB RAINBOW TROUT	WILD DEER CREEK RB FROM LAKE. KELVIN & GLENORA CREEK EXCELLENT SPAWNING AREA. NOT A GOOD DEAL OF GOOD SPAWNING GRAVEL IN THE UPPER RIVER. THE EXTREME LOWER PART HAS GOOD SPAWNING GRAVEL. (REF. 18-1, REF. 18-15)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
CO COHO SALMON	4200	1976 - 1985	28A-18	9000	28A-18		
CM CHUM SALMON	4900	1976 - 1985	28A-18	8000	28A-18		
CH CHINOOK SALMON	335	1976 - 1985	28A-18	1000	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 X
CH CHINOOK 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
FW FISHWAY		0.0	AT MARBLE FALLS (A SLOTTED FISHWAY). AFTER HIGH WATER, THE SLOTTED FISHWAY IS FILLED WITH ROCKS AND MAKES FISHWAY ALMOST USELESS. (REF. 18-18, REF. 18-19)	1980/
HY HATCHERY	CO COHO SALMON	0.0	INTEND TO COMPARE 25K GLENORA C CO REARED AT COWICHAN HY WITH 25K SALVAGED FRY FROM THIS STREAM (NATURAL REARING). WILL RELEASE VENTRAL CLIPPED COHO AT 2.5 GRAM. (SEE R. BAMS, P.B.S. FOR INFO) (REF. 18-75)	1985/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
AG AGRICULTURE	EXTENSIVE AGRICULTURAL USE BELOW THE 100M CONTOUR. (REF. 18-76)
FO FORESTRY	SIGNIFICANT OLD GROWTH REMAINS AND MUCH OF THE UPPER BASIN IS IN EARLY STAGES OF REGENERATION. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

COHD COLONIZATION IN UPPER WATERSHED RECOMMENDED. WOULD LIKE TO REINTRODUCE CHINOOK RUN INTO KOKSILAH. (REF. 18-10)
LENGTH ACCESSIBLE TO MIGRANT FISH IS 40.0KM. (REF. 18-15)
MANAGEMENT INFORMATION ON CH IN THE KOKSILAH IS EXTREMELY WEAK. (REF. 18-19)
PRODUCTION IS LIMITED BY HIGH FALL-WINTER DISCHARGE FLUCTUATION AND LOW SUMMER FLOWS. AS OF 1980, 0.122CMS WERE LICENCED TO BE WITH- DRAWN DIRECTLY FROM THE KOKSILAH AND 0.323CMS WERE ALLOCATED FROM TRIBUTARIES, SPRINGS AND DOUGAN LAKE. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

K. SIS COMPLETED BY

Completed by:	GITA KAPAHI	Date:	1986/06/07
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	MURRAY WILLIAMS	Date:	1988/06/17

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T., T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COMICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION. (PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 15

AUTHOR: FREDERICK, B., T. HARDING. JULY 18, 1971.
DESCRIPTION: KOKSILAH RIVER FILES: STREAM SURVEY FORM, KOKSILAH RIVER.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 16

AUTHOR: ANONYMOUS
DESCRIPTION: KOKSILAH RIVER FILES: VANCOUVER ISLAND OBSTRUCTION SURVEYS, KOKSILAH RIVER.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: PY PHYSICAL HABITAT

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 92B/12 EAST & WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 18

AUTHOR: ANONYMOUS. 1980.
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS. FILE NO. 600 - KOKSILAH RIVER. AREA NO. 18, DIST. NO. 3. VOL. NO. 1.
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2, 1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 75

AUTHOR: UNKNOWN NOV. 30, 1985.
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT. (G. LOGAN'S OFFICE)
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT PY PHYSICAL HABITAT

REFERENCE LIST
1988/07/06

Watershed Code: 92-4800-020
Stream Name: KOKSILAH RIVER
Page: 2

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COMICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
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: KOKSILAH RIVER

WATERSHED-CODE: 92-4800-020

YEAR	SOCKEYE	COHO	PINK	CHUM	CHINOOK	STEELHEAD
1953	0	5,000	0	1,000	75	2,000
1954	0	1,500	0	3,500	25	1,500
1955	0	7,500	0	1,500	750	750
1956	0	1,500	0	1,500	400	200
1957	0	3,500	0	1,500	25	1,500
1958	0	3,500	0	3,500	75	750
1959	0	3,500	0	3,500	75	75
1960	0	1,500	0	1,500	75	25
1961	0	35,000	0	7,500	75	25
1962	0	3,500	0	15,000	75	75
1963	0	3,500	0	3,500	75	25
1964	0	35,000	0	3,500	400	200
1965	0	3,500	0	3,500	75	75
1966	0	3,500	0	7,500	200	400
1967	0	3,500	0	3,500	200	200
1968	0	3,500	0	3,500	75	400
1969	0	3,500	0	3,500	400	0
1970	0	7,500	0	1,500	200	0
1971	0	3,500	0	1,500	400	0
1972	0	1,800	0	4,000	275	0
1973	0	5,000	0	5,000	400	0
1974	UNK	10,000	UNK	5,000	600	0
1975	N/O	10,000	N/O	5,000	500	UNK
1976	0	9,000	0	4,000	1000	UNK
1977	UNK	7,500	UNK	7,500	400	0
1978	N/O	3,500	N/O	7,500	200	0
1979	0	3,500	0	2,500	750	0
1980	0	6,000	0	3,500	400	0
1981	0	2,000	0	2,000	50	0
1982	0	4,500	0	2,000	400	0
1983	0	2,000	0	5,000	50	0
1984	0	2,000	0	7,000	50	0
1985	N/O	2,000	N/O	8,000	50	0
1986						
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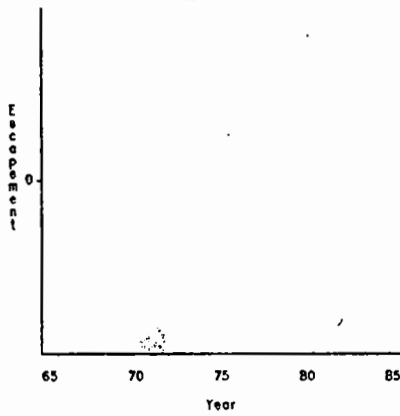
N/O = STREAM INSPECTED, NO FISH OBSERVED

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

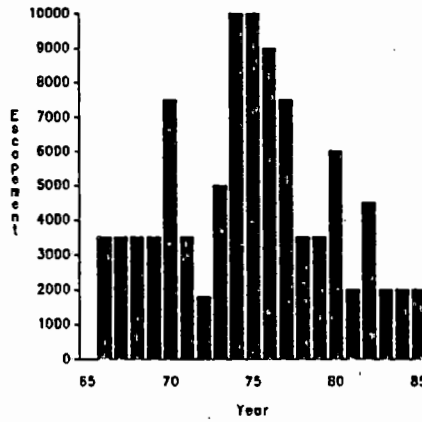
KOKSILAH RIVER (92-4800-020)

Escapement & Run Timing

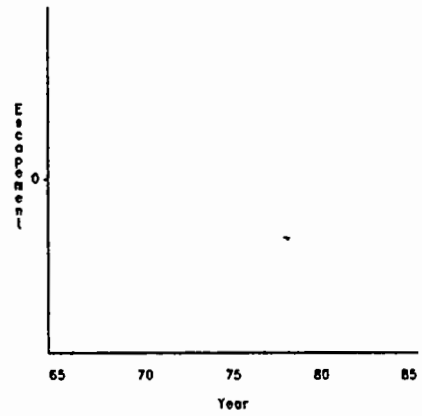
sockeye (SK)



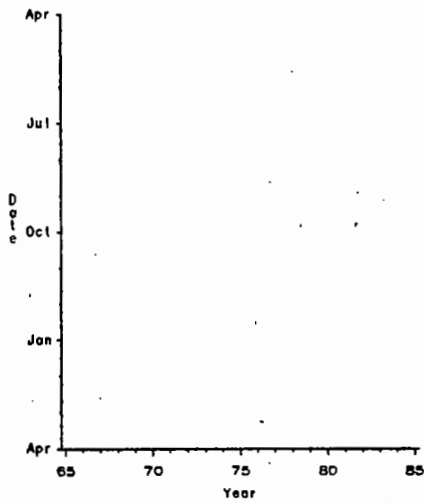
Coho (CO)



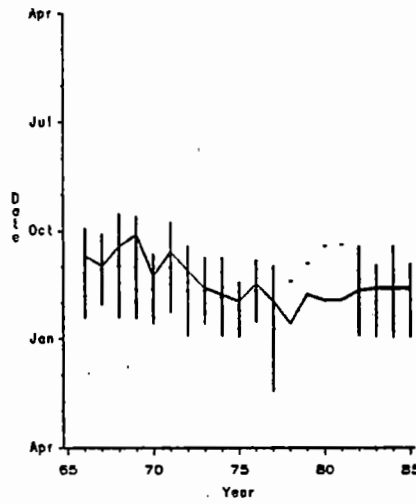
Pink (PK)



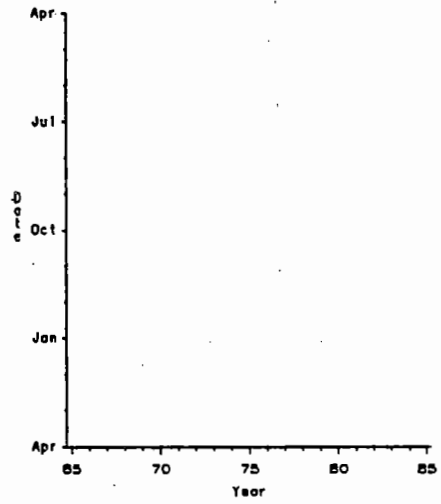
Sockeye



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	-	-	-	-
1975	0	-	-	-
1976	0	-	-	-
1977	-	-	-	-
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	30SEP	23OCT	15DEC
1967	3,500	05OCT	01NOV	04DEC
1968	3,500	18SEP	15OCT	15DEC
1969	3,500	20SEP	05OCT	15DEC
1970	7,500	22OCT	10NOV	20DEC
1971	3,500	25SEP	20OCT	10DEC
1972	1,800	15OCT	05NOV	30DEC
1973	5,000	25OCT	20NOV	20DEC
1974	10,000	25OCT	25NOV	30DEC
1975	10,000	15NOV	01DEC	31DEC
1976	9,000	27OCT	16NOV	16DEC
1977	7,500	01NOV	01DEC	15FEB
1978	3,500	14NOV	20DEC	-
1979	3,500	30OCT	25NOV	-
1980	6,000	15OCT	30NOV	-
1981	2,000	14OCT	30NOV	-
1982	4,500	15OCT	22NOV	30DEC
1983	2,000	31OCT	20NOV	31DEC
1984	2,000	15OCT	20NOV	31DEC
1985	2,000	30OCT	20NOV	31DEC

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

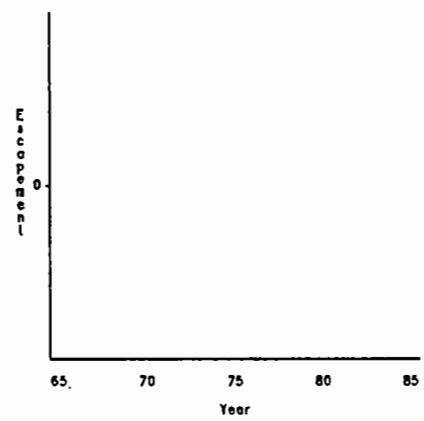
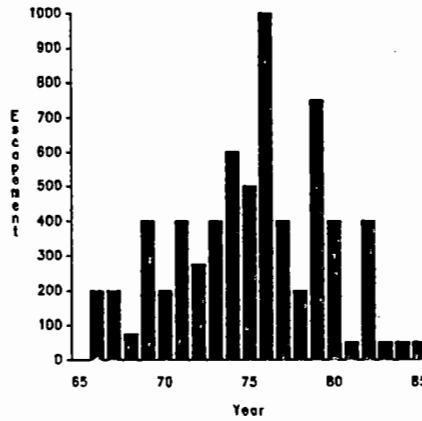
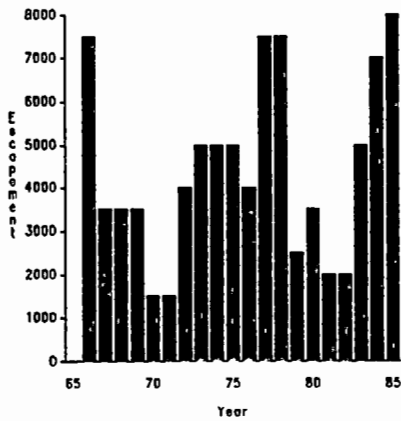
KOKSILAH RIVER (92-4800-020)

Escapement & Run Timing

Chum (CM)

Chinook (CH)

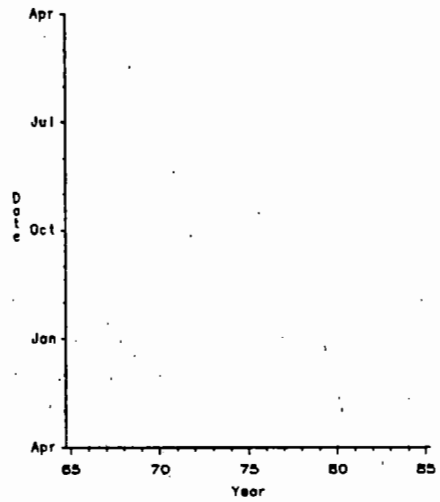
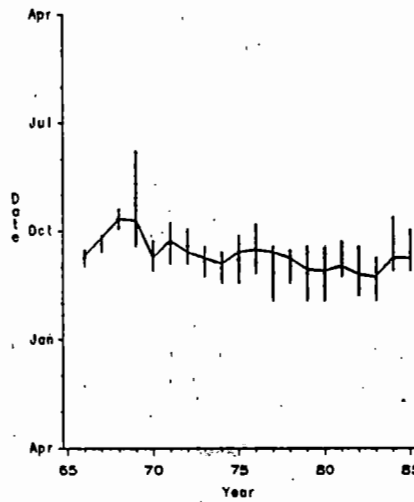
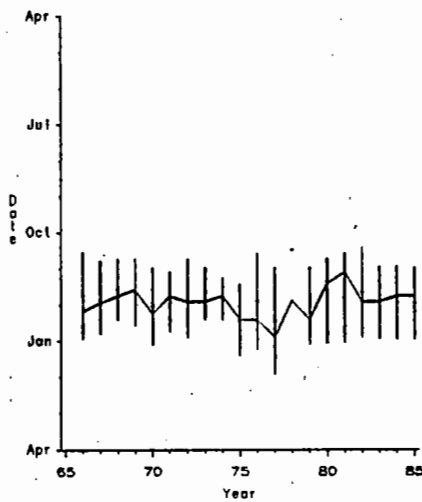
Steelhead (ST)



Chum

Chinook

Steelhead

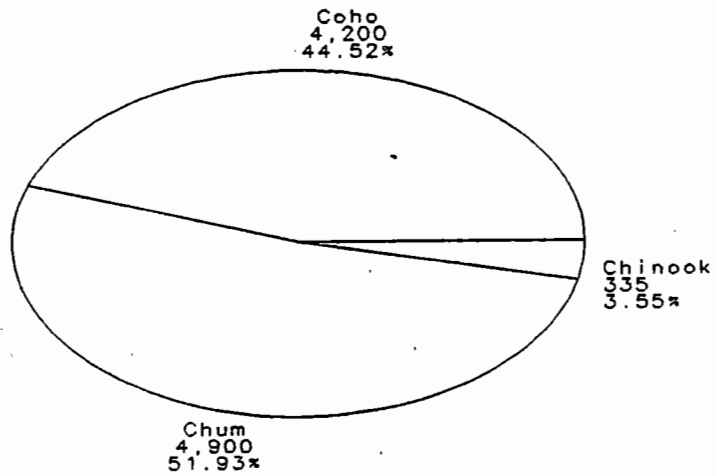


Chum				
Year	Escapement	Start	Peak	End
1966	7,500	19OCT	08DEC	31DEC
1967	3,500	26OCT	01DEC	27DEC
1968	3,500	25OCT	25NOV	15DEC
1969	3,500	25OCT	20NOV	20DEC
1970	1,500	01NOV	10DEC	05JAN
1971	1,500	05NOV	25NOV	25DEC
1972	4,000	25OCT	30NOV	30DEC
1973	5,000	01NOV	30NOV	15DEC
1974	5,000	10NOV	25NOV	15DEC
1975	5,000	15NOV	15DEC	15JAN
1976	4,000	20OCT	15DEC	09JAN
1977	7,300	01NOV	30DEC	30JAN
1978	7,500	17OCT	29NOV	-
1979	2,500	01NOV	15DEC	05JAN
1980	3,500	25OCT	15NOV	04JAN
1981	2,000	20OCT	05NOV	03JAN
1982	2,000	15OCT	30NOV	30DEC
1983	5,000	31OCT	30NOV	31DEC
1984	7,000	31OCT	25NOV	31DEC
1985	8,000	01NOV	25NOV	31DEC

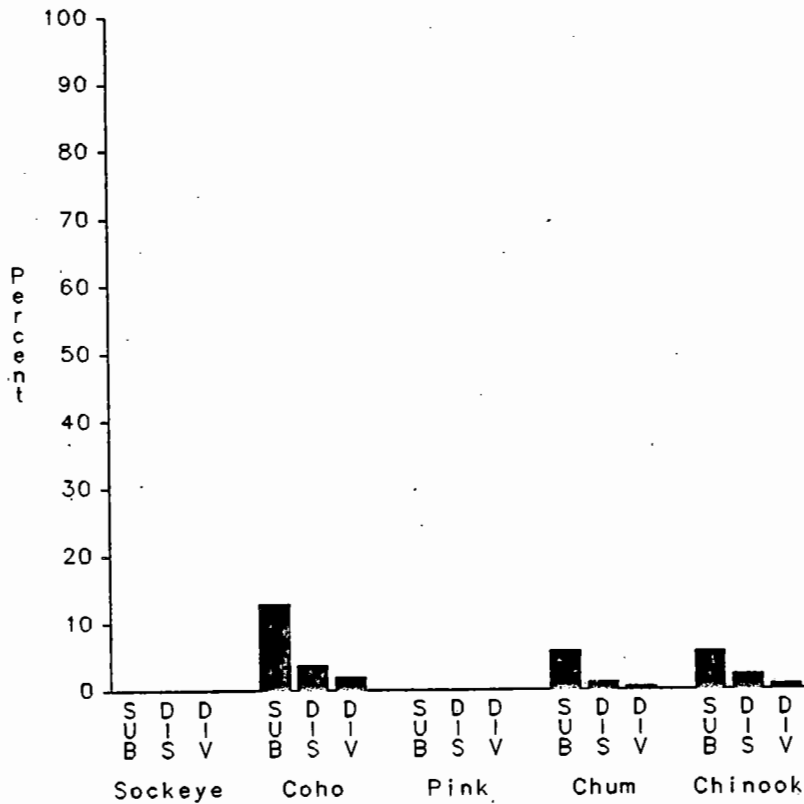
Chinook				
Year	Escapement	Start	Peak	End
1966	200	18OCT	23OCT	01NOV
1967	200	08OCT	-	20OCT
1968	75	13SEP	22SEP	01OCT
1969	400	25JUL	23SEP	15OCT
1970	200	10OCT	25OCT	05NOV
1971	400	25SEP	10OCT	30OCT
1972	275	30SEP	20OCT	30OCT
1973	400	15OCT	25OCT	10NOV
1974	600	20OCT	30OCT	15NOV
1975	500	08OCT	20OCT	15NOV
1976	1,000	28SEP	18OCT	07NOV
1977	400	15OCT	20OCT	30NOV
1978	200	18OCT	29OCT	15NOV
1979	750	15OCT	04NOV	30NOV
1980	400	18OCT	05NOV	30NOV
1981	50	11OCT	01NOV	10NOV
1982	400	15OCT	08NOV	26NOV
1983	50	25OCT	10NOV	30NOV
1984	50	20SEP	25OCT	05NOV
1985	50	01OCT	25OCT	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	-	-	-	-

KOKSILAH RIVER (92-4800-020)
 10-yr Mean Escapement
 (1976-1985)



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



A. DESCRIPTION

Stream Name: KELVIN CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-050	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12 B.C.G.S. (1:20k) Map: 062 U.T.M. Mouth: Lat./Long. Mouth: 48 DG. 44' 57'' 123 DG. 33' 23'' Mainstem Length: 14.0 km Ref. No.: 18-20 Watershed Area: Ref. No.:
GLENORA CREEK	130	
Location: ENTERS THE KOKSILAH 1.5KM ABOVE THE ISLAND HIGHWAY BRIDGE. THE BASIN IS STEEP AND NARROW ABOVE THE 200M CONTOUR. FEATURES A BROAD, MOIST VALLEY BOTTOM (200 - 300M) BETWEEN 90 AND 100M ASL.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT - MODERATE. (REF. 18-20)
0.0- 3.5 3.5- 10.0 10.0- 14.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
X LOG JAMS				BELOW THE FALLS. (REF. 18-20)
F FALLS	4.6	5.5	AF ALL SPECIES	NARROW CHUTE FALLS. LENGTH ACCESSIBLE TO ANADROMOUS FISH IS 5.5KM (REF. 18-20)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: REPORTS OF STREAM DRYING AND ISOLATING FRY. (REF. 18-22)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	MAJORITY FOUND FROM THE DOUPE RD. BRIDGE TRAIL UP TO THE FALLS. MAJORITY FOUND ABOVE THE FIRST LOGGING ROAD CROSSING OF THE TWO BRANCHES ABOVE THE RAILROAD, THE WEST BRANCH WAS THE MOST PRODUCTIVE. (REF. 18-20, REF. 18-21)
CO COHO SALMON	ABOVE FALLS; COHO FRY COLONIZED BY R. BAMS AS PART OF A P.B.S. EXPERIMENT ON STREAM PRODUCTION OF COHO FROM ABOVE BARRIER HABITAT. 1986/1987. (REF. 18-19)
CM CHUM SALMON	MAJORITY OF CHUM SPAWN BELOW CONFLUENCE OF KELVIN AND GLENORA. SOME GO AS FAR AS THE TRAIL OF DOUPE RD. ONLY FOUND FROM DOUPE ROAD BRIDGE DOWN TO THE CONFLUENCE. (REF. 18-21)
CH CHINOOK SALMON	A SMALL AMOUNT OF CHINOOK FOUND. (REF. 18-14)
ST STEELHEAD	POSSIBLY PRESENT, BUT NOT SEEN. (REF. 18-14)
CT CUTTHROAT TROUT	PRESENT. (REF. 18-20)

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
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	PLANS TO STOCK COHO FRY ABOVE FALLS IN 1986. (REF. 18-10)	1986/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
AG AGRICULTURE	MODERATE UTILIZATION FOR GRAZING AND FORAGE PRODUCTION. (REF. 18-76)
FO FORESTRY	MOST OLD GROWTH HAS BEEN CUT. SECOND GROWTH IS WELL ADVANCED. CONSIDERABLE RECENT HARDWOOD LOGGING ON THE VALLEY BOTTOM ABOVE THE 90 (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

RUNS THROUGH FARM AREA FOR MOST OF LENGTH. ABOVE BARRIER COHO FRY COLONIZATION COULD YIELD 1200 TO 6000 SMOLTS. (BURNS AND TUTTY, 1986) (REF. 18-20, REF. 18-76)
--

J. FISHERY OFFICER NARRATIVE

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

K. SIS COMPLETED BY

Completed by: GITA KAPAH	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16,1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8,1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O.,1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2,1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 20

AUTHOR: FREDERICK, B., T. HARDING. JULY 16,1971.
DESCRIPTION: STREAM SURVEY FORM: KELVIN AND GLENORA CREEKS. IN KOKSILAH RIVER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: FS FISH SAMPLING PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 21

AUTHOR: YOUNG, T. JAN. 19,1982.
DESCRIPTION: MEMO TO B. TUTTY: KOKSILAH RIVER - GLENORA CREEK SYSTEM STUDY. FILE NO. 5903-85-K235 - KOKSILAH RIVER (COWICHAN BAY)
VOL. NO. 1.
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER
KEYWORDS: AD ALL SALMON FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 22

AUTHOR: SENGER, R. AUG. 27,1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT, GLENORA CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: GLENORA CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-050-130	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12
		B.C.G.S. (1:20k) Map: 072
		U.T.M. Mouth:
		Lat./Long. Mouth: 42 DG. 44' 33'' 123 DG. 33' 24''
		Mainstem Length: 10.5 km Ref. No.: 18-20
		Watershed Area: Ref. No.:
Location: ENTERS KELVIN C FROM THE S.W. DRAINS KOKSILAH RIDGE (WHERE THE BASIN IS STEEP AND NARROW) AND LOW RELIEF BENCHLAND. (REF. 76)		

Gradient Class/Location (km upstream from mouth)					Comments
0 - .5%	.5 - 2%	2 - 5%	5 - 10%	>10%	
0.0- 7.0		7.0- 10.5			

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	6.0	7.5	AF ALL SPECIES	(REF. 18-20)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 DISCHARGE: 9/15/85 M & B LINE 0.00033CMS. A 1500M SECTION (2.5 - 4.0KM) DRIES. 9/16/85 BELOW DRY SECTION : 0.036CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	GOOD COHO SPawning IN KEATING CREEK(TRIB. OF GLENORA WHICH DRAINS KEATING LAKE). LOW FLOW IN SUMMER. FRY PRESENT UP TO KEATING LAKE . THERE MAY BE A POPULATION OF COHO REARING IN THE LAKE. (REF. 18-14, REF. 18-20)
CM CHUM SALMON	MAJORITY SPAWN BELOW CONFLUENCE OF GLENORA AND KELVIN, SOME GO AS FAR AS THE TRAIL OFF DOUPE RD. (REF. 18-21)
CH CHINOOK SALMON	SMALL AMOUNT OF CHINOOK REARING IN LOWER GLENORA. (REF. 18-14)
ST STEELHEAD	REPORTED TO BE PRESENT. (REF. 18-14)

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
AG AGRICULTURE	LIGHT AGRICULTURAL DEVELOPMENT, WITH LIVESTOCK IN CREEK IN LOWER 1/3 OF CREEK. (REF. 18-76)
FO FORESTRY	MOST OLD GROWTH HAS BEEN CUT. SECOND GROWTH LOGGING HAS BEGUN. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

LOW SUMMER FLOWS AND LACK OF WINTER HABITAT. POSSIBLE KEATING LAKE STORAGE. HIGH PRODUCER OF FRY SALVAGED DURING LOW FLOWS IN MID SECTION OF CREEK ALONG MAINLINE OF M & B LOGGING ROAD. (REF. 18-19, REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

K. SIS COMPLETED BY

Completed by: GITA KAPAH	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2, 1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 20

AUTHOR: FREDERICK, B., T. HARDING. JULY 16, 1971.
DESCRIPTION: STREAM SURVEY FORM: KELVIN AND GLENORA CREEKS. IN KOKSILAH RIVER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: FS FISH SAMPLING PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 21

AUTHOR: YOUNG, T. JAN. 19, 1982.
DESCRIPTION: MEMO TO B. TUTTY: KOKSILAH RIVER - GLENORA CREEK SYSTEM STUDY, FILE NO. 5903-85-K235 - KOKSILAH RIVER (COWICHAN BAY)
VOL. NO. 1.
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER
KEYWORDS: AO ALL SALMON FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: WILD DEER CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-425	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12
		B.C.G.S. (1:20k) Map: 062
		U.T.M. Mouth:
		Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0''
		Mainstem Length: 7.2 km Ref. No.: 18-23
		Watershed Area: Ref. No.:
		Location:

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT MODERATE THROUGHOUT. (REF. 18-23)
1.5- 7.2	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	2.5	0.5	AF ALL SPECIES	LENGTH ACCESSIBLE TO MIGRANT FISH. (REF. 18-23)
F FALLS	1.8	1.5		SERIES OF FALLS FROM CONFLUENCE OF KOKSILAH AND WILD DEER C. (REF. 18-17, REF. 18-23)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 DISCHARGE: 9/6/85 NEAR BURNT BRIDGE 0.11CMS. 9/15/85 R2 0.035CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	COHO FRY AT MOUTH OF CREEK. (REF. 18-23)
AO ALL SALMON	POOR COHO PRODUCTIVITY BUT EXCELLENT FOR RB. ANADROMOUS FISH WATER UP TO FALLS. POSSIBLE SPawning FOR RB IN WILD DEER LAKE OUTLET. (REF. 18-17, REF. 18-23)
RB RAINBOW TROUT	IN LAKE (STOCKED) ABOVE FALLS. (REF. 18-17, REF. 18-23)

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

POTENTIAL FISH HABITAT FROM FALLS TO WILD DEER LAKE; POSSIBLE COHO SMOLT YIELD: 1040 - 5600. (REF. 18-17, REF. 18-76)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

K. SIS COMPLETED BY

Completed by: GITA KAPAH
 Checked by: TREVOR FIELDS
 Date: 1986/06/01
 Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-020-425
Stream Name: WILD DEER CREEK
Page: 1

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 92B/12 EAST & WEST. 1:50,000.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 23

AUTHOR: FREDERICK, B., T. HARDING. JULY 16, 1971.
DESCRIPTION: STREAM SURVEY FORM: WILD DEER CREEK. KOKSILAH RIVER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: GRANT LAKE OUTFLOW CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-500	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12
		B.C.G.S. (1:20k) Map: 062
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 37' 45'' 123 DG. 46' 21''
		Mainstem Length: 0.7 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: LAKE IS 54HA.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	2 - 5% SLOPE FROM MOUTH TO 0.07KM. (REF. 18-76)
0.0- 0.1	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS				THERE IS A SEQUENCE OF 14 INDIVIDUAL FALLS U/S OF RENFREW RD. (B.TUTTY; 06/02/86) (REF. 18-19)
D DAM	1.5			WEIR AT LAKE OUTLET CONTROLS FLOW AT MINI PRIVATE HYDRO FACILITY. (B.D. TUTTY; JUNE 2/86) (REF. 18-19, REF. 18-76)
F FALLS	6.0	0.0	AF ALL SPECIES	IMMEDIATELY ABOVE LOGGING ROAD, 100M FROM THE MOUTH. (REF. 18-14, REF. 18-17, REF. 18-19)

C. FLOW

Flow Control: Y	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: 1985 DISCHARGE: 9/6/85 RENFREW RD. 0.06CMS. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	THE FIRST 100M OF STREAM IS ACCESSIBLE COHO HABITAT, JUST BEFORE THE SERIES OF 14 FALLS. (B.D.TUTTY, JUNE 2/86) (REF. 18-19)
AF ALL SPECIES	THE STREAM IS ACCESSIBLE TO THE FALLS BUT NOT UTILIZED; TOO SMALL FOR ST; AND CO - CT HAVE NOT BEEN IDENTIFIED IN THE UPPER KOKSILAH SYSTEM. (1987) (REF. 18-76)

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
HY HATCHERY	CO COHO SALMON	0.0	MINI HATCHERY HAS OPERATED AT MOUTH FOR 2 YEARS (TREVOR MORRIS HAS DETAILS) (REF. 18-10)	1984/1986
TR TRANSPLANT	CO COHO SALMON	0.0	50,000 FRY STOCKED IN 1985. 100,000 FRY STOCKED IN 1986 BY R. BAMS(P.B.S. EXPERIMENT ON COHO PRODUCTION FROM LAKE HABITAT ABOVE BARRIERS) (REF. 18-10)	1985/1986

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
NO INFORMATION AVAILABLE	

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

GOOD POTENTIAL HABITAT ABOVE FALLS. IDEAL FOR MORE HEADWATER STORAGE. CREEK NEVER SILTS UP. MINOR TEMPERATURE FLUCTUATIONS. (REF. 18-14, REF. 18-17)
GRANT LAKE COLONIZATION: STOCKED 50,000 COHO FRY LAST SUMMER (1985); 25,000 EDP HATCHERY, 25,000 FROM GLENORA C. JUNE 1986: SEVERAL THOUSAND SMOLTS OBSERVED (MAX SIZE: 200MM). R. BAMS IN CHARGE. (B.D.TUTTY, JUNE 2/86) (REF. 18-19)
POTENTIAL COHO SMOLT YIELD FROM GRANT LAKE: 43,200 - 216,000. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHU	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-020-500
Stream Name: GRANT LAKE OUTFLOW CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COMICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 92B/12 EAST & WEST. 1:50,000.
LOCATION: O MDE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2, 1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COMICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: WEST KOKSILAH RIVER	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-670	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12 B.C.G.S. (1:20k) Map: 061 U.T.M. Mouth: Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0'' Mainstem Length: 6.5 km Ref. No.: 18-1 Watershed Area: Ref. No.:
		Location: ENTERS SOUTH KOKSILAH 1KM ABOVE ITS CONFLUENCE WITH THE KOKSILAH. THE UPPER BASIN IS BROAD - LOW RELIEF. THE STREAM IS IN A GORGE BELOW THE 500M CONTOUR. TWO UPSTREAM FORKS DESIGNATED BRANCHES 1 AND 2.

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

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	10.0			ON BRANCH 1 AT ITS CONFLUENCE. (I.E. 0.0KM U/S) (REF. 18-76)
F FALLS	12.0	0.4		ON BRANCH 1. (REF. 18-76)
C CASCADE	1.5	0.5		1.5M OVER 2 (REF. 18-76)
F FALLS	8.0	0.5		ON BRANCH 2 500M ABOVE CONFLUENCE. (REF. 18-76)
C CASCADE	2.0	0.6		3 CASCADES: 2M OVER 6 AT 600M UPSTREAM; 2M OVER 5 AT 620M U/S; AND 2M OVER 3 AT 670M U/S. (REF. 18-76)
F FALLS	6.0	0.6	AF ALL SPECIES	(REF. 18-76)
F FALLS	40.0	1.5		(REF. 18-76)

C. FLOW

Flow Control: W.S.C. Station No. 1:	Water Survey of Canada (WSC) Flow Gauge: No. 2:	No. 3:	No. 4:
Comments: 1985 DISCHARGE: BRANCH 1 - 9/7/85 A MAIN: 0.0079CMS. BRANCH 2 --9/7/85 200M BELOW A: 0.017CMS ; 9/7/85 K LINE: 0.006CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
ST STEELHEAD	LOWER 600M. (REF. 18-76)

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 COHO SMOLT YIELD POTENTIAL: BRANCH 2 - 400 - 2000; MAINSTEM-- 180 - 1800; BRANCH 1-- 60 - 600. (REF. 18-76)
PRODUCTION LIMITED BY SHORT ACCESSIBLE LENGTH AND HIGH FALL - WINTER DISCHARGE. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/05/31
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-020-670
Stream Name: WEST KOKSILAH RIVER
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURMS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: FELLOWS CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-700	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12
MCPHERSON CREEK	200	B.C.G.S. (1:20k) Map: 061
		U.T.M. Mouth: Lat./Long. Mouth: 48 DG. 39' 52'' 123 DG. 52' 10''
		Mainstem Length: 8.4 km Ref. No.: 18-1 Watershed Area: Ref. No.:
		Location: LAST (MOST UPSTREAM) TRIBUTARY OF THE KOKSILAH. (REF.15,17)

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	
2.9- 8.4 0.0- 2.4 2.4- 2.9	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	2.5	0.4		PROBABLY PASSABLE FOR STEELHEAD. (REF. 18-76)
F FALLS	8.0	1.4	AF ALL SPECIES	3 FALLS: 2M, 2M AND 4M. (REF. 18-76)
F FALLS	3.0	2.4		NOT VERTICAL; 3M OVER 5. (REF. 18-76)

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
CO COHO SALMON	UP TO FALLS. (REF. 18-15, REF. 18-17)
ST STEELHEAD	UP TO FALLS. (REF. 18-15, REF. 18-17)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
Comments: 1985 LATE SUMMER ST FRY DENSITY IN LOWER 400M : 1/SQ.M . (REF. 18-76)							

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

POTENTIAL ABOVE BARRIER COHO COLONIZATION SITE. (REF. 18-76)
POTENTIAL REARING HABITAT ON BOTH NORTH AND SOUTH FORK UPSTREAM OF FALLS. SEE SHIP MAPS (B. TUTTY) (REF. 18-17)

J. FISHERY OFFICER NARRATIVE

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

Completed by:	GITA KAPAH	Date:	1986/06/01
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	B.D. TUTTY	Date:	1988/03/07

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/0-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 15

AUTHOR: FREDERICK, B., T. HARDING. JULY 18, 1971.
DESCRIPTION: KOKSILAH RIVER FILES: STREAM SURVEY FORM, KOKSILAH RIVER.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 92B/12 EAST & WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: MCPHERSON CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-020-700-200	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/12 B.C.G.S. (1:20k) Map: 061 U.T.M. Mouth: Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0'' Mainstem Length: 7.5 km Ref. No.: 18-1 Watershed Area: Ref. No.:
		Location: ENTERS FELLOWS CREEK 2KM ABOVE THE KOKSILAH. MUCH OF THE UPPER BASIN IS OF LOW RELIEF WITH CONSIDERABLE WETLAND AREA. THE STREAM IS IN A GORGE BELOW THE 500M CONTOUR.

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

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	30.0	0.5	AF ALL SPECIES	(REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 DISCHARGE: 8/29/85 AT M MAIN 0.005CMS. 9/1/1985 AT X MAIN 0.02CMS. 9/1/85 100M BELOW LAKE 0.01CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
NO INFORMATION AVAILABLE	

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

POTENTIAL COHO SMOLT YIELD: LAKE - 4,800 - 24,000; CREEK-- 680 - 3,400. (REF. 18-76)
--

J. FISHERY OFFICER NARRATIVE

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

Completed by:	GITA KAPAH	Date:	1986/05/31
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	KATHY PONTUS	Date:	1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-020-700-200
Stream Name: MCPHERSON CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: QUAMICHAN CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-055	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
		B.C.G.S. (1:20k) Map: 082
		U.T.M. Mouth: 506026
		Lat./Long. Mouth: 48 DG. 46' 33'' 123 DG. 40' 23''
		Mainstem Length: 1.3 km Ref. No.: 18-24
		Watershed Area: 11.0 km2 Ref. No.: 18-1
Location: ENTERS THE COWICHAN AT QUAMICHAN VILLAGE 4KM ABOVE THE ESTUARY.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	
1.2- 1.5 0.0- 1.2	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	2.0	0.3	AF ALL SPECIES	LENGTH ACCESSIBLE TO ANADROMOUS FISH. (REF. 18-24)

C. FLOW

Flow Control: W.S.C. Station No. 1:	Water Survey of Canada (WSC) Flow Gauge: No. 2:	No. 3:	No. 4:
Comments: DISCHARGE RANGE: 0.03 - 14 CMS. (REF. 18-24)			
STREAM BECOMES INTERMITTENT BY EARLY SUMMER. 1985 MIN. DISCHARGE: 0.0 - 0.000063CMS, 0.0534 LICENCED AS OF 1980. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CD COHO SALMON	SPAWN FROM THE MOUTH TO THE FALLS. (REF. 18-10)
CT CUTTHROAT TROUT	SEA-RUN FISH BELOW THE FALLS. SPAWNERS FROM QUAMICHAN LAKE USE PORTIONS OF THE STREAM ABOVE THE FALLS. (REF. 18-76)

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
UD URBAN DEVELOPMENT	QUAMICHAN LAKE (310 HA) IS A SHALLOW, MATURE LAKE ENRICHED BY AGRICULTURAL - RESIDENTIAL NUTRIENTS. TDS INCREASED FROM 60 IN 1957 TO (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

GOOD COHO SPANNING AND REARING POTENTIAL ABOVE FALLS TO STOCKED LAKE. (REF. 18-10)
PICTURES AVAILABLE. (REF. 18-24)
QUAMICHAN LAKE COHO SMOLT YIELD POTENTIAL: 248,000 - 1,240,000. QUAMICHAN CREEK COHO SMOLT YIELD POTENTIAL: 180 - 900. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHU	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 24

AUTHOR: AXFORD, R., P. BURNS. JUNE 25, 1976.
DESCRIPTION: QUAMICHAN CREEK, PARAMETER FILES. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: O MDE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: SOMENOS CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-060	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
BINGS CREEK	650	B.C.G.S. (1:20k) Map: 072
AVERILL CREEK	800	U.T.M. Mouth:
RICHARDS CREEK	900	Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0''
		Mainstem Length: 3.2 km Ref. No.: 18-26
		Watershed Area: 40.0 km2 Ref. No.: 18-1
Location:		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT NEAR 0.1%. (REF. 18-76)
0.0- 3.2	

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: ALTHOUGH FLOW CEASES, THE CHANNEL IS USUALLY WETTED. TOTAL LICENCED FLOW FROM BASIN AS OF 1980: 0.105 CMS. (REF. 18-76)			
DISCHARGE RANGE: 0 - 0.71CMS. (REF. 18-26)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	ANAORNOUS FISH WATER ALL THE WAY UP TO SOMENOS LAKE. (COHO AND CT). (REF. 18-25)
AF ALL SPECIES	THERE IS NO SPAWNING BECAUSE OF THE MUDDY SUBSTRATE; ENTIRELY MUCK - DETRITUS. THE STREAMS PRIMARY VALUE IS WINTER HABITAT. (REF. 18-14, REF. 18-76)

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
Comments: FISH PASS THROUGH THE CREEK TO BINGS, RICHARDS AND, TO A MUCH LESSER EXTENT, AVERILL CREEK. (REF. 18-76)													

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	SOMENOS CREEK HAS BEEN DITCHED TO IMPROVE DRAINAGE ON SOMENOS FLATS AND LOWER RICHARDS CREEK. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

1 PICTURE AVAILABLE. (REF. 18-26)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION. (PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 25

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: MAP NO. 92B/13 EAST AND WEST. 1: 50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 26

AUTHOR: AXFORD, R., P. BURNS. JUNE 25, 1976.
DESCRIPTION: SOMENOS CREEK, PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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 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	A SIGNIFIACNT PORTION OF THE BASIN BELOW 100M IS UTILIZED FOR GRAZING AND FORAGE PRODUCTION. HOWEVER, INTENSITY IS FAIRLY LOW AND (REF. 18-76)
UD URBAN DEVELOPMENT	CONSIDERABLE RESIDENTIAL USE, BUT LITTLE DEGRADATION. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

GOOD POTENTIAL FOR HEADWATER STORAGE. (REF. 18-5)
GOOD POTENTIAL COHO HABITAT RIGHT UP TO HEADWATERS. R. BAMS EXPERIMENTS IN COHO COLONIZATION IN 1986/87. (REF. 18-14)
MAINSTEM HAS PLENTIFUL OCCURANCE OF BACK AND SIDE CHANNELS. PICTURES AVAILABLE. (REF. 18-27)
NEED TO IMPROVE COHO RECRUITMENT POTENTIAL IN LOWER 1.3KM TO FULLY REALIZE SOMENOS LAKES' REARING CAPACITY. GRAVEL QUALITY IS LOW. POTENTIAL ABOVE BARRIER COHO SMOLT YIELD(INCLUDING MENZIES): 1100 - 5500. (REF. 18-76)
REMOVAL OF SMALL UNUSED DAM AT 1.7KM, AND FALLS AT 1.3KM WOULD OPEN UP ABOUT 11.25KM OF UPSTREAM HABITAT. (REF. 18-28)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHI	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-060-650
Stream Name: BINGS CREEK
Page: 1

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T. T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 27

AUTHOR: AXFORD, R., P. BURNS. JULY 7, 1976.
DESCRIPTION: BINGS CREEK STREAM INVENTORY PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 28

AUTHOR: ANONYMOUS JUNE 20, 1978.
DESCRIPTION: VANCOUVER ISLAND OBSTRUCTION SURVEY, BINGS CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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

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	INTENSIVE USE OF MOST OF THE BASIN BELOW 100M HAS CAUSED CHRONIC DEGRADATION: SEDIMENT, BANK DAMAGE, COVER REMOVAL AND POLLUTION. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

THIS SYSTEM IS POOR SALMONID HABITAT WITH LITTLE IMPROVEMENT POTENTIAL FOR COHO COLONIZATION. (REF. 18-76)
TOPOGRAPHY PROVIDES SOME POTENTIAL FOR HEADWATER STORAGE. GOOD POTENTIAL HABITAT FOR 3.6KM ABOVE FALLS. (REF. 18-5)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T. T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 29

AUTHOR: BURNS, T. 1971.
DESCRIPTION: LOCAL INITIATIVES PROGRAM (L.I.P.), STREAM INVENTORY FORM: AVERILL CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: RICHARDS CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-060-900	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
		B.C.G.S. (1:20k) Map: 082
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 49' 0'' 123 DG. 42' 0''
		Mainstem Length: 9.0 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: DRAINS CROFTON LAKE AND MT. RICHARDS. ENTERS THE N.E. END OF SOMENOS LAKE.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	THE AREA IS DITCHED AND INTENSIVELY FARMED. THE ONLY PRODUCTIVE REACH AT PRESENT IS FROM 5 TO 6KM U/S OF MOUTH (0.5 - 2% SLOPE). (REF. 18-76)
0.0- 5.0 5.0- 6.0 6.5- 9.0 6.0- 6.5	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	30.0	6.0	AF ALL SPECIES	A SERIES OF FALLS UP TO 4M HIGH LOCATED IN A BEDROCK ZONE 150M LONG. (REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: 1985 DISCHARGE: AT THE POWERLINE 0.0144 CMS. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	ALSO SPAWNING FROM RICHARDS TRAIL TO JUST ABOVE SUTHERLANDS POND. (REF. 18-30)

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
AG AGRICULTURE	FORMER EXTENSIVE WETLAND BASIN ADJACENT TO LOWER 4.5KM IS EXTENSIVELY FARMED. THE STREAM IS DITCHED IN THIS REACH. SUBSTRATE IS EN- (REF. 18-76)
WW WATER WITHDRAWAL	PUMPS BELOW RICHARDS TRAIL HAVE AT TIMES TAKEN 100% OF FLOW. (REF. 18-10)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO SMOLT YIELD POTENTIAL: STREAM 400 - 2,000; CROFTON LAKE 19,200 - 96,000. (REF. 18-76)
DREDGED IN 1983, CHANGES DIRECTION ON MAP. (REF. 18-10)
RUNS THROUGH FARMER'S FIELDS IN FORM OF DITCHES IN AREAS. (REF. 18-30)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-060-900
Stream Name: RICHARDS CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 30

AUTHOR: FIELDS, T.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O. DUNCAN. SALMON SPAWNING REPORT IN TREVOR FIELD'S BLACK BINDER.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: UNNAMED CREEK	D.F.O. Division: SOUTH COAST
Local Name: ROTARY PARK CREEK	District: 3 NANAIMO
Watershed Code: 92-4800-070	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
		B.C.G.S. (1:20k) Map: 072
		U.T.M. Mouth:
		Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0''
		Mainstem Length: 0.5 km Ref. No.: 18-9
		Watershed Area: Ref. No.:
		Location:

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

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: UPPER PORTION OF ROTARY SIDE CHANNEL SUBJECT TO DRYING, ISOLATING SMOLTS. (REF. 18-3)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	GOOD YEAR-ROUND COHO REARING. DRIES THROUGHOUT SPAWNING AREA. (REF. 18-9, REF. 18-10)
CN CHUM SALMON	PRESENT. (REF. 18-9)

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
SI STREAM IMPROVEM'T	CO COHO SALMON	0.0	UPPER PORTION DEEPEMED TO ALLOW YEAR-ROUND FLOW. COVER ADDED TO IMPROVE REARING VALUE (COMICHAN VALLEY WATERSHED PROJECT). (N.B.* NOT DEEP ENOUGH; DOES NOT PROVIDE YEAR ROUND FLOW. REF. 10) (REF. 18-10, REF. 18-76)	1983/1983

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
NO INFORMATION AVAILABLE	

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

RIFFLE-TYPE CREEK WITH A FEW DEEP POOLS. MOLESTATION OF FISH IS A PROBLEM AS CREEK FLOWS THROUGH A RESIDENTIAL AND PLAYGROUND AREA. (REF. 18-9)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

K. SIS COMPLETED BY

Completed by: GITA KAPAH
 Checked by: TREVOR FIELDS
 Date: 1986/06/05
 Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-070
Stream Name: UNNAMED CREEK
Page: 1

REFERENCE NO: 18- 3

AUTHOR: COWICHAN VALLEY WATERSHED PROJECT. 1977.
DESCRIPTION: DEPT. OF FISHERIES & OCEANS, DUNCAN OFFICE. FILE #5830-13-1-3-C.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 9

AUTHOR: BROWN, R.F. 1977.
DESCRIPTION: COWICHAN RIVER ADULT CHUM SPAWNING SURVEY AND EGG - TAKING OPERATION. COWICHAN VALLEY WATERSHED PROJECT, D.F.O.
DUNCAN.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CM CHUM FS FISH SAMPLING S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
AG AGRICULTURE	A SIGNIFICANT PORTION OF THE BASIN BELOW 100M IS UTILIZED FOR LIVESTOCK GRAZING - FORAGE PRODUCTION. IMPACT IS MINOR. (REF. 18-76)
UD URBAN DEVELOPMENT	LIGHT, RURAL SCALE RESIDENTIAL USE; MINIMAL IMPACT. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

PICTURES AVAILABLE. (REF. 18-31)
THE STREAM DRIES ABOVE 5200M. HEADWATER STORAGE MIGHT PROVIDE CONTINUOUS FLOW AND ADD SOME 10,000SQ.M OF ADDITIONAL COHO REARING HABITAT. (REF. 18-76)
COHO PRODUCTION POTENTIAL IN REACH IMMEDIATELY ABOVE FALLS IS EXCELLENT. (REF. 18-19)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHU	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-125
Stream Name: INWOOD CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2, 1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 31

AUTHOR: AXFORD, R. DATE UNKNOWN.
DESCRIPTION: CURRIE CREEK, INCOMPLETE PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-125-250
Stream Name: CURRIE CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: HOLT CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 HANAIMO
Watershed Code: 92-4800-190	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
		B.C.G.S. (1:20k) Map: 072
		U.T.M. Mouth: 441182
		Lat./Long. Mouth: 48 DG. 46' 0'' 123 DG. 49' 0''
		Mainstem Length: 14.0 km Ref. No.: 18-32
		Watershed Area: Ref. No.:
Location: ENTERS THE COWICHAN FROM THE SOUTH ABOUT 15.5KM ABOVE THE ESTUARY. DRAINS KOKSILAH RIDGE AND LOIS AND TADJISS LAKES. UPPER AND LOWER PORTIONS OF THE BASIN ARE OF RELATIVELY LOW RELIEF BUT THE MIDDLE SECTION IS STEEP AND NARROW.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	ABOVE FALLS, 50-60% OF STREAM IS RIFFLE. (REF. 18-33) GRADIENT IS MODERATE TO STEEP (REF. 18-76)
0.0- 5.0 5.0- 7.5 11.0- 14.0 7.5- 11.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	3.0	0.3	CD COHO SALMON	2 FALLS; 3M OVER 5, THEN 2.5 OVER 5; RESTING POOL BETWEEN. (REF. 18-76)
F FALLS	9.0	6.8	AF ALL SPECIES	UPPER LIMIT OF POTENTIAL ACCESS FOR ANADROMOUS FISH. (REF. 18-76)

C. FLOW

Flow Control: N	Water Survey of Canada (WSC) Flow Gauge: N
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: 1985 SUMMER DISCHARGE: 8/29/85 AT SHAWNIGAN N. LINE - 0.040CMS 9/1/85 AT N. MAIN UPPER CROSSING 0.042CMS. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CD COHO SALMON	SPAWN AND REAR UP TO FALLS AT 0.32KM. (REF. 18-33)
ST STEELHEAD	CAN MIGRATE UP AND OVER FALLS. (REF. 18-32)
ST STEELHEAD	NO FRY OR PARR SEEN ABOVE THE FIRST FALLS IN THE SUMMER OF 1985. (REF. 18-76)
RB RAINBOW TROUT	CAN MIGRATE UP AND OVER FALLS. (REF. 18-32)

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
ST STEELHEAD	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
FO FORESTRY	THE MAJORITY OF THE BASIN HAS BEEN LOGGED WITH LITTLE RESIDUAL IMPACT DESPITE DIFFICULT CONDITIONS IN SOME AREAS. SOME VERY STEEP (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

POTENTIAL COHO COLONIZATION ABOVE BARRIER LOIS AND TADJISS LAKES (REF. 18-76)
POTENTIAL ABOVE BARRIER STEELHEAD SMDLT YIELD: 1400. (REF. 18-76)
POTENTIAL COHO AND ST REARING HABITAT FROM FIRST FALLS TO 10K ABOVE. ALSO IN LOIS AND TADJISS LAKES WHICH CONTAIN NO FISH AND ARE UNLIKELY TO BE STOCKED BECAUSE THEY RECEIVE VERY LITTLE RECREATIONAL USE. LOIS LAKE IS MAN-MADE. (REF. 18-76)
THE LAKES COULD ALSO BE UTILIZED TO AUGMENT LOW FLOWS. 1M STORAGE COULD PROVIDE 0.014CMS FOR THE 180 DAY SUMMER DISCHARGE PERIOD ALLOWING FOR 30% EVAPORATION LOSS. THIS WOULD INCREASE 1985 SUMMER FLOW BY 35%. (REF. 18-76)
TOTAL ABOVE BARRIER HABITAT: STREAM - 48,000 SQ.M LAKES: LOIS-- 25HA ; TADJISS-- 7HA . (REF. 18-76)
TRIBUTARIES LEADING INTO MAINSTEM HAVE NO FISH VALUE. (REF. 18-17)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHI	Date: 1986/05/31
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 92B/12 EAST & WEST. 1:50,000.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 32

AUTHOR: FREDERICK, B., T. HARDING. JULY 19, 1971.
DESCRIPTION: STREAM SURVEY FORM: HOLT CREEK. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 33

AUTHOR: ANONYMOUS
DESCRIPTION: "HOLT CREEK ENHANCEMENT. (STEELHEAD)". IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: EN ENHANCEMENT PY PHYSICAL HABITAT ST STEELHEAD

REFERENCE NO: 18- 76

AUTHOR: BURMS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: UNNAMED CREEK	D.F.O. Division: SOUTH COAST
Local Name: MAYO LAKE CREEK	District: 3 NANAIMO
Watershed Code: 92-4800-350	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92B/13
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 49' 0'' 124 DG. 2' 0''
		Mainstem Length: Ref. No.:
		Watershed Area: Ref. No.:
Location: ENTERS THE COMICHAN IN MARIE CANYON ABOUT 28KM ABOVE THE ESTUARY. DRAINS MAYO LAKE AND THE S.E. TOE OF HILL 60. LOW RELIEF BASIN. (REF.76).		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	SLOPE 10%+ FROM MOUTH TO 0.01KM U/S. (REF. 18-76)
0.0- 6.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	20.0	0.1	AF ALL SPECIES	SERIES OF FALLS UP TO 5M VERTICAL DROP. FROM MOUTH TO 100M UPSTREAM (REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: ENTIRE STREAM DRIES EXCEPT FOR A FEW ISOLATED POOLS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CT CUTTHROAT TROUT	IN MAYO LAKE AND THE CREEK BELOW. LARGE NUMBERS ARE TRAPPED IN ISOLATED POOLS IN SUMMER. (REF. 18-76)
RB RAINBOW TROUT	IN MAYO LAKE. (REF. 18-76)

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

MAYO LAKE HAS A COHO SMOLT YIELD POTENTIAL OF 2,800 - 14,000. (REF. 18-76)
POTENTIAL SPAWNING IF HIGH FALLS AT LOWER END OF THE CREEK WAS DEALT WITH. ALSO GOOD POTENTIAL REARING. (REF. 18-5)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-350
Stream Name: UNNAMED CREEK
Page: 1

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T. ,T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COMICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: BEAR CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-400	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 928/13 B.C.G.S. (1:20k) Map: 071 U.T.M. Mouth: Lat./Long. Mouth: 48 DG. 46' 45'' 123 DG. 57' 15'' Mainstem Length: 11.3 km Ref. No.: 18-34 Watershed Area: Ref. No.:
		Location: ENTERS THE COWICHAN FROM THE SOUTH APPROXIMATELY 1KM ABOVE SKUTZ FALLS. DRAINS A BASIN THAT IS RELATIVELY BROAD AND OF COMPARATIVELY LOW RELIEF IN ITS UPPER ZONE, THEN STEEP AND NARROW TO THE COWICHAN FLOOD PLAIN.

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	FLOW PATTERN: TUMBLING, POOL-RIFFLE, STEEP NATURE ABOVE FIRST FALLS TO 9KM. (REF. 18-76)
0.0- 2.3 2.3- 4.8 4.8- 8.8 9.0- 11.3	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	4.4	0.8	AF ALL SPECIES	(REF. 18-34)
F FALLS	5.5	2.3		3 FALLS: 1M, 2M OVER 3 AND 2.5 OVER 4. (REF. 18-76)
F FALLS	100.0	4.8		SERIES OF FALLS TALLING 100M IN A 350M HIGH GRADIENT ZONE. (REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 122M LONG SIDE CHANNEL RUNS AGAINST THE BLUFF ON THE E. BELOW A LARGE LOG JAM JUST BELOW THE FIRST FALLS; IT DRIES. (REF. 18-35)			
1985 SUMMER DISCHARGE: 8/28/85 500M ABOVE FALLS 0.34CMS. 9/21/85 M & B MAIN (REACH 4) 0.008CMS. (REF. 18-76)			
DISCHARGE RATE: 0.28 - 5.67 CMS. (REF. 18-34)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	LARGE NUMBERS OF FRY SEEN IN SIDE CHANNEL. (REF. 18-35)
ST STEELHEAD	NO ADULTS HAVE BEEN SEEN ABOVE THE FIRST FALLS. (REF. 18-76)
ST STEELHEAD	NUMEROUS IN STREAM BELOW THE LOWER FALLS (POSSIBLY PASSABLE BY ST). (REF. 18-35)
AO ALL SALMON	SPANNING GOOD UP TO THE LOG JAM, BELOW THE 4.4M FALLS, WHERE THE ANADROMOUS FISH WATER ENDS. (REF. 18-35)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
ST STEELHEAD	16	1983 - 1983	18-76				
ST STEELHEAD	43	1985 - 1985	18-76				

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
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
EN ENHANCEMENT ACTS	ST STEELHEAD	0.0	THE B.C. FISH AND WILDLIFE BRANCH HAS MADE VALIANT EFFORTS TO IMPROVE THE FIRST FALLS FOR ST PASSAGE. RESULTS TO DATE: NIL. THESE ARE MATURE, LATE-RUN FISH WITHOUT ENOUGH ENERGY TO SURMOUNT THE FALLS. UPSTREAM FRY STOCKING WOULD YIELD BETTER RESULTS. (REF. 18-76)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ACCESSIBLE OLD GROWTH HAS BEEN HARVESTED. ADVANCED SECOND GROWTH NOW DOMINATES. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER HABITAT INCLUDING A LAKE AND WETLANDS HAVE COHO COLONIZATION POTENTIAL. MUCH OF THIS AREA IS BETTER SUITED TO STEELHEAD PRODUCTION. (REACH 2 & 3; 16000SQ.M OF 1.5% - 4% HABITAT). (REF. 18-76)
BANK AND HILLSIDES ARE VERY STABLE. (REF. 18-34)
IT IS CONSIDERED GOOD TROUT REARING HABITAT. (REF. 18-35)
NO TRIBUTARIES WERE INVESTIGATED BUT ARE OF DOUBTFUL USE. (REF. 18-35)
PICTURES AVAILABLE. (REF. 18-34)
THE AREA ABOVE THE 2ND FALLS APPEARS TO CONTAIN NO PERMANENT BARRIERS TO ANADROMOUS FISH, ALTHOUGH THERE IS NO EVIDENCE OF FISH ABOVE THESE FALLS. (REF. 18-35)

J. FISHERY OFFICER NARRATIVE

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

Completed by:	GITA KAPAHI	Date:	1986/06/01
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	B.D. TUTTY	Date:	1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-400
Stream Name: BEAR CREEK
Page: 1

REFERENCE NO: 18- 34

AUTHOR: AXFORD, R., A.D. DE LEEUW. MAY 22, 1975
DESCRIPTION: BEAR CREEK, PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 35

AUTHOR: FREDERICK, B.G., T. HARDING. 1971.
DESCRIPTION: STREAM SURVEY FORM: BEAR CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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	IDENTIFIED AS DONOR OF COHO FRY FOR STOCKING TO GRANT, KWASSIN LAKE. (REF. 18-76)	1986/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ACCESSIBLE OLD GROWTH HAS BEEN HARVESTED; ADVANCED SECOND GROWTH NOW COVERS THE WATERSHED. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

APPEARS TO HAVE EXCELLENT REARING AND SPANNING POTENTIAL IF SUMMER WATERFLOW PROBLEM IS RESOLVED. (REF. 18-38)
IDEAL FOR POTENTIAL WATER STORAGE. (REF. 18-14)
PICTURES AVAILABLE. (REF. 18-37)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 37

AUTHOR: AXFORD, R., P. BURNS. JULY 19, 1976.
DESCRIPTION: FAIRSERVICE CREEK PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 38

AUTHOR: DE LEEUW, V. AUG. 18, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT, FAIR SERVICE CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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	ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

MINOR BARRIER ABOVE COHO COLONIZATION POTENTIAL: 72-288 (REF. 18-76)
--

J. FISHERY OFFICER NARRATIVE

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

Completed by:	GITA KAPANI	Date:	1986/06/05
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	B.D. TUTTY	Date:	1988/03/07

A. DESCRIPTION

Stream Name: MILLAR CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 MANAIMO
Watershed Code: 92-4800-605-130	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 49' 0'' 124 DG. 13' 0''
		Mainstem Length: 5.0 km Ref. No.: 18-4
		Watershed Area: Ref. No.:
Location: ENTERS SUTTON CREEK 1.5KM ABOVE COWICHAN LAKE. DRAINS A NARROW, MOIST BASIN. RELATIVELY STABLE DISCHARGE REGIME. SUMMER FLOW IS GROU NDWATER SEEPAGE. (REF.76)		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	DRIES ABOVE 3.0KM. (REF. 18-76)
0.0- 3.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
X LOG JAMS				CONT'D: THEY ARE SUBJECT TO ANNUAL MOVEMENT. NO HABITAT ABOVE THE JAM DUE TO GRADIENT & DRYING. (REF. 18-76)
X LOG JAMS				CONT'D: THEY BEGIN ABOUT 1.5KM ABOVE SUTTON C. ANY OR ALL MAY BE BARRIERS TO CO MIGRATION BECAUSE (REF. 18-76)
X LOG JAMS	2.0	3.0	AF ALL SPECIES	A HUGE, STABLE, BACKFILLED LOG JAM. THERE ARE SEVERAL SMALL JAMS BELOW THIS POINT. (REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: 1985 SUMMER DISCHARGE: 8/26/85 - 20M ABOVE SUTTON MAINLINE: 0.026CMS. FLOW IS RELATIVELY STABLE. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SUPPORTS A STRONG COHO POPULATION FOR 1.6KM; THEN SPARSE RESIDENT CUTTHROAT FOR ABOUT 1.0KM. (REF. 18-4)
CT CUTTHROAT TROUT	SOME COWICHAN LAKE CUTTHROAT MAY SPAWN IN THIS CREEK. (SEE ALSO, COHO COMMENT) (REF. 18-76)

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											
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
NO INFORMATION AVAILABLE				

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	OLD GROWTH HAS BEEN HARVESTED. THE WATERSHED IS COVERED WITH ADVANCED SECOND GROWTH FIR - CEDAR - HEMLOCK. MATURE ALDER STANDS ARE (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

NO INFORMATION AVAILABLE

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-605-130
Stream Name: WILLAR CREEK
Page: 1

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
ST STEELHEAD	Migration Spawning Incubation Rearing				X	X X							
Comments: COHO AND STEELHEAD ARE LATE RUN; TYPICAL OF RUNOFF STREAMS. (REF. 18-76)													

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	ACCESSIBLE TIMBER HAS BEEN LOGGED; MUCH OF IT DECADES AGO. MOST OF THE BASIN IS ADVANCED SECOND GROWTH. (REF. 18-76)
UD URBAN DEVELOPMENT	CONSIDERABLE FLOOD PLAIN USE. MAY HAVE TO BE DEFENDED.(RESIDENTIAL USE). (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO SMOLT YIELD POTENTIAL RANGES FROM 1,500 TO 15,000. (REF. 18-76)
MOST TRIBUTARIES OF THIS CREEK HAVE NO FISH VALUE. SERIES OF LARGE, DEEP (6 - 7M) POOLS FOUND AT LOWER SECTION OF CANYON. (REF. 18-39)
PICTURES AVAILABLE. (REF. 18-50)
THE THIRD TRIBUTARY ON THE N. SIDE, 7500M ABOVE COWICHAN LAKE HAS SOME CAPABILITY.. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-650
Stream Name: MEADE CREEK
Page: 1

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 50

AUTHOR: AXFORD, R., A. D. DE LEEUW. JULY 21, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. MEADE CREEK PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: UTILITY CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-715	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 52' 0'' 124 DG. 11' 0''
		Mainstem Length: 0.1 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: YOUNG VILLAGE. A VERY SMALL GROUNDWATER SEEPAGE STREAM THAT CARRIES SURFACE RUNOFF ONLY IN EXTREME EVENTS.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	FIRST 50M IS DELTAIC FAN PRODUCED BY A STEEP RUNOFF TRIBUTARY THAT ENTERS JUST ABOVE THE CN RAILWAY CULVERT. THE SECOND 50M IS SILT- FINE GRAVEL. (REF. 18-76) INCREASING GRADIENT AT 1 KM (JUST BELOW N.SHORE CULVERT) (REF. 18-76)
0.0- 0.1	

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: LOWER 50M DRY IN EXTREMELY DRY SUMMERS. THERE IS ALWAYS ENOUGH FLOW TO WET THE CHANNEL IN THE UPPER 50M. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SPAWNING FROM MOUTH OF CREEK TO 30M BELOW N. SHORE RD. CULVERT. MANY FRY MIGRATE TO COWICHAN LAKE IN THE SUMMER. (REF. 18-76)
AF ALL SPECIES	ACCESSIBLE TO ALL FISH FOR THE FIRST KM WHERE GRADIENT CHANGES. (REF. 18-76)
CT CUTTHROAT TROUT	A FEW FRY ARE PRESENT AND COULD BE PROGENY OF COWICHAN LAKE SPAWNERS. (REF. 18-76)

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											
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
NO INFORMATION AVAILABLE				

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ENTIRE BASIN ABOVE YOUNG VILLAGE IS ADVANCED SECOND GROWTH. EXTENSIVE ALDER IN A 100M WIDE SEEPAGE ZONE ABOVE N. SHORE ROAD. (REF. 18-76)
UD URBAN DEVELOPMENT	THE STREAM FLOWS THROUGH YARDS FOR 50M (RESIDENTIAL AREA); RESIDENTS HAVE NOT DEGRADED IT. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

SUPPLEMENTAL INCUBATION WOULD YIELD MUCH BENEFIT. WINTER DISCHARGE IS STABLE ABOVE 50M; AVERAGING 0.056CMS. AVERAGE TEMPERATURE: 5 C EXCESS COHO FRY WOULD BE EASILY ABSORBED BY COWICHAN LAKE WHICH IS UNDERUTILIZED BY COHO. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

Date Prepared: / / Prepared By:

K. SIS COMPLETED BY

Completed by:	GITA KAPAH	Date:	1986/06/02
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	KATHY PONTUS	Date:	1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-715
Stream Name: UTILITY CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: COONSKIN CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-725	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 52' 0'' 124 DG. 12' 0''
		Mainstem Length: 3.0 km Ref. No.: 18-53
		Watershed Area: Ref. No.:
Location: A SHORT, STEEP BASIN THAT DRAINS THE CENTRAL AREA OF MT. HOLMES. FLOWS THROUGH YOBOU AND SERVES AS THE COMMUNITY WATER SUPPLY.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	DELTAIC FAN; IT DRIES. (REF. 18-76) GRADIENT RAPIDLY INCREASE AT 0.1 KM (REF. 18-76)
0.0- 0.1 0.1- 3.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	100.0	0.2		A SERIES OF FALLS WHICH BEGIN AT 200M AND EXTEND UPSTREAM FOR 200M. AT THIS PT. HERE IS A 10M DAM. (REF. 18-76)
D DAM	10.0	0.4		(REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 SUMMER DISCHARGE: 8/26/85 - 30M ABOVE N. SHORE RD. = 0.004CMS. (REF. 18-76)			
ACTUAL DISCHARGE IS 0.08CMS; THE RANGE IS 0.01 - 2.83CMS. IT DRIES IN SUMMER. (REF. 18-53)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SPAWN IN THE LOWER 50M. IT DRIES IN SUMMER. MOST FRY MIGRATE TO THE LAKE BUT SOME MOVE UPSTREAM ANOTHER 50M AND SPEND THE SUMMER IN THE CREEK. WHEN THE STREAM BEGINS TO RISE AND COOL, THEY MIGRATE TO THE LAKE TO OVERWINTER AND SMOLT. (REF. 18-76)
AF ALL SPECIES	ALL FISH LIMITED TO FIRST 0.1 KM DUE TO STEEP GRADIENT PAST THIS POINT (REF. 18-76)
CT CUTTHROAT TROUT	A SPARSE RESIDENT FRY POPULATION SCATTERED TO 200M. THEY COULD BE THE PROGENY OF COWICHAN LAKE SPAWNERS. (REF. 18-76)

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
CT CUTTHROAT TROUT	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		0.0	CONTACT TREVOR MORRIS FOR PIP HATCHERY INFORMATION. (REF. 18-10)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	FROM 100 TO 1500M (STREAM LENGTH), THE BASIN IS ADVANCED SECOND GROWTH. ABOVE 1500M, THE AREA HAS BEEN RECENTLY LOGGED. CONSIDERABLE (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

PICTURES AVAILABLE. (REF. 18-4)
PRODUCTION LIMITED BY LOW RECRUITMENT POTENTIAL, HIGH WINTER DISCHARGE, SHORT HABITABLE AREA AND LOW SUMMER FLOWS. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/04
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-725
Stream Name: COONSKIN CREEK
Page: 1

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 53

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. COONSKIN CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

F. LIFE HISTORY TIMING CONTINUED

Species	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Comments: COHO ARE LATE RUN. THEY HOLD IN THE LAKE UNTIL CONDITIONS ARE RIGHT THEN ENTER, SPAWN AND LEAVE. FRY LEAVE SOON AFTER EMERGENCE. NUMBER OF SPAWNERS IS VERY SMALL - IN MANY YEARS, THERE ARE NONE. (REF. 18-76)													

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	MOST OF THE UPPER BASIN TIMBER IS INACCESSIBLE. MUCH OF THE WEST SLOPE OF THE BASIN ABOVE THE 700M POINT (STREAM LENGTH) BURNED. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

FROM HIGHWAY BRIDGE TO THE HEAD WATERS, INCLUDING ALL THE TRIBUTARIES, THERE IS NO VALUE FOR FISH HABITAT (REF. 18-39)
PICTURES AVAILABLE. (REF. 18-54)
PRODUCTION LIMITED BY LOW RECRUITMENT POTENTIAL, HIGH WINTER FLOWS AND EARLY DRYING. NO ENHANCEMENT OPPORTUNITIES. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPANI	Date: 1986/06/04
Checked by: TREVOR FIELDS	Date: 1986/04/24

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 54

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. YOUNG CREEK, PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
ST STEELHEAD	Migration Spawning Incubation Rearing				X X	X X							
Comments: STEELHEAD AND COHO ARE BOTH LATE RUN - TYPICAL OF NON-BUFFERED STREAMS. (REF. 18-76)													

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	ACCESSIBLE OLD GROWTH IS LARGELY GONE. DUE TO HIGH SOIL MOISTURE, A LARGE PERCENTAGE OF SECOND GROWTH WAS ALDER. MUCH OF IT HAS BEEN (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO COLONIZATION POTENTIAL. PRODUCTION LIMITED BY HIGH FALL - WINTER FLOWS. (REF. 18-76)
ALL TRIBUTARIES (EXCEPT WIDOW C) HAVE NO FISH VALUE. (REF. 18-56)
NOT WELL UTILIZED, GOOD POTENTIAL. (REF. 18-14)
SUBSTRATE: BOULDERS WITH GRAVEL BARS. PICTURES AVAILABLE. (REF. 18-56)
THERE IS POTENTIAL HABITAT FOR ABOUT 1KM UP EACH OF THE FORKS AT THE 6.7KM POINT. (REF. 18-39)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/04
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION I - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 55

AUTHOR: AXFORD, R., D. DE LEEUW. JULY 4, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. COTTONWOOD CREEK, PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 56

AUTHOR: FREDERICK, B.G. AUG. 10, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, COTTONWOOD CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
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	LITTLE ACCESSIBLE OLD GROWTH LEFT. LOGGING IS NEARLY FINISHED IN THIS WATERSHED. A STEEP MOUNTAIN FACE ON THE NORTH SIDE OF THE (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ALL TRIBUTARIES HAVE NO FISH VALUE (REF. 18-39)
POTENTIAL ABOVE BARRIER COHD SMOLT YIELD: 240 - 2400 (REFERS TO THE FIRST 1200M) (REF. 18-76)
POTENTIAL HABITAT FOR ANOTHER 1KM BEYOND THE EARLIER MENTIONED TRIBUTARY. (REF. 18-39)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-750-250
Stream Name: WIDOW CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: CROFT CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-820	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 099
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 52' 11'' 124 DG. 17' 52''
		Mainstem Length: 3.0 km Ref. No.: 18-57
		Watershed Area: Ref. No.:
Location:		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT IS 3.5%. (REF. 18-57)

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: ACTUAL DISCHARGE IS 0.42CMS WITH A RANGE OF 0.06 - 2.83CMS. (REF. 18-57)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	COHO SPAWN AND REAR IN CREEK. (REF. 18-57)
AF ALL SPECIES	FIRST 2 KM ARE ACCESSIBLE TO MIGRANT FISH (REF. 18-57)

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

NO INFORMATION AVAILABLE

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPANI	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-820
Stream Name: CROFT CREEK
Page: 1

REFERENCE NO: 18- 57

AUTHOR: AXFORD, R., P. BURNS. JUNE 10, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. CROFT CREEK PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES

HS HABITAT SAMPLING

PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: WARDROPER CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-850	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 099
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 54' 0'' 124 DG. 18' 0''
		Mainstem Length: 5.0 km Ref. No.: 18-58
		Watershed Area: Ref. No.:
Location: DRAINS A VERY STEEP, SHORT AND NARROW BASIN ON COWICHAN LAKES' NORTH SHORE.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT: STEEP. (REF. 18-59)
0.0- 1.0 1.0- 1.5 1.5- 5.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
C CASCADE	3.0	1.5	AF ALL SPECIES	FORMED BY A LOG AND FALLEN BRIDGE. GRADIENT INCREASES SHARPLY ABOVE THIS POINT. (REF. 18-39, REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: DISCHARGE: LESS THAN 0.03 - 2.83CMS. STREAM CHANNEL SUBJECT TO FLOODING AND INTERMITTENT LOW SUMMER FLOWS; ENHANCEMENT OPPORTUNITIES UNLIKELY. (REF. 18-58)			
LOWER 1KM DRIES. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	PRESENT BUT SPARSE, FRY MIGRATE TO COWICHAN LAKE. (REF. 18-59, REF. 18-76)
CT CUTTHROAT TROUT	PRESENT IN 1KM SECTION BETWEEN DRY AREA AND FALLS. (REF. 18-76)

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
FD FORESTRY	ACCESSIBLE OLD GROWTH HAS BEEN CUT, BASIN IS NOW COVERED BY ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

CONDUCTIVE TO FISH PRODUCTION IN 1ST MILE. PICTURES AVAILABLE. (REF. 18-58)
FIRST QUARTER OF RIVER IS ANADROMOUS FISH WATER, THE SECOND AND THIRD QUARTERS ARE MARGINAL FISH HABITAT (ABOVE BOTH OBSTRUCTIONS). (REF. 18-39)
PRODUCTION LIMITED BY SLOPE, LOW COHO RECRUITMENT POTENTIAL AND HIGH FALL - WINTER. NO ENHANCEMENT OPTIONS. (REF. 18-76)
THE REMAINDER OF THE CREEK AND ALL TRIBUTARIES ARE OF NO VALUE AS FISH HABITAT. (REF. 18-39)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHI	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-850
Stream Name: WARDROPER CREEK
Page: 1

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 58

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. WARDROPER CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 59

AUTHOR: FREDERICK, B.G. AUG. 10, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, WARDROPER CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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											
ST STEELHEAD	Migration Spawning Incubation Rearing				X X	X X							
Comments: STEELHEAD AND COHO ARE LATE RUN. (REF. 18-76)													

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	STILL IN PROGRESS. CONSIDERABLE OLD GROWTH LEFT. DEBRIS RACKS AT CULVERTS ON EAST BRANCH TRIBUTARIES. AREAS OF STEEP, MOIST SOILS (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

LOW ENHANCEMENT POTENTIAL. ABOVE BARRIER COHO SMOLT YIELD POTENTIAL: 1400 - 14,000. PRODUCTION LIMITED BY HIGH DISCHARGE IN FALL AND WINTER AND LOW COHO RECRUITMENT POTENTIAL. (REF. 18-76)
PICTURES AVAILABLE. (REF. 18-60)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-875
Stream Name: MCKAY CREEK
Page: 1

REFERENCE NO: 18- 60

AUTHOR: AXFORD, R., P. BURNS. JUNE 17, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. MCKAY CREEK PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: NIXON CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-900	Subdistrict: 18 DJUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
UNNAMED CREEK	625	B.C.G.S. (1:20k) Map: 089
		U.T.M. Mouth: 48 06. 53' 0'' 124 06. 22' 0''
		Mainstem Length: 14.0 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: DRAINS AN AREA OF RELATIVELY LOW MOUNTAINS (LESS THAN 1000M), S.W. OF THE W. PORTION OF COMICHAN LAKE.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	DELTAIC FAN - DRIES EARLY. OCCASIONAL TEMPORARY SIDE CHANNELS TO 5.5KM. (REF. 18-76)
0.0- 2.0 2.0- 11.0 11.0- 13.0 13.0- 14.0	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	6.0	11.0	AF ALL SPECIES	(REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 SUMMER DISCHARGE: 9/22/85 -- 2000M ABOVE S. SHORE RD.=0.225CMS; 9/26/85 -- 200M ABOVE FALLS = 0.043CMS. (REF. 18-76)			
DISCHARGE: RANGE 0.06 - 17.0CMS. (REF. 18-61)			
LOWER 2KM OF STREAM DRIES. (REF. 18-14)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	CHANGING SIDE CHANNELS PROVIDE EXCELLENT SPawning AND REARING, ESPECIALLY FOR COHO (REF. 18-61)
CO COHO SALMON	EXCELLENT COHO SPawning STREAM BUT SUBJECT TO HIGH DISCHARGE FLUCTUATION. FOUND TO 11000M. (REF. 18-61, REF. 18-62, REF. 18-76)
ST STEELHEAD	PRESENT IN SYSTEM; FOUND TO 11000M. (REF. 18-62, REF. 18-76)
CT CUTTHROAT TROUT	CHANGING SIDE CHANNELS PROVIDE EXCELLANT SPawning AND REARING FOR CUTTHROAT (REF. 18-61)
CT CUTTHROAT TROUT	PRESENT IN SYSTEM. (REF. 18-62)
NF NO FISH	NO FISH OBSERVED ABOVE FALLS ON EAST FORK. (REF. 18-61)

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
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
NO INFORMATION AVAILABLE				

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	MOST OF THE BASIN IS WELL ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO SMOLT YIELD POTENTIAL: MAINSTEM - 160 TO 1600. GRAVEL REMOVAL ON THE DELTAIC FAN COULD ALLEVIATE DRYING AND ADD CONSIDERABLE LOW GRADIENT HABITAT. (REF. 18-76)
GOOD SIDE CHANNELS IN MAINSTEM FROM LAKE TO 800' ELEVATION. PICTURES AVAILABLE. SIDE CHANNELS CHANGE ANNUALLY. (REF. 18-61)
GRAVEL REMOVAL IN PAST HAS NOT ALLEVIATED PROBLEMS. TREMENDOUS RECRUITMENT OCCURS WITH EVERY FLOOD. (REF. 18-10)
LOTS OF POTENTIAL FOR THE CREEK, BUT FOR SOME REASON IT IS NOT VERY WELL UTILIZED. (REF. 18-14)
THIS STREAM DRIES EVERY YEAR BELOW BRIDGE. FRY SALVAGE CARRIED OUT EVERY YEAR. (REF. 18-10)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION. (PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 61

AUTHOR: AXFORD, R., P. BURNS. JUNE, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. NIXON CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 62

AUTHOR: FREDERICK, B.G. SEPT. 14, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, NIXON CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: UNNAMED CREEK	D.F.O. Division: SOUTH COAST
Local Name: RAYMOND CREEK	District: 3 NANAIMO
Watershed Code: 92-4800-900-625	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 089
		U.T.M. Mouth:
		Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0''
		Mainstem Length: 5.0 km Ref. No.: 18-61
		Watershed Area: Ref. No.:
Location: ENTERS NIXON FROM THE W. 6KM UPSTREAM FROM COWICHAN LAKE.		

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

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 DISCHARGE: 0.12CMS AT CAYOUSE MAIN (9/22/85). (REF. 18-76)			
THE DISCHARGE RANGES FROM 0.14 - 14.2CMS. (REF. 18-61)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	SIGHTED IN CREEK. (REF. 18-61)
ST STEELHEAD	UTILIZED BY SALMON AND TROUT FOR ALL ITS ACCESSIBLE LENGTH. (REF. 18-61)
AF ALL SPECIES	FIRST 5 KM ACCESSIBLE TO MIGRANT FISH (REF. 18-39, REF. 18-61)

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
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
NO INFORMATION AVAILABLE				

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	95% OF THE BASIN IS COVERED BY ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

60% BOULDER BED. (REF. 18-61)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHU	Date: 1985/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-900-625
Stream Name: UNNAMED CREEK
Page: 1

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 61

AUTHOR: AXFORD, R., P. BURNS. JUNE, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. NIXON CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: SHAW CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-950	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16 B.C.G.S. (1:20k) Map: 098 U.T.M. Mouth: Lat./Long. Mouth: 0 06. 0' 0'' 0 06. 0' 0'' Mainstem Length: 17.0 km Ref. No.: 18-63 Watershed Area: Ref. No.:
		Location: SHAW C FLOWS SOUTH IN THREE BRANCHES: WEST, MIDDLE AND EAST FORKS. LOCATED 56KM N.W. OF DUNCAN. DRAINS SHAW AND GILLESPIE LAKES, THE E. SLOPE OF HEATHER MOUNTAIN AND THE SOUTH END OF THE VANCOUVER ISLAND RANGES.

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT AVERAGES 0.5%; CONSIDERABLE CANYON AREA. (REF. 18-76)
0.0- 2.5 2.5- 5.5 5.5- 8.0 8.0- 16.7	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	2.5	3.0	CH CHINOOK SALMON CO COHO SALMON	STEELHEAD PASS IN SOME YEARS. (REF. 18-76)
C CASCADE	3.0	3.2		3M OVER 10. (REF. 18-76)
C CASCADE	2.0	5.0		SERIES OF CHUTES IN NARROW ROCK CUT. (REF. 18-76)
F FALLS	3.0	6.5	ST STEELHEAD	(REF. 18-76)
F FALLS	1.0	8.0		(REF. 18-76)
F FALLS	1.0	8.1		(REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: 1985 DISCHARGE: 2500M ABOVE THE FIRST FALLS; 8/13/85; - 0.51CMS. (REF. 18-76)	
DISCHARGE: 1.41 - 14.5CMS. (REF. 18-63)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	FRY IN LOWER CREEK. ABOVE THE CANYON AT LEAST 6.5KM OF SPANNING GRAVEL. (REF. 18-65)
CH CHINOOK SALMON	IDEAL STREAM FOR THIS SPECIES; CHINOOK FRY IN THIS SYSTEM SMOLT IN 60 - 90 DAYS. BEING A TRIBUTARY OF A LAKE, IT IS POSSIBLE THAT ALL FRY REAR IN LAKE. (REF. 18-65)
ST STEELHEAD	POSSIBLY A FEW PRESENT. (REF. 18-65)

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 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	MUCH OF THIS BASIN WAS LOGGED OFF AT LEAST 30 YEARS AGO, SECOND GROWTH WELL STARTED. (REF. 18-65)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO SMOLT YIELD POTENTIAL: MAINSTEM - 1800 - 9000; MIDDLE FORK -- 1400 - 14,000; SHAW LAKE -- 8,000 - 40,000. (REF. 18-76)
CONSIDERING THE QUALITY OF THE SPAWNING AREAS ABOVE THE CANYON, THE INTRODUCTION OF SEVERAL SETS OF FISHWAYS WOULD HUGEY IMPROVE THIS CREEK. (REF. 18-65)
PICTURES AVAILABLE. (REF. 18-63)
THE RELEASE OF SEVERAL THOUSAND CHINOOK AND COHO FRY WOULD POSSIBLY ENSURE A RETURN RUN FOR THE FUTURE. (REF. 18-65)
THERE WERE CONSERVATION PROBLEMS WITH WEST SHAW IN 1978 RE: LOGGERS FALLING TREES ACROSS CREEK. (REF. 18-67)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHI	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24

REFERENCE NO: 18- 63

AUTHOR: AXFORD, R., P. BURNS. JUNE 16, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SHAW CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 65

AUTHOR: DE LEEUW, V. SEPT. 16, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, SHAW CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 67

AUTHOR: BROADLAND, K.R. JULY, 1978.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SHAW CREEK APPREHENSION REPORT.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: LITTLE SHAW CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-960	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 098
		U.T.M. Mouth: 960194
		Lat./Long. Mouth: 48 DG. 55' 0'' 124 DG. 25' 0''
		Mainstem Length: 4.0 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: SMALL TRIBUTARY WHICH ENTERS THE NORTH SIDE OF LAKE COWICHAN WEST OF SHAW CREEK. DRAINS A SHORT, STEEP BASIN.		

Gradient Class/Location (km upstream from mouth)					Comments
0 - .5%	.5 - 2%	2 - 5%	5 - 10%	>10%	A DELTAIC FAN. 0.0 TO 0.5% SLOPE FOUND FROM MOUTH TO 0.07KM U/S.; 5 TO 10% SLOPE FOUND FROM 0.07KM TO 0.9KM U/S FROM MOUTH. (REF. 18-76)
	2.6-	3.6	0.0-	0.9	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
F FALLS	9.0	0.9	AF ALL SPECIES	FOUR FALLS WITH VERTICAL DROPS OF ABOUT 2M. LENGTH ACCESSIBLE TO MIGRANT FISH IS 0.9KM. (REF. 18-4, REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: DISCHARGE: RANGE 0.03 - 5.7CMS. HIGH WINTER DISCHARGE FLUCTUATION. (REF. 18-4)			
FIRST 200M DRY. 1985 DISCHARGE: 100M ABOVE NORTH SHORE RD., 9/22/85 = 0.046CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	FRY MIGRATE TO COWICHAN LAKE WITH THE ONSET OF DRYING. (REF. 18-76)
CO COHO SALMON	FRY PLENTIFUL ALONG STREAM EDGE AND IN SLOW POOLS. VERY FEW OPTIONS FOR ENHANCEMENT. SUPPORTS SMALL NUMBER OF COHO FRY IN LOWER 150M AND A FEW RESIDENT RB UNTIL MID-JULY WHEN THIS SECTION DRIES. (REF. 18-4)
AD ALL SALMON	SPAWNING GRAVEL LIMITED TO SMALL POCKETS OR POOLS. (REF. 18-69)
RB RAINBOW TROUT	A FEW RESIDENTS UNTIL MID-JULY (SEE ABOVE) (REF. 18-4)

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											

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	MUCH OF THE UPPER BASIN WAS LOGGED IN THE 1970'S AND IS IN EARLY STAGES OF REGENERATION. EXTENSIVE CROSS-STREAM YARDING CAUSED BANK (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO SMOLT YIELD POTENTIAL: 80 - 800. (REF. 18-76)
NO WORTHWHILE ENHANCEMENT OPPORTUNITIES. (REF. 18-69)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-960
Stream Name: LITTLE SHAW CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN).ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16,1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 69

AUTHOR: AXFORD, R., T. BURNS. JUNE, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. LITTLE SHAW CREEK, PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
EN ENHANCEMENT ACTS		0.0	UNAUTHORIZED STREAM IMPROVEMENT ATTEMPTED. (REF. 18-10)	1981/1981

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
AG AGRICULTURE	A LARGE PERCENTAGE OF THE BASIN IS IN LIVESTOCK FORAGE PRODUCTION. CATTLE DAMAGE TO BANKS IS COMMON. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

CUTTHROATS DOMINATED THE STREAM IN THREE YEARS OF OBSERVATION (1971,1984,1985); THE ONLY YEARS OF OBSERVATION. COHO ENHANCEMENT WOULD CHANGE THIS. SINCE THERE ARE FEW STREAMS THAT FAVOUR CT, IT IS PROBABLY BEST TO LEAVE GARNETT C BE OR ENHANCE CT. (REF. 18-76)
EGG SURVIVAL LIMITED BY POOR SUBSTRATE QUALITY (FINES). COHO FRY COULD BE STOCKED IN A SMALL RESERVOIR ON THE SOUTH FORK. AREA IS ABOUT 0.6HA. POSSIBLE SMOLT YIELD @ 1 FRY/SQ.M = 480. (REF. 18-76)
HOWEVER, TO MY KNOWLEDGE, NOBODY FISHES THIS POPULATION. THEY PROBABLY RANGE FROM INNER COWICHAN BAY TO MILL BAY - BAMBERTON IN THIS SALTWATER PHASE. (REF. 18-76)
WOULD LIKE TO SEE SMALL INCUBATION BOX OR COHO COLONIZATION PROJECTS. (REF. 18-10)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPANI	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (MANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURMS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
ST STEELHEAD	Migration Spawning Incubation Rearing				X X	X X							
Comments: COHO AND STEELHEAD ARE LATE RUN. (REF. 18-76)													

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	MUCH OLD GROWTH HAS BEEN HARVESTED. THERE HAS BEEN POOR REGENERATION ON STEEP, THIN SOIL SLOPES. CONSIDERABLE OLD GROWTH REMAINS (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

POTENTIAL COHO COLONIZATION ABOVE BARRIER. POTENTIAL ABOVE BARRIER STEELHEAD SMOLT YIELD (REACH 3): 224. EXTREME GRAVEL TRANSPORT IN LOWER REACHES. (REF. 18-76)
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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: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-585-400
Stream Name: EAST ROBERTSON RIVER
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (MANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: ASHBURNHAM CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-600	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 49' 0'' 124 DG. 11' 0''
		Mainstem Length: 5.5 km Ref. No.: 18-4
		Watershed Area: Ref. No.:
Location: HONEYMOON BAY. DRAINS A STEEP NARROW BASIN ON THE SOUTH SIDE OF COWICHAN LAKE. (REF.76)		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	GRADIENT IS MODERATE. (REF. 18-48)
0.0- 0.2 0.2- 1.5 1.5- 3.0 3.0- 5.0 5.0- 6.2	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
D DAM	5.0	1.5	AF ALL SPECIES	0.15HA RESERVOIR ABOVE DAM. (REF. 18-76)
F FALLS	3.0	1.6		3M OVER 5. (REF. 18-76)
F FALLS	12.0	3.0		(REF. 18-76)

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:
W.S.C. Station No. 1:	No. 2: No. 3: No. 4:
Comments: DISCHARGE ESTIMATED AT 0.03 - 2.BCMS. (REF. 18-47)	
THE LOWER KM DRIES. 1985 DISCHARGE: 8/30/85 - JUST BELOW DAM 0.026CMS. 9/25/86 -- 50M ABOVE 12M FALLS = 0.007CMS. 9/25/85 -- 60M ABOVE RESERVOIR = 0.043CMS. (REF. 18-76)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	MANY FRY MIGRATE INTO COWICHAN LAKE BEFORE STREAM DRIES. (REF. 18-76)
CT CUTTHROAT TROUT	A SMALL RESIDENT POPULATION, MAINLY IN AND ABOVE THE RESERVOIR TO THE 12M FALLS. FY SALVAGE SOURCE. (REF. 18-76)

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

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	OLD GROWTH HAS BEEN COMPLETELY HARVESTED, ENTIRE BASIN IS NOW ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER POTENTIAL COHO SMOLT YIELD: 225 - 2250. COHO COLONIZATION SITE. (REF. 18-76)
RESERVOIR STOPS GRAVEL RECRUITMENT TO SPAWNING AREA AND PRODUCTIVITY IS DECREASING WITH EACH FLOOD. (REF. 18-10)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/04
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16,1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16,1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 47

AUTHOR: AXFORD, R., FOBISTER. AUG. 8,1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. ASHBURNHAM CREEK PARAMETER FILES.
LOCATION: O MDE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 48

AUTHOR: DE LEEUW, V. AUG. 18,1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, ASHBURNHAM CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: SUTTON CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-605	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 089
		U.T.M. Mouth:
		Lat./Long. Mouth: 0 DG. 0' 0'' 0 DG. 0' 0''
		Mainstem Length: 13.5 km Ref. No.: 18-49
		Watershed Area: Ref. No.:
Location: ENTERS COWICHAN LAKE 1.5KM W. OF HONEYMOON BAY TOWNSITE. DRAINS A RELATIVELY BROAD BASIN WITH COMPARATIVELY LOW RELIEF.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	STEEP GRADIENT AND NEUMEROUS FALLS BEGIN AT 10.5 KM (REF. 18-76)
0.0- 1.0 1.0- 6.5 6.5- 10.5 10.5- 13.5	

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: DISCHARGE RATE: 0.47 - 5.7CMS. (REF. 18-49)			
FIRST KM DRIES. 1985 DISCHARGE: 8/26/86 50M ABOVE SUTTON MAIN - 0.35CMS. 9/17/86 550M ABOVE S.SUTTON CONFLUENCE --- 0.061CMS. (REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	ARE DOMINANT THROUGHOUT. HABITAT IS EXCELLENT FOR SPAWNING, REARING AND HOLDING OF RESIDENT AND MIGRATORY SPECIES. (REF. 18-49)
ST STEELHEAD	SMALL RUN OF SPRING FISH. (REF. 18-49)
CT CUTTHROAT TROUT	A SMALL RESIDENT POPULATION; POSSIBILITY OF SPAWNING BY COWICHAN LAKE FISH. (REF. 18-76)

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
ST STEELHEAD	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	CO COHO SALMON	0.0	TREVOR MORRIS HAS DETAILS ON P.I.P. HATCHERY. (REF. 18-76)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ACCESSIBLE OLD GROWTH IS GONE - BASIN COVER IS NOW ADVANCED SECOND GROWTH. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COHO FRY STOCKING OPPORTUNITIES IN SLIPPERY, FIVE CULVERTS AND SOUTH SUTTON CREEKS. SLIPPERY: 104 - 832. SOUTH SUTTON: 120 - 1200. FIVE CULVERTS: 100 - 1000. (REF. 18-76)
MARGINAL POTENTIAL AVAILABLE ON SEVERAL TRIBUTARIES. (REF. 18-14, REF. 18-39)
PICTURES AVAILABLE. SEMI-NATURAL ENHANCEMENT ON FLAT BEACHES COULD BE UTILIZED FOR SPAWNING AND REARING. POSSIBLE OBSTRUCTION REMOVAL AND CHANNEL STABILIZATION TO MAINTAIN SUMMER STREAM FLOW. (REF. 18-49)

J. FISHERY OFFICER NARRATIVE

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

K. SIS COMPLETED BY

Completed by: GITA KAPAHI	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-605
Stream Name: SUTTON CREEK
Page: 1

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPANNING

REFERENCE NO: 18- 49

AUTHOR: AXFORD, R., P. BURMS. JUNE 8, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SUTTON CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-480
Stream Name: JOSIAH CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: STANLEY CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-500	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-B
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 50' 0'' 123 DG. 3' 0''
		Mainstem Length: 3.5 km Ref. No.: 18-4
		Watershed Area: Ref. No.:
Location: NEAR THE EAST END OF LAKE COWICHAN VILLAGE. DRAINS A SHORT STEEP BASIN NEAR THE WEST END OF HILL 60.		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	0.0 TO 0.2KM U/S IS THE MAIN SPAWNING REACH. (REF. 18-76)
0.0- 0.2 0.2- 1.7 1.7- 2.0 2.0- 3.5	

B. OBSTRUCTIONS TO MIGRATION

Barrier (Type)	Height (meters)	Location (km U/S)	Impassable to (species)	Comments
CV CULVERT	0.5	0.4		PASSABLE AT HIGH FLOWS DUE TO BACK FLOODING OF PLUNGE POOL. (REF. 18-76)
CV CULVERT		0.9	CO COHO SALMON	PASSABLE AT MODERATE FLOWS. (REF. 18-76)
D DAM	1.0	1.7	AF ALL SPECIES	(REF. 18-76)
D DAM	2.0	1.9		(REF. 18-76)
F FALLS	2.1	2.0		(REF. 18-76)

C. FLOW

Flow Control: Y	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: 1985 FLOWS: 8/26/85 20M ABOVE YOUNG ROAD 0.00013CMS.; 8/31/85 GREENDALE ROAD 0.11CMS. (REF. 18-76)			
SURFACE FLOW IS NIL DURING AUGUST AND SEPT. BETWEEN YOUNG HIGHWAY CULVERT AND OLD LAKE COWICHAN HIGHWAY. (REF. 18-14, REF. 18-76)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	LOWER 900M, OCCASIONALLY TO 1750M. (REF. 18-76)
ST STEELHEAD	OCCASIONAL. (REF. 18-76)
AGB BROWN TROUT (ANAD)	REPORTED BUT RARE. (REF. 18-76)
CT CUTTHROAT TROUT	SPARSE RESIDENT POPULATION MAINLY LOCATED BETWEEN 1000M AND 1900M. (REF. 18-76)
DV DOLLY VARDEN	SPARSE. SCATTERED FRY AND PARR. (REF. 18-76)

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
FD FORESTRY	NO LOGGING IN WATERSHED. TIMBER IS JUST REACHING HARVESTABLE SIZE FOLLOWING A FOREST FIRE. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ENHANCEMENT POTENTIAL IS NIL. (REF. 18-76)
PICTURES AVAILABLE. (REF. 18-40)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHI	Date: 1986/05/31
Checked by: TREVOR FIELDS	Date: 1986/04/24

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION.
(PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 40

AUTHOR: NO AUTHOR. 1975.
DESCRIPTION: STANLEY CREEK, INCOMPLETE PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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	MOST OF THE BASIN IS COVERED BY ADVANCED SECOND GROWTH. (REF. 18-76)
UD URBAN DEVELOPMENT	THE LOWER 600M FLOWS THROUGH LAKE COWICHAN VILLAGE. 500M HAVE BEEN ENCLOSED IN A CONCRETE FLUME. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ABOVE BARRIER COMO COLONIZATION AND SMOLT YIELD POTENTIAL: 120 - 600. (REF. 18-76)
PICTURES AVAILABLE. (REF. 18-41)
RECOMMEND REMOVAL OF CULVERT AND FLUME. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAHU	Date: 1986/06/01
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D. TUTTY	Date: 1988/03/07

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-510
Stream Name: BEADNELL CREEK
Page: 1

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REFERENCE NO: 18- 41

AUTHOR: AXFORD, R.,A.D. DE LEEUW. JULY 15,1975.
DESCRIPTION: OLIVER CREEK PARAMETER FILES AND PHYSIOGRAPHIC FEATURES, FILE #1. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-515
Stream Name: HATCHERY CREEK
Page: 1

REFERENCE NO: 18- 42

AUTHOR: AXFORD, R., D. DE LEEUW. JULY 15, 1975.
DESCRIPTION: HATCHERY CREEK PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES

HS HABITAT SAMPLING

PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: BEAVER CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-520	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 49' 22'' 124 DG. 03' 25''
		Mainstem Length: 2.5 km Ref. No.: 18-4
		Watershed Area: Ref. No.:
Location: FLWS FROM BEAVER TO COWICHAN LAKE SKIRTING THE WEST PORTION OF LAKE COWICHAN VILLAGE. A BROAD, LOW RELIEF BASIN. (REF.76)		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	REACH 1 MAINLY MUCK - DETRITUS. (REF. 18-76)
0.0- 0.2 0.2- 0.4 0.4- 2.8	

B. OBSTRUCTIONS TO MIGRATION

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

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: DAM AT OUTLET TO LAKE. (REF. 18-10, REF. 18-76)	
ON AUG.11/82, ONLY THE LOWER 400M OF CREEK HAD ANY WATER FLOW. (DATE OF SCOUTING REPORT). (REF. 18-43)	
PRIOR TO 1984, THE STREAM DRIED. 1985 DISCHARGE: 8/9/85 SOUTH SHORE RD. 0.007CMS. (REF. 18-76)	
SOME AREAS DRY IN SUMMER (BY JUNE 15) (REF. 18-43)	
WINTER DISCHARGE FLUCTUATION IS MINIMAL. (REF. 18-4)	

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	THROUGHOUT AND IN BEAVER LAKE. A FEW PRESENT AT BOTTOM END. (REF. 18-5, REF. 18-43, REF. 18-76)
AF ALL SPECIES	LENGTH ACCESSIBLE TO MIGRANT FISH: FROM MOUTH OF CREEK TO AND INCLUDING BEAVER LAKE. (REF. 18-39)
AO ALL SALMON	LAKE AND CREEK OVERMATURE IN TERMS OF SALMONID PRODUCTION/CAPABILITY DUE TO LACK OF FLUSHING CAPABILITY IN THE SMALL CATCHMENT BASIN. OVERALL PRODUCTIVITY LIMITED BY A LACK OF SPawning HABITAT (NIL SUMMER FLOW). REHABILITATION UNDERTAKEN IN 1983/1984. (REF. 18-4)
CT CUTTHROAT TROUT	FRY AT BOTTOM END. A FEW RESIDENTS AND SOME SPARNERS FROM COWICHAN LAKE. (REF. 18-43, REF. 18-76)
SMB SMALLMOUTH BASS	IN BEAVER LAKE. (REF. 18-76)

E. ESCAPEMENT SUMMARY

Species	Escapement			Maximum Recorded Escapement	Ref. No.	Management Target Escapement	Ref. No.
	Mean	Period of Record	Ref. No.				
Comments: 1985 COHO ESCAPEMENT 200. (REF. 18-76)							

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

G. ENHANCEMENT/MANAGEMENT ACTIVITIES IN WATERSHED

Type of Activity	Species	Location (km U/S)	Comments	Period of Operation Start/Finish
FC FLOW CONTROL		0.0	DAM AT LAKE OUTLET PROVIDES 0.007CMS FOR 180 DAYS. (REF. 18-76)	/
CO COLONIZATION	CO COHO SALMON	0.0	120,000 FRY SALVAGED FROM ROBERTSON, SUTTON, FAIRSERVICE AND MEADE WERE RELEASED IN THE CREEK AND LAKE. (REF. 18-76)	/
SI STREAM IMPROVEM'T	CO COHO SALMON CT CUTTHROAT TROUT	2.0	0-2.0KM. LOW GRADIENT SECTIONS WERE RENOVATED. MUCK - DETRITUS OVERBURDEN WAS REMOVED AND, IN PLACES, REPLACED BY GRAVEL, STONES AND BOULDERS. (REF. 18-76)	1983/1984

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	THE ENTIRE BASIN IS IN ADVANCED SECOND GROWTH. CEDAR MILL ON BEAVER LAKE. (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

ADDITION OF SPAWNING GRAVEL TO SELECTED PORTIONS OF THE UPPER REACH WOULD INCREASE RECRUITMENT POTENTIAL SIGNIFICANTLY. (REF. 18-4)
FEW CONSTRAINTS REMAIN. THE SYSTEM IS NOW A HIGH PRODUCER AS A RESULT OF EFFORTS BY LEO NELSON AND THE LAKE COWICHAN SALMONID ENHANCEMENT SOCIETY. (REF. 18-76)
GOOD POTENTIAL FOR BROWN TROUT REARING. (REF. 18-4)
PORTION OF STREAM IN TOWN IS SLIGHTLY POLLUTED. (REF. 18-4)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/05/31
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: B.D TUTTY	Date: 1988/03/07

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COMICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T. T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 43

AUTHOR: DE LEEUW, V. AUG. 11, 1982.
DESCRIPTION: COMICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT: BEAVER CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COMICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

A. DESCRIPTION

Stream Name: -- MESACHIE CREEK	D.F.O. Division: SOUTH COAST
Local Name:	District: 3 NANAIMO
Watershed Code: 92-4800-580	Subdistrict: 18 DUNCAN
	Statistical Subarea: 18-8
	M.O.E.P. Region: 1 VANCOUVER ISLAND
	Management Unit: 4

Tributaries	Code	Topographic (1:50k) Map: 92C/16
		B.C.G.S. (1:20k) Map: 090
		U.T.M. Mouth:
		Lat./Long. Mouth: 48 DG. 48' 0'' 124 DG. 8' 0''
		Mainstem Length: 1.0 km Ref. No.: 18-1
		Watershed Area: Ref. No.:
Location: THE CREEK RUNS FROM MESACHIE LAKE TO BEAR LAKE. (REF.44)		

Gradient Class/Location (km upstream from mouth)	Comments
0 - .5% .5 - 2% 2 - 5% 5 - 10% >10%	MEAN GRADIENT IS 0.4% (REF. 18-76)
0.0- 1.0	

B. OBSTRUCTIONS TO MIGRATION

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

C. FLOW

Flow Control:	Water Survey of Canada (WSC) Flow Gauge:		
W.S.C. Station No. 1:	No. 2:	No. 3:	No. 4:
Comments: DRIED COMPLETELY IN AUGUST - SEPT. 1985. (REF. 18-76)			
SLOW CURRENT. LOW WATER DRIES UP CREEK TO A FEW POOLS. SILTATION CAUSES PROBLEMS FOR EGG SURVIVAL. (REF. 18-44)			

D. DISTRIBUTION SUMMARY

Species	Watershed Distribution
CO COHO SALMON	PRESENT. (REF. 18-44)
CT CUTTHROAT TROUT	SPAWNERS FROM MESACHIE, BEAR AND PERHAPS COWICHAN LAKE. (REF. 18-76)

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
TR TRANSPLANT	AO ALL SALMON	0.0	REQUIRES ANNUAL FRY SALVAGE. (REF. 18-10)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ENTIRE BASIN IS ADVANCED SECOND GROWTH. (REF. 18-76)

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 KAPAHI	Date:	1986/06/02
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	KATHY PONTUS	Date:	1987/07/23

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 44

AUTHOR: DE LEEUW, V. SEPT. 27, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, MESACHIE CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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	X X
ST STEELHEAD	Migration Spawning Incubation Rearing				X X	X X							

Comments: TWO COHO RUNS ARE EVIDENT. ONE BEGINNING IN LATE NOVEMBER OR EARLY DECEMBER, THE SECOND IN MID-JANUARY. STEELHEAD ARE TYPICAL SPRING - RUN FISH. (REF. 18-76)

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	SHOT ROCK DYKING IN THE LOWER 1.5KM. MORE WORK IS ANTICIPATED. GRAVEL MOVEMENT IS ENORMOUS. GRAVEL REMOVAL UNDERTAKEN EACH YEAR. (REF. 18-76)	/
TR TRANSPLANT	AF ALL SPECIES	0.0	FREQUENT FRY SALVAGE REQUIRED EVERY YEAR. (REF. 18-10)	/

H. LAND USE/WATER USE/WATER QUALITY

Activity	Description/Location
FO FORESTRY	ALL OLD GROWTH HAS BEEN HARVESTED, MOST OF THE BASIN IS IN ADVANCED SECOND GROWTH. EARLY SECOND GROWTH ABOVE 500M. LOGGING HAS RE- (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

CONT'D: PARTICULARLY IF FEEDING AND PREDDATOR CONTROL MEASURES WERE EMPLOYED. (REF. 18-76)
MEASURES TO ALLEVIATE DRYING IN THE LOWER 5.0KM AND SIDENCHANNELS WOULD PROVIDE SOME 40,000SQ.M OF ADDITIONAL HABITAT. A JOINT FLOOD CONTROL - HABITAT IMPROVEMENT PROGRAM WOULD YIELD MUCH BENEFIT. IN THE INTERIM, ENLARGEMENT OF THE FEW EXISTING POOLS WOULD HELP. (REF. 18-76)
POTENTIAL ABOVE BARRIER COHO SMOLT YIELD: 1800 - 12,000. (REF. 18-76)

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/02
Checked by: TREVOR FIELDS	Date: 1986/04/24

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-585
Stream Name: ROBERTSON RIVER
Page: 1

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 45

AUTHOR: AXFORD, R. JULY 9, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. ROBERTSON RIVER PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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
ST STEELHEAD	Migration Spawning Incubation Rearing				X X	X X							

Comments: COHO AND STEELHEAD ARE LATE RUN. (REF. 18-76)

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	AN ESPECIALLY SENSITIVE AREA IS PRESENT ON THE NORTH SIDE AT 2500M. (REF. 18-76)
FO FORESTRY	OLD GROWTH HAS BEEN HARVESTED; THE BASIN IS NOW COVERED IN ADVANCED SECOND GROWTH WHICH IS BEGINNING TO BE LOGGED. SOME CLAY-COMPACT (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

NO ENHANCEMENT OPPORTUNITIES. (REF. 18-76)
--

J. FISHERY OFFICER NARRATIVE

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

Completed by:	GITA KAPAH	Date:	1986/06/05
Checked by:	TREVOR FIELDS	Date:	1986/04/24
Last updated by:	KATHY PONTUS	Date:	1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-585-200
Stream Name: NINETEEN CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (MANAIMO - LADYSMITH -
DUNCAN).ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

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	OLD GROWTH HAS BEEN LOGGED; LOWER BASIN IS IN ADVANCED SECOND GROWTH. THERE HAS BEEN POOR REGENERATION ON THIN, ROCKY SOILS OF THE (REF. 18-76)

I. FISH PRODUCTION POTENTIAL/CONSTRAINTS/GENERAL COMMENTS

NO INFORMATION AVAILABLE

J. FISHERY OFFICER NARRATIVE

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

Completed by: GITA KAPAH	Date: 1986/06/05
Checked by: TREVOR FIELDS	Date: 1986/04/24
Last updated by: KATHY PONTUS	Date: 1987/07/23

hab308433994
REFERENCE LIST
1988/06/29

Watershed Code: 92-4800-585-250
Stream Name: MARCH CREEK
Page: 1

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH -
DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

4.0 Bibliography

REFERENCE LIST
1988/07/04

Page: 1

REFERENCE NO: 18- 16

AUTHOR: ANONYMOUS
DESCRIPTION: KOKSILAH RIVER FILES: VANCOUVER ISLAND OBSTRUCTION SURVEYS, KOKSILAH RIVER.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: PY PHYSICAL HABITAT

REFERENCE NO: 18- 33

AUTHOR: ANONYMOUS
DESCRIPTION: "HOLT CREEK ENHANCEMENT. (STEELHEAD)". IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: EN ENHANCEMENT PY PHYSICAL HABITAT ST STEELHEAD

REFERENCE NO: 18- 28

AUTHOR: ANONYMOUS JUNE 20, 1978.
DESCRIPTION: VANCOUVER ISLAND OBSTRUCTION SURVEY, BINGS CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 36

AUTHOR: ANONYMOUS AUG. 10, 1976.
DESCRIPTION: BEAR CREEK REPORT AND PICTURES ON FISH BY-PASS. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 18

AUTHOR: ANONYMOUS. 1980.
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS. FILE NO. 600 - KOKSILAH RIVER. AREA NO. 18, DIST. NO. 3. VOL. NO. 1.
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER
KEYWORDS: AD ALL SALMON PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 7

AUTHOR: ANONYMOUS. COWICHAN RIVER FILES 1 & 2.
DESCRIPTION: TEN PAGE REPORT DISCUSSING DISTRIBUTION OF CHINOOK, COHO AND CHUM IN THE COWICHAN RIVER MAINSTEM AS WELL AS THE TIDAL SPORT FISHERIES. THERE IS A MEMO PROCEEDING THE REPORT TO J.C. LYONS FROM BOB HOOTEN REQUESTING A COPY OF THIS REPORT. TITLE UNKNOWN.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: CH CHINOOK CM CHUM CO COHO
S SPAWNING

REFERENCE NO: 18- 71

AUTHOR: ASSORTED DATES & AUTHORS.
DESCRIPTION: SAANICH INLET FILE.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 74

AUTHOR: ASSORTED DATES AND AUTHORS
DESCRIPTION: SHAWNIGAN CREEK FILE.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT
S SPAWNING

REFERENCE NO: 18- 45

AUTHOR: AXFORD, R. JULY 9, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. ROBERTSON RIVER PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 31

AUTHOR: AXFORD, R. DATE UNKNOWN.
DESCRIPTION: CURRIE CREEK, INCOMPLETE PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES

REFERENCE NO: 18- 68

AUTHOR: AXFORD, R., A. D. DE LEEUW. JULY 11, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. LAKEHEAD CREEK, STREAM INVENTORY PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 50

AUTHOR: AXFORD, R., A. D. DE LEEUW. JULY 21, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. MEADE CREEK PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 42

AUTHOR: AXFORD, R., D. DE LEEUW. JULY 15, 1975.
DESCRIPTION: HATCHERY CREEK PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 55

AUTHOR: AXFORD, R., D. DE LEEUW. JULY 4, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. COTTONWOOD CREEK, PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 47

AUTHOR: AXFORD, R., FOBISTER. AUG. 8, 1975.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. ASHBURNHAM CREEK PARAMETER FILES.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 66

AUTHOR: AXFORD, R., K. HART. NOV. 7, 1978.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. VANCOUVER ISLAND OBSTRUCTION SURVEYS, SHAW CREEK. FILE # 0637.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 13

AUTHOR: AXFORD, R., P. BURNS. JUNE 16, 1976.
DESCRIPTION: FISHLADDER CREEK, PARAMETER FILES IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 24

AUTHOR: AXFORD, R., P. BURNS. JUNE 25, 1976.
DESCRIPTION: QUAMICHAN CREEK, PARAMETER FILES. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 27

AUTHOR: AXFORD, R., P. BURNS. JULY 7, 1976.
DESCRIPTION: BINGS CREEK STREAM INVENTORY PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: 0 MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 57

AUTHOR: AXFORD, R., P. BURNS. JUNE 10, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. CROFT CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 63

AUTHOR: AXFORD, R., P. BURNS. JUNE 16, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SHAW CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 60

AUTHOR: AXFORD, R., P. BURNS. JUNE 17, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. MCKAY CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 54

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. YOUNG CREEK, PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 58

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. WARDROPER CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 26

AUTHOR: AXFORD, R., P. BURNS. JUNE 25, 1976.
DESCRIPTION: SOMENOS CREEK, PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 49

AUTHOR: AXFORD, R., P. BURNS. JUNE 8, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SUTTON CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 61

AUTHOR: AXFORD, R., P. BURNS. JUNE, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. NIXON CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 69

AUTHOR: AXFORD, R., T. BURNS. JUNE, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. LITTLE SHAW CREEK, PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 41

AUTHOR: AXFORD, R., A.D. DE LEEUW. JULY 15, 1975.
DESCRIPTION: OLIVER CREEK PARAMETER FILES AND PHYSIOGRAPHIC FEATURES, FILE #1. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 34

AUTHOR: AXFORD, R., A.D. DE LEEUW. MAY 22, 1975
DESCRIPTION: BEAR CREEK, PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 37

AUTHOR: AXFORD, R., P. BURNS. JULY 19, 1976.
DESCRIPTION: FAIRSERVICE CREEK PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 53

AUTHOR: AXFORD, R., P. BURNS. JUNE 22, 1976.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. COONSKIN CREEK PARAMETER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 11

AUTHOR: BELL, L.M. & R.J. KALLMAN. 1975.
DESCRIPTION: THE COWICHAN - CHEMAINUS RIVER ESTUARIES, STATUS OF ENVIRONMENTAL KNOWLEDGE TO 1975. (OBTAINED FROM J. PATTERSON'S OFFICE).
LOCATION: B DFO - HABITAT MANAGEMENT DIVISION - VANCOUVER
KEYWORDS: HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 67

AUTHOR: BROADLAND, K.R. JULY, 1978.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. SHAW CREEK APPREHENSION REPORT.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 8

AUTHOR: BROWN, R.F. 1977.
DESCRIPTION: COWICHAN RIVER ADULT CHUM SPawning AND EGG TAKE SURVEY FOR COWICHAN NATIVE INDIAN HATCHERY PROJECT. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: CM CHUM FS FISH SAMPLING

REFERENCE NO: 18- 77

AUTHOR: BROWN, R.F. MAY 2, 1977.
DESCRIPTION: MEMO TO D.E. MARSHALL. (GEORGIA - JOHNSTONE STRAIT BRANCH). FILE NO. 5900-85-C416.RE: COWICHAN RIVER CHUM SALMON SURVEYS & PROJECTS - 1976. (B.TUTTY FILES.)
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: CM CHUM FS FISH SAMPLING PY PHYSICAL HABITAT
S SPawning

REFERENCE NO: 18- 9

AUTHOR: BROWN, R.F. 1977.
DESCRIPTION: COWICHAN RIVER ADULT CHUM SPawning SURVEY AND EGG - TAKING OPERATION. COWICHAN VALLEY WATERSHED PROJECT, D.F.O. DUNCAN.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CM CHUM FS FISH SAMPLING S SPawning

REFERENCE NO: 18- 72

AUTHOR: BURNS, J.E.
DESCRIPTION: LAKES OF THE VICTORIA AREA: A CURSORY EVALUATION WITH SOME MANAGEMENT RECOMMENDATIONS.
LOCATION: M MOE - FISHERIES BRANCH - VICTORIA
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 76

AUTHOR: BURNS, T. FEB. 1986.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 79

AUTHOR: BURNS, T. DEC. 1984.
DESCRIPTION: FISH HABITAT INVENTORY OF MAP 92 C/16: COWICHAN LAKE. PREPARED FOR B.C. FOREST PRODUCTS, LTD.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 29

AUTHOR: BURNS, T. 1971.
DESCRIPTION: LOCAL INITIATIVES PROGRAM (L.I.P.), STREAM INVENTORY FORM: AVERILL CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 83

AUTHOR: BURNS, T. 1980.
DESCRIPTION: AQUATIC RESOURCES OF NORTH COWICHAN DISTRICT MUNICIPALITY: A DESCRIPTION AND MANAGEMENT SUGGESTIONS. COWICHAN ESTUARY TASK FORCE(1980): APP.6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT PY PHYSICAL HABITAT

REFERENCE NO: 18- 85

AUTHOR: BURNS, T. AND B.D. TUTTY
DESCRIPTION: COHO COLONIZATION POTENTIAL OF THE COWICHAN-KOKSILAH WATERSHED: A HABITAT EVALUATION. CAN. MANUSCRIPT REPORT NO. 1865. MARCH 1986.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CO COHO EN ENHANCEMENT FS FISH SAMPLING

REFERENCE NO: 18- 86

AUTHOR: BURNS, T.; R.A. BAMS; T. MORRIS; T. FIELDS; B.D. TUTTY
DESCRIPTION: COWICHAN WATERSHED FRY SALVAGE AND COHO COLONIZATION OPERATIONS (1986): A REVIEW AND PRELIMINARY RESULTS. CAN. MANUSCRIPT REPORT NO. 1949. MAY 1987. V + 68 P.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CO COHO EN ENHANCEMENT FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 4

AUTHOR: BURNS, TED. JUNE 16, 1983.
DESCRIPTION: FREELANCE STREAM SURVEYOR, LAKE COWICHAN. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FL FLOW FS FISH SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 84

AUTHOR: CHAMBERLIN, T.W., E.A. HARDING, B.D. TUTTY
DESCRIPTION: SALMONID HABITAT INFORMATION PROJECT (S.H.I.P.): A STRATEGIC LEVEL INVENTORY APPROACH. CAN. MANUSCRIPT REPORT OF FISHERIES & AQUATIC SCIENCES NO. 1821. APRIL 1984.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES AO ALL SALMON PY PHYSICAL HABITAT
S SPawning

REFERENCE NO: 18- 3

AUTHOR: COWICHAN VALLEY WATERSHED PROJECT. 1977.
DESCRIPTION: DEPT. OF FISHERIES & OCEANS, DUNCAN OFFICE. FILE #5830-13-1-3-C.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 12

AUTHOR: DE LEEUW, D. 1977.
DESCRIPTION: DALES CREEK. LEVEL 2 INVENTORY. IN G. REID'S COWICHAN RIVER FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING

REFERENCE NO: 18- 46

AUTHOR: DE LEEUW, V. AUG. 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE AND SCOUTING/PROJECT REPORTS, ROBERTSON RIVER.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 44

AUTHOR: DE LEEUW, V. SEPT. 27, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, MESACHIE CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 48

AUTHOR: DE LEEUW, V. AUG. 18, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, ASHBURNHAM CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 43

AUTHOR: DE LEEUW, V. AUG. 11, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT: BEAVER CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 38

AUTHOR: DE LEEUW, V. AUG. 18, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT, FAIR SERVICE CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 65

AUTHOR: DE LEEUW, V. SEPT. 16, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. RECONNAISSANCE REPORT, SHAW CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 30

AUTHOR: FIELDS, T.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O. DUNCAN. SALMON SPawning REPORT IN TREVOR FIELD'S BLACK BINDER.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON S SPawning

REFERENCE NO: 18- 10

AUTHOR: FIELDS, T. JUNE 16, 1983.
DESCRIPTION: FISHERY OFFICER, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 20

AUTHOR: FREDERICK, B., T. HARDING. JULY 16, 1971.
DESCRIPTION: STREAM SURVEY FORM: KELVIN AND GLENORA CREEKS. IN KOKSILAH RIVER FILES.
LOCATION: O MOE - REGION 1 - MANAIWO
KEYWORDS: FS FISH SAMPLING PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 23

AUTHOR: FREDERICK, B., T. HARDING. JULY 16, 1971.
DESCRIPTION: STREAM SURVEY FORM: WILD DEER CREEK. KOKSILAH RIVER FILES.
LOCATION: O MOE - REGION 1 - MANAIWO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 15

AUTHOR: FREDERICK, B., T. HARDING. JULY 18, 1971.
DESCRIPTION: KOKSILAH RIVER FILES: STREAM SURVEY FORM, KOKSILAH RIVER.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 32

AUTHOR: FREDERICK, B., T. HARDING. JULY 19, 1971.
DESCRIPTION: STREAM SURVEY FORM: HOLT CREEK. IN COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 56

AUTHOR: FREDERICK, B.G. AUG. 10, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, COTTONWOOD CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 51

AUTHOR: FREDERICK, B.G. AUG. 10, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, MEADE CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 62

AUTHOR: FREDERICK, B.G. SEPT. 14, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, NIXON CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 64

AUTHOR: FREDERICK, B.G., T. HARDING. AUG. 6, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, SHAW CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 59

AUTHOR: FREDERICK, B.G. AUG. 10, 1971.
DESCRIPTION: COWICHAN RIVER FILES 1 & 2. STREAM SURVEY FORM, WARDROPER CREEK.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT

REFERENCE NO: 18- 35

AUTHOR: FREDERICK, B.G., T. HARDING. 1971.
DESCRIPTION: STREAM SURVEY FORM: BEAR CREEK. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PS POPULATION SAMPLING
PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 2

AUTHOR: HURN, D.R. 1964.
DESCRIPTION: SUMMARY OF A REPORT PRESENTED TO THE ANNUAL FISHERIES MEETING, MANNING PARK. JAN. 1964. COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS:

REFERENCE NO: 18- 6

AUTHOR: KENNEDY, R. SEPT. 1982.
DESCRIPTION: ADDITIONAL UNPUBLISHED MAPS IN: CHINOOK SPAWNING AND REARING DISTRIBUTION, COWICHAN RIVER. (SUPPLIED BY B.D.TUTTY).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: CH CHINOOK PY PHYSICAL HABITAT R REARING
S SPAWNING

REFERENCE NO: 18- 80

AUTHOR: MARSHALL, D.E. MAY 27, 1983.
DESCRIPTION: MEMO TO J.R. MACLEOD : "GROUNDWATER - FED SIDE CHANNELS -- PROGRESS TO DATE AND FUTURE OPPORTUNITIES."
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 81

AUTHOR: MARSHALL, D.E. OCT. 10, 1984.
DESCRIPTION: MEMO TO DENNIS DEANS & G. LOGAN: COMMENTS RE: BRIAN TUTTY'S MEMO:"GROUNDWATER SIDE CHANNELS, COWICHAN RIVER" (B. TUTTY'S MEMO IS ATTACHED).
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES EN ENHANCEMENT PY PHYSICAL HABITAT

REFERENCE NO: 18- 1

AUTHOR: MARSHALL, D.E. ET AL 1976
DESCRIPTION: PRELIMINARY CATALOGUE OF SALMON STREAMS AND SPawning ESCAPEMENTS OF STATISTICAL AREAS 17 & 18 (NANAIMO - LADYSMITH - DUNCAN). ENVIRONMENT CANADA, FISHERIES & MARINE SERVICE, PACIFIC REGION TECHNICAL REPORT, PAC/D-76-6.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 78

AUTHOR: MCDUGALL, R. D. & ASSOCIATES. JUNE 1985.
DESCRIPTION: A HABITAT MANAGEMENT AREA PLAN FOR SALMON STOCKS IN THE COWICHAN RIVER WATERSHED. DRAFT. PREPARED FOR FIELD SERVICES BRANCH, D.F.O. PACIFIC REGION BY R.D. MCDUGALL & ASSOCIATES.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AO ALL SALMON PY PHYSICAL HABITAT

REFERENCE NO: 18- 40

AUTHOR: NO AUTHOR. 1975.
DESCRIPTION: STANLEY CREEK, INCOMPLETE PARAMETER FILES. IN: COWICHAN RIVER FILES 1 & 2.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES HS HABITAT SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 52

AUTHOR: RAMSAY, J., D. PARKER, R. SENGER. AUG. 20, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT, MEADE CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING HS HABITAT SAMPLING

REFERENCE NO: 18- 14

AUTHOR: SENGER, R. MARCH 8, 1983.
DESCRIPTION: U.I.C. JOB CREATION SUPERVISOR FOR THE COWICHAN VALLEY WATERSHED PROJECT, CROFTON OFFICE. PERSONAL COMMUNICATION. (PATROLMAN FOR NANAIMO D.F.O., 1986).
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 22

AUTHOR: SENGER, R. AUG. 27, 1982.
DESCRIPTION: COWICHAN VALLEY WATERSHED PROJECT, D.F.O., DUNCAN. SCOUTING/PROJECT REPORT, GLENORA CREEK.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PS POPULATION SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 82

AUTHOR: SERBIC, G.
DESCRIPTION: COMPUTER PRINTOUT OF MEAN AND MAXIMUM ESCAPEMENTS FOR AREAS 17, 18, 19 & 20.
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO
KEYWORDS: AF ALL SPECIES S SPawning

REFERENCE NO: 18- 17

AUTHOR: STREAM & LAKE INVENTORY MAPS
DESCRIPTION: AREA 1 & 2; VICTORIA AND DUNCAN. MAP NO. 928/12 EAST & WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPawning

REFERENCE NO: 18- 25

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: MAP NO. 92B/13 EAST AND WEST. 1: 50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 39

AUTHOR: STREAM & LAKE INVENTORY MAPS. 1971.
DESCRIPTION: AREA 1 & 2. MAP NO. 92 C/16 EAST AND WEST. 1:50,000.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT S SPAWNING

REFERENCE NO: 18- 19

AUTHOR: TUTTY, B.D. MARCH 2, 1983.
DESCRIPTION: HABITAT BIOLOGIST, HABITAT MANAGEMENT DIVISION, D.F.O. NANAIMO. PERSONAL COMMUNICATION.
LOCATION: G DFO - SOUTH COAST DIVISION - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 73

AUTHOR: UNKNOWN 1982.
DESCRIPTION: ANNUAL REPORT OF SALMON STREAM AND SPAWNING GROUNDS, SHAWNIGAN CREEK.
LOCATION: J DFO - PACIFIC BIOLOGICAL STATION - NANAIMO
KEYWORDS: AF ALL SPECIES S SPAWNING

REFERENCE NO: 18- 75

AUTHOR: UNKNOWN NOV.30, 1985.
DESCRIPTION: SPECIAL PROJECTS DIVISION STATUS REPORT. (G. LOGAN'S OFFICE)
LOCATION: C DFO - SALMONID ENHANCEMENT PROGRAM - VANCOUVER
KEYWORDS: AF ALL SPECIES EM ENHANCEMENT PY PHYSICAL HABITAT

REFERENCE NO: 18- 70

AUTHOR: VERMON, E.H. JULY, 1951.
DESCRIPTION: LAKE SURVEY; SHAWNIGAN LAKE. IN GEORGE REID'S FILES.
LOCATION: O MOE - REGION 1 - NANAIMO
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

REFERENCE NO: 18- 21

AUTHOR: YOUNG, T. JAN. 19, 1982.
DESCRIPTION: MEMO TO B. TUTTY: KOKSILAH RIVER - GLENORA CREEK SYSTEM STUDY. FILE NO. 5903-85-K235 - KOKSILAH RIVER (COWICHAN BAY)
VOL. NO. 1.
LOCATION: A DFO - REGIONAL LIBRARY - VANCOUVER
KEYWORDS: AO ALL SALMON FS FISH SAMPLING PY PHYSICAL HABITAT

REFERENCE NO: 18- 5

AUTHOR: YOUNG, T. T. FIELDS. MARCH 16, 1983.
DESCRIPTION: FISHERIES OFFICERS, D.F.O., DUNCAN OFFICE. PERSONAL COMMUNICATION.
LOCATION: S DFO - SUBDISTRICT (INCLUDED IN REF. NO)
KEYWORDS: AF ALL SPECIES PY PHYSICAL HABITAT

5.0 MAPS

This section contains the following Stream Information Summary Maps:

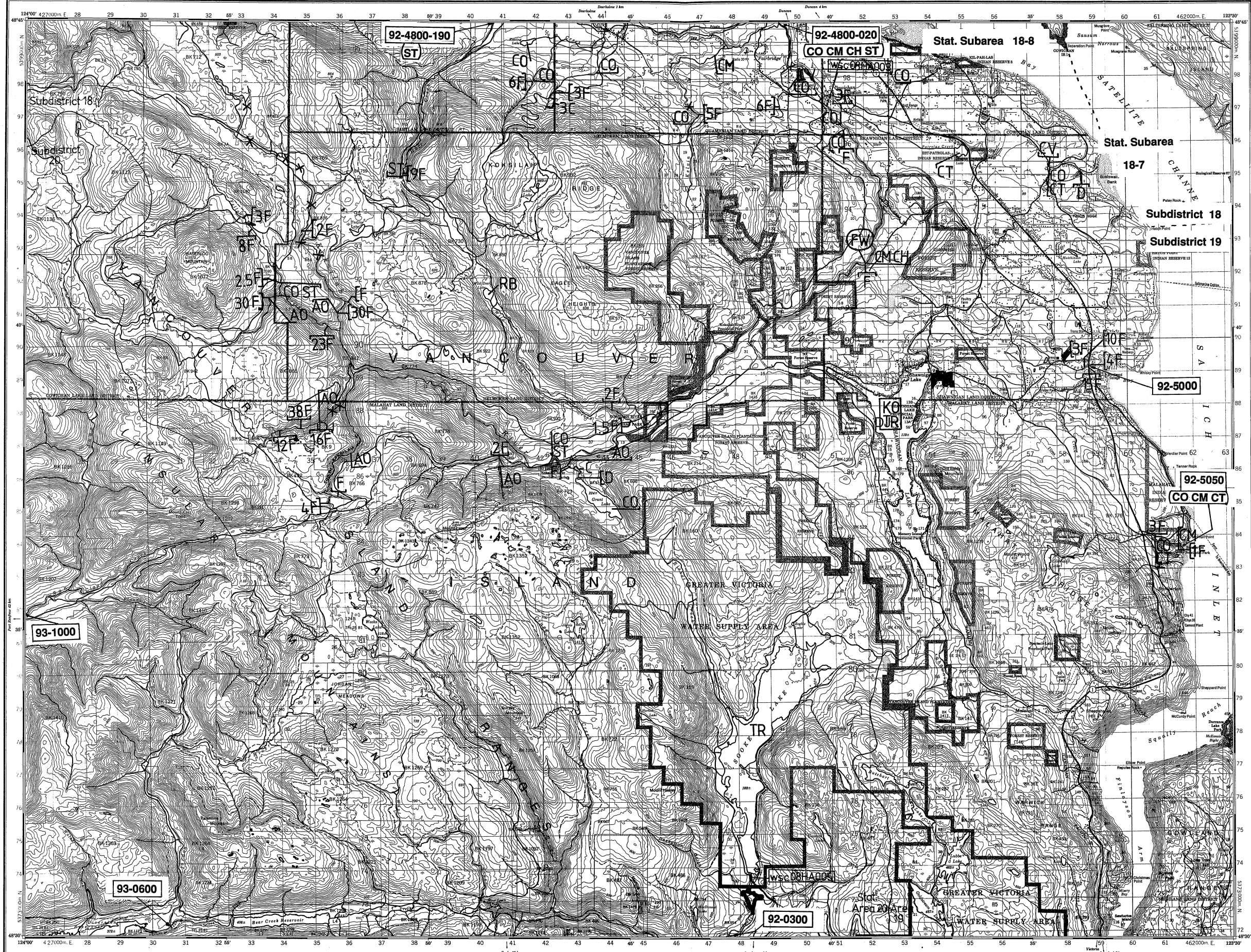
92B/12 Shawnigan Lake

92B/13 Duncan

92B/14 Mayne Island

92C/9 Port Renfrew

92C/16 Cowichan Lake



Military users, refer to this map as: **MAP 92 B/12 CANADA**
 Références de cette carte: **EDITION 4 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
- CM* upper limit of spawning

OBSTRUCTIONS (measurements included where known)

- 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

WSCOFB003 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 CHAIRCH - EGLISE 100-1000
POINT DE REPÈRE CHAIRCH - EGLISE 100-1000

EASTING Read number on grid line corresponding to left of page
ESTIMATION Note le chiffre de la ligne de coordonnées correspondante à gauche de la page.

NORTHING Read number on grid line immediately below page
COORDONÉES Note le chiffre de la ligne de coordonnées correspondante en dessous de la page.

Scale 1:50 000

FEBRUARY 1988

TABLEAU D'ADRESSEMENT DU SYSTÈME NATIONAL DE RÉFÉRENCES CARTOGRAPHIQUES

92 010	92 015	92 020
92 025	92 030	92 035
92 040	92 045	92 050

INDEX TO ADJACENT MAPS OF THE NATIONAL TRIANGULAR SYSTEM

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Cartes peuvent être obtenues au Canada Map Office, Department of Energy, Mines and Technical Services, ou leur équivalent dans d'autres pays.

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SHAWIGAN LAKE
 BRITISH COLUMBIA

Scale 1:50 000 Échelle

CONVERSION SCALE FOR ELEVATIONS
 Metres 0 50 100 200 300 400 500 600 700 800 900 1000
 Feet 0 100 200 300 400 500 600 700 800 900 1000

SHAWIGAN LAKE
 BRITISH COLUMBIA

Scale 1:50 000 Échelle

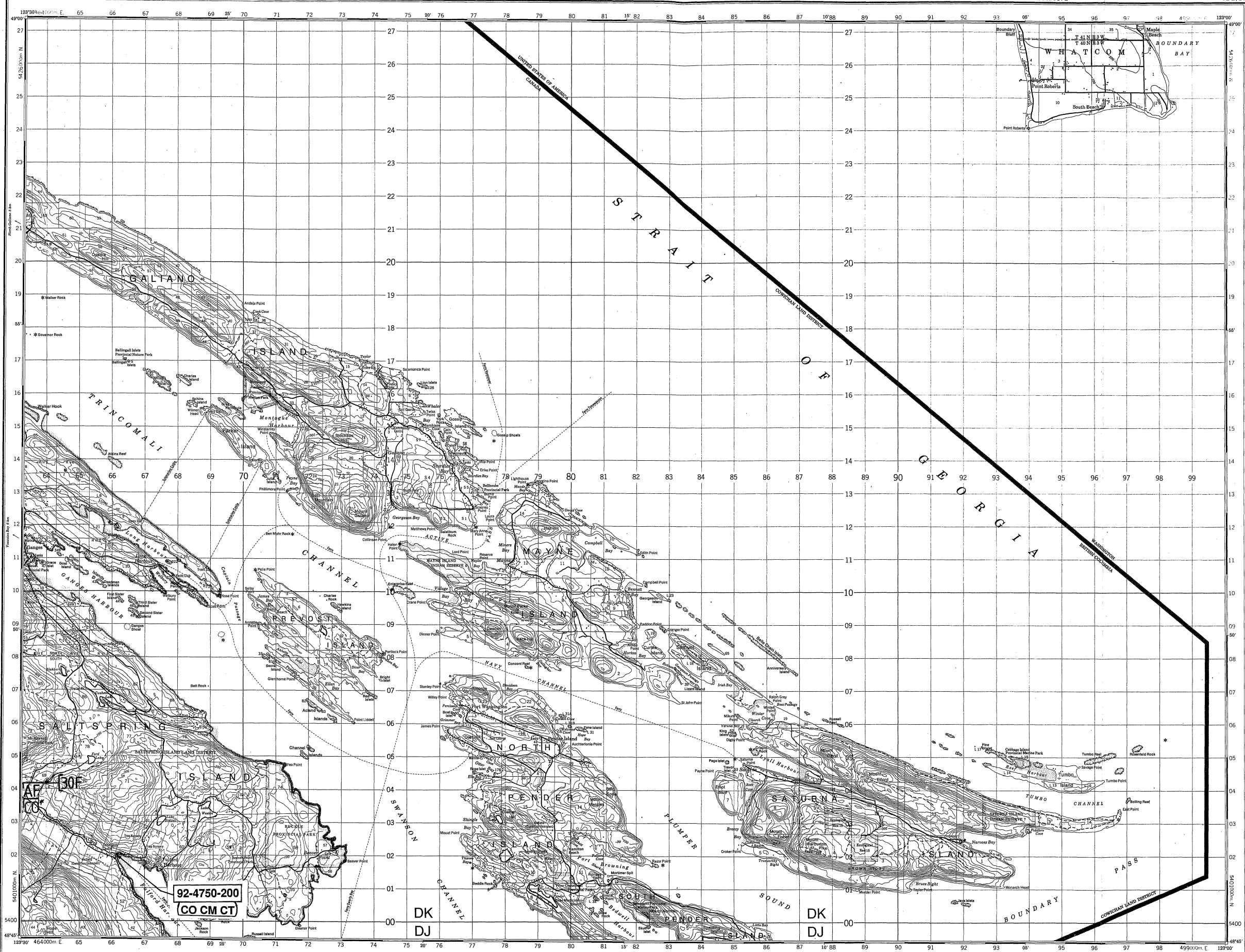
ÉCHELLE DE CONVERSION DES ALTITUDES
 Mètres 0 50 100 200 300 400 500 600 700 800 900 1000
 Pieds 0 100 200 300 400 500 600 700 800 900 1000

Établie par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, DÉPARTEMENT DES ÉNERGIES, DES MINES ET DES SERVICES TECHNIQUES, à partir de photographies aériennes prises en 1976. Vérification des ouvrages en 1978. Publié en 1988.

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Military users, refer to this map as: SERIES A 721 SERIE
 Références de cette carte pour usage militaire: MAP 92 B/14 CARTE
 ÉDITION 2 MISE À JOUR



**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* major spawning zone
- CM* upper limit of spawning

OBSTRUCTIONS (measurements included where known)

- log jam (persistent)
- D = dam
- F = falls (3m high)
- CV = culvert
- BD = beaver dam
- 20100 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	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 CHEURCH - EGLISE
POINT DE REPÈRE ÉGLISE - EGLISE

EASTING Read number on grid line immediately to left of point.
ABSCISSE Lire le chiffre de la ligne de quadrillage immédiatement à gauche du point.

NORTHING Read number on grid line immediately below point.
ORDONNÉE Lire le chiffre de la ligne de quadrillage immédiatement en dessous du point.

Estimate number of squares from this line to point.
 Estimer le nombre de carrés de cette ligne et le nombre en direction est.

Estimate number of squares from this line to point.
 Estimer le nombre de carrés de cette ligne et le nombre en direction nord.

GRID REFERENCE 97994
 Numéro de référence des coordonnées 97994

La projection utilisée est celle de la zone 18 UTM.

MARCH 1988

TABLEAU D'ADRESSAGE DU SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

92 B/14	92 B/14	92 B/14
92 B/14	92 B/14	USA
92 B/14	92 B/14	USA

INDEX TO ADDRESSING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

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MAYNE ISLAND CANADA-UNITED STATES OF AMERICA

Scale 1:50 000 Échelle

0 1000 2000 3000 4000 Mètres
 0 1000 2000 3000 4000 Verges

Information concerning location and precise elevation of bench marks can be obtained by writing to the Geomatics Survey Branch and Mapping Branch, Ottawa.

Do not obtain this information on the Day of the Earthquake. Direction des cartes géographiques et des cartes géométriques, Ottawa.

CONVERSION SCALE FOR ELEVATIONS
 Mètres 0 20 40 60 80 100
 Feet 100 200 300 400 500

ÉCHELLE DE CONVERSION DES ALTITUDES
 Mètres 0 20 40 60 80 100
 Pieds 100 200 300 400 500

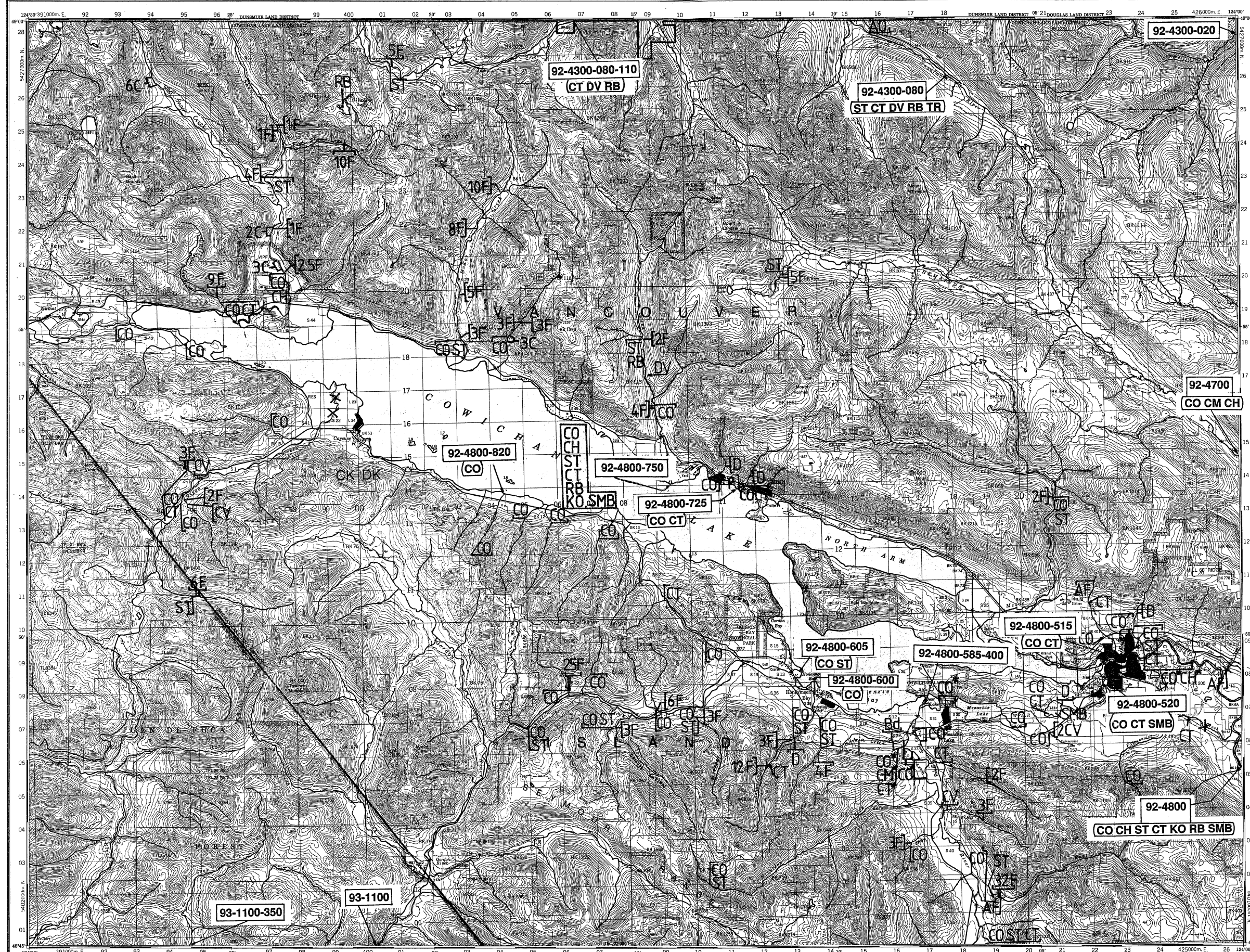
ÉQUIVALENCES DES COORDONÉES EN CANADA ET EN ÉTATS UNIS
 Équivalences en mètres entre le système métrique et le système impérial. Le système métrique est le système de référence national. 1987. Transverse Mercator Projection.

ÉQUIVALENCES DES COORDONÉES AUX ÉTATS UNIS
 Équivalences en mètres entre le système métrique et le système impérial. Le système métrique est le système de référence national. 1987. Projection Transverse de Mercator.

Établi 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 1978. Vérification des contours de 1978. Publié en 1988. Partie imprimée, corrigée et mise à jour des cartes formées par le GÉOLOGICAL SURVEY DES ÉTATS-UNIS. Ces cartes sont en vente au Bureau des Cartes du Canada, Ministère de l'Énergie, des Mines et des Ressources, Ottawa, au 1-800-387-6346.

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MAYNE ISLAND 92 B/14
 ÉDITION 2



Military users refer to this map as: **SERIES A721 SERIE**
 Références de cette carte: **MAP 92 C/16 CMBE**
 Edition 2 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**
- 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

Water Survey of Canada Gauging Station

300 CO tributary watershed code

SPECIES ABBREVIATION LIST

SK - Sockeye	BS - Bass (general)
CO - Coho	CT - Cutoffthroat
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.

REFFERENCE POINT CHAUCHA: ÉGALISE (de point de repère)

NOTES: Read number on grid line immediately to right of point.

ABSCISSA: Read number on left side of line of quadrangle immediately to a square of height.

ORDONNÉE: Read number on right side of line of quadrangle immediately to a square of height.

Estimate number of a square from this line extended to point:

Estime le nombre de carrés du côté entre cette ligne et le repère en direction est:

Estime le nombre de carrés du côté entre cette ligne et le repère en direction nord:

ORDONNÉE DE QUADRANGLE: 92084

REFFÉRENCE AU QUADRANGLE: 92084

Rechercher le nombre de carrés du côté entre cette ligne et le repère (à droite ou à gauche):

MARCH 1988

TABLAZO PRESENTACION DE REFERENCIA NACIONAL DE REFERENCIA CARTOGRAFICA

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92 013	92 014	92 015
92 016	92 017	92 018
92 019	92 020	92 021

INDEX TO ADDRESSES MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

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Roads: paved, bitum, gravel, dirt, etc.

Rivers: hard surface, all weather, loose or stabilized surface, all weather, loose surface, dry weather, unclassified streets, cart track, trail, cut line or portage

Contours: 5m, 10m, 20m, 30m, 40m, 50m, 60m, 70m, 80m, 90m, 100m, 120m, 150m, 200m, 250m, 300m, 400m, 500m, 600m, 700m, 800m, 900m, 1000m, 1200m, 1500m, 2000m, 2500m, 3000m, 4000m, 5000m, 6000m, 7000m, 8000m, 9000m, 10000m

COWICHAN LAKE
 BRITISH COLUMBIA

Scale 1:50 000 Échelle

CONVERSION SCALE FOR ELEVATIONS
 METERS TO FEET

ÉCHELLE DE CONVERSION DES ALTITUDES
 MÈTRES EN PIEDS

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