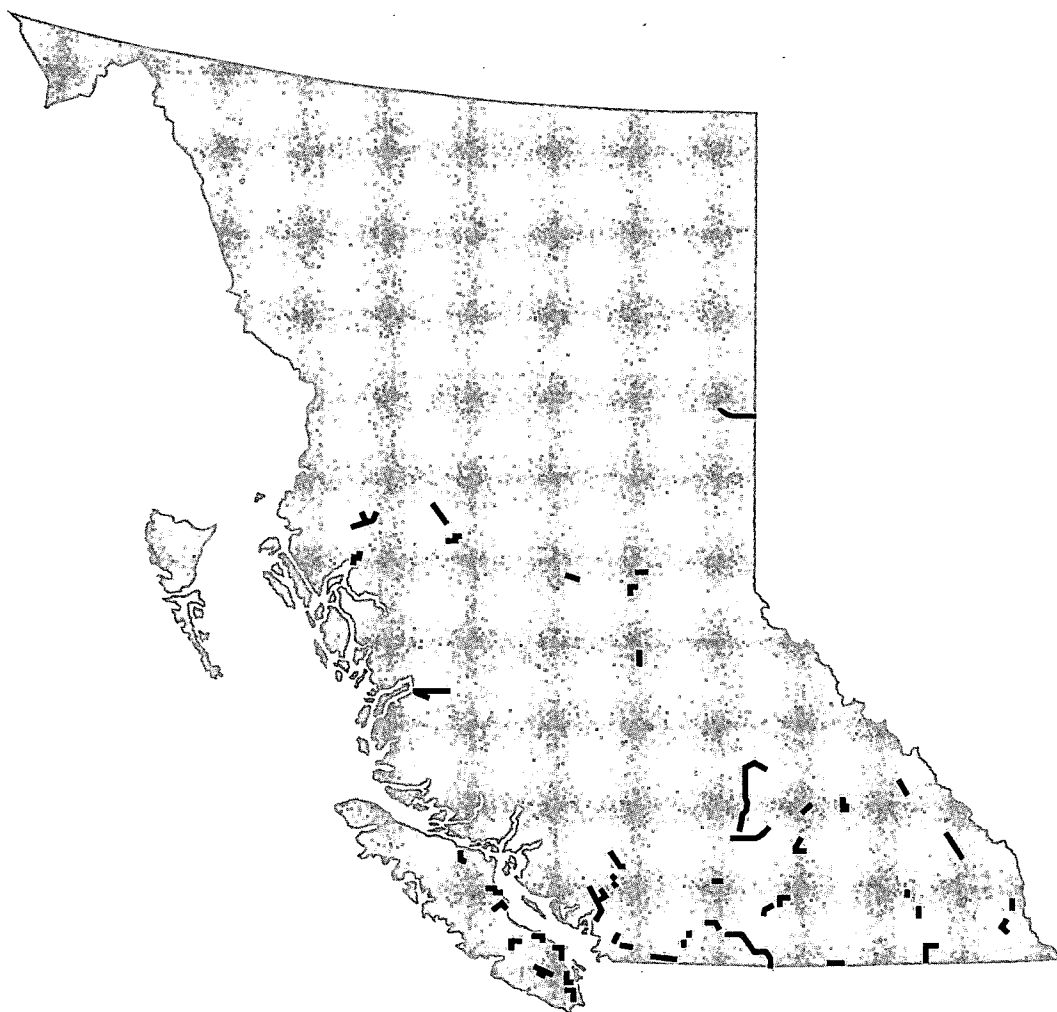


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A G R E E M E N T R E S P E C T I N G

Floodplain Mapping



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STEERING COMMITTEE
CANADA - BRITISH COLUMBIA AGREEMENT
RESPECTING FLOODPLAIN MAPPING

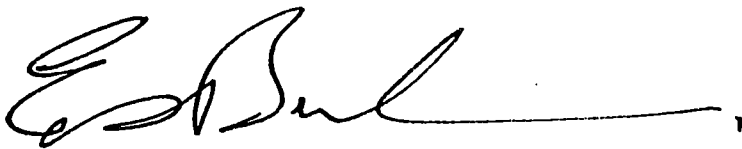
Canada
T.D. Ellison
C.H. Pharo

British Columbia
E.W.D. Bonham
R.W. Balser

Dear Mr. Minister:

The Steering Committee responsible for the administration of the Agreement Respecting Floodplain Mapping in the Province of British Columbia herewith submits its 6th Annual Report for the year ending March 31, 1994, in accordance with the requirements of the Agreement signed December 3, 1987.

Respectfully submitted,



E.W.D. Bonham, Chair
Steering Committee

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PACIFIC REGION

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1.0 INTRODUCTION

The 10-year Canada-British Columbia Agreement Respecting Floodplain Mapping was signed on December 3, 1987, to provide information on the extent of floodplain areas within British Columbia. The first five years of cost sharing under the agreement came to an end in March 1993. Negotiations proceeded during 1993/94 to amend the agreement to provide an additional five years of cost-shared funding. Provincial Treasury Board and Order-in-Council approvals were obtained on March 31, 1993. Federal authorization to proceed was obtained on March 24, 1994. The amending agreement is scheduled for formal signing by the ministers in August 1994.

The agreement provides for the determination of the location and extent of selected floodplain areas, for the designation or interim designation by the Minister of the Environment for Canada and the Minister of Environment, Lands and Parks for British Columbia of the mapped floodplains. The agreement also provides for the preparation and distribution of information about the floodplains to zoning authorities, government agencies, and to the general public.

This report summarizes the progress made during the sixth year of the agreement. Up to March 31, 1994, expenditures under the program amounted to \$5,597,463. A total of seventy areas have been designated or interim designated by the ministers under the terms of the agreement. A significant portion of the technical work under the agreement has been assigned to the private sector under contract.



2.0 ORGANIZATION

Under the terms of the agreement, a four-member steering committee was established to be responsible for its general administration and to provide overall coordination and direction of the floodplain mapping program. A technical coordinator and secretary to the steering committee was also appointed. The steering committee reports through its chair to the Minister of Environment, Lands and Parks for British Columbia and to the Minister of the Environment for Canada.

A majority of the base mapping production is assigned to the private sector under contract to the Surveys and Resource Mapping Branch, Ministry of Environment, Lands and Parks. Engineering study contracts are managed by the Water Management Division, Ministry of Environment, Lands and Parks. The steering committee assigned coordination between the Parties of the public information program under the agreement to selected staff members.

Figure 1 is an illustration of the organization under the agreement.



3.0 STEERING COMMITTEE MEMBERSHIP

The steering committee consists of two federal and two provincial members. The steering committee, which met on May 13 and September 17, 1993, consists of the following:

Canada

C.H. Pharo, Manager
Integrated Programs Branch
Environmental Conservation
Pacific and Yukon Region
Environment Canada
North Vancouver, B.C.

T.D. Ellison, Director
Economics and Conservation Branch
Environment Canada
Ottawa, Ontario

British Columbia

E.W.D. Bonham (Chair)
Director, Floodplain Management Branch
Water Management Division
Ministry of Environment, Lands and Parks
Victoria, B.C.

R.W. Balser
TOPO/GIS Section Manager
Surveys and Resource Mapping Branch
Ministry of Environment, Lands and Parks
Victoria, B.C.

T.D. Ellison was appointed to the steering committee on August 30, 1992, pursuant to Clause 7(1) of the agreement. T.D. Ellison retired in December 1993 and a new member will be appointed for Canada in 1994.

R.W. Nichols, P.Eng., Water Management Division, Ministry of Environment, Lands and Parks, was appointed by the ministers as technical coordinator and secretary to the steering committee.



4.0 1993/94 PROGRAM

4.1 Highlights

A total of three projects were designated or interim designated by the ministers during 1993/94.

An additional three projects were recommended by the steering committee to the ministers for designation or interim designation by September 1994.

Engineering studies were completed or under way in six project areas.

River surveys were completed or under way for four project areas.

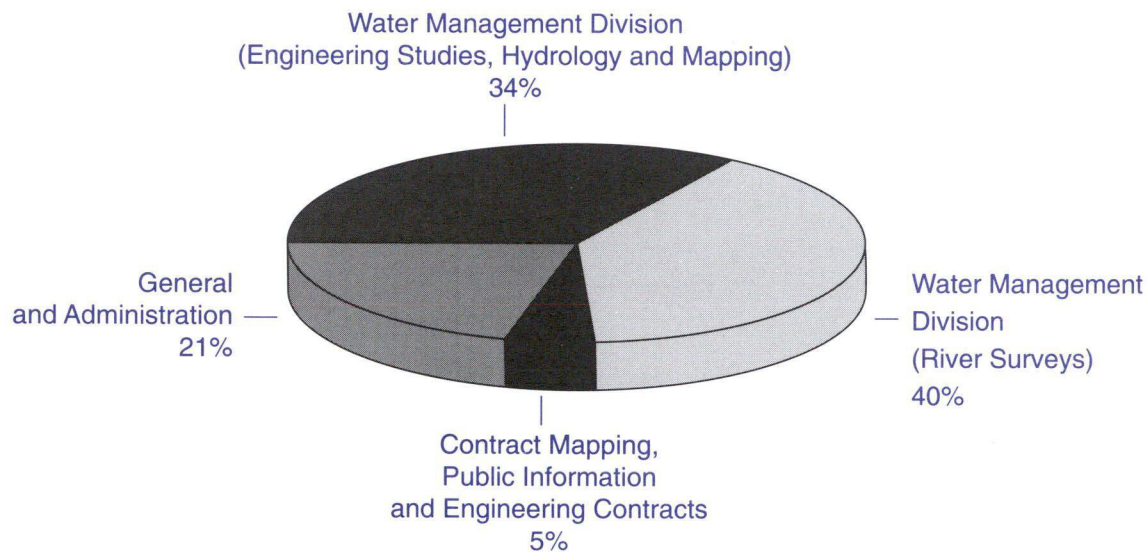
Four base mapping projects from 1992/93 were received during 1993/94.

The Minister of the Environment was authorized to enter into the Amending Agreement on behalf of Canada on March 22, 1994. Provincial authority to enter into the Amending Agreement was obtained on March 31, 1993. The Amending Agreement is scheduled to be signed by the ministers in August 1994. The Amending Agreement provides:

- for funding the gradual phasing out of the program in British Columbia by completing most of the remaining high priority floodplain mapping projects;
- for monitoring the floodplain mapping projects to ensure their continued adequacy, accuracy and usefulness.

4.2 Expenditures

Total expenditures for the 1993/94 fiscal year amounted to \$407,724. The federal share of these expenditures was \$203,862. Appendix 1 shows the 1993/94 expenditures by projects. Documentation and records of the expenditures have been examined by auditors in accordance with requirements of the agreement. Base mapping and engineering study contracts were held in abeyance during 1993/94 due to delays in authorization to enter into the Amending Agreement. The 1993/94 expenditures under the program were distributed as follows:





4.3 Public Information

Public information has been ongoing since 1974 as regards the Provincial Floodplain Mapping Program. Federal and provincial ministries, agencies and municipalities affected by the September 1993 designations or interim designations were so informed.

A total of 670 floodplain mapping sheets were distributed based on 60 requests to Maps BC and issuance of maps to government agencies and municipalities as a result of designations. In addition, numerous “over-the-counter” enquiries related to the Floodplain Mapping Program were processed in federal, provincial and municipal offices throughout the Province.

The key plan catalogues previously distributed to 156 federal and provincial agencies and municipalities were updated to reflect the September 1993 designations. Copies of the 1991/92 annual report were also provided to catalogue users.

A series of four maps at 1:1,200,000 scale outlining floodplain mapping projects in British Columbia have been distributed for information purposes to government agencies and consultants on request.

A draft copy of the “Users Guide to Floodplain Mapping” pamphlet was forwarded in May 1993 to the offices of Environment Canada, Legal Services Branch, regional water managers and staff of BC Environment. Comments were received and a contract for pamphlet preparation will be pursued in 1994/95.



4.4 Engineering Studies

Engineering studies proposed for contract in the 1993/94 program were held in abeyance due to delays in federal funding approval for 1993/94. Three projects were recommended by the steering committee to the ministers for designation or interim designation:

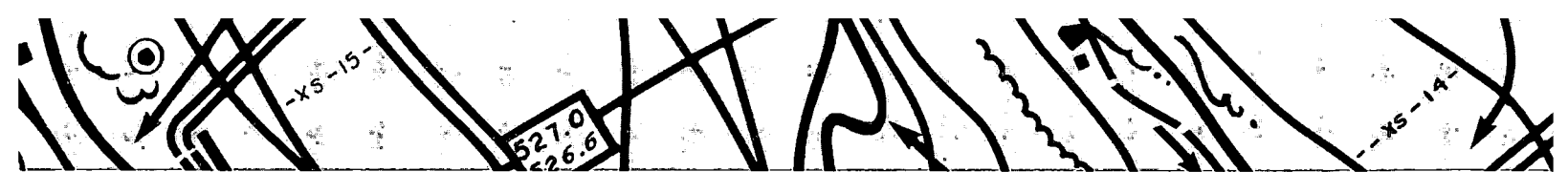
	Project	No. of Drawings
A.3.28	Skeena River at Hazelton	1
A.3.11	Quatse River at Port Hardy	1
A.3.43/47	Serpentine-Nicomekl Rivers	14

Two additional projects were under way and are scheduled for completion in fiscal 1994/95.

Backwater studies were completed in connection with the review of the Salmon/White River project A.1.15. A draft report was prepared and the review is scheduled for completion in 1994/95.

No progress was made on the Lillooet River review project A.2.16 or in the Lower Fraser TRIM project A.3.86.

Additional work was necessitated during the year on the Serpentine-Nicomekl project A.3.43/47 to determine the effects of new information that was developed in the Boundary Bay flood protection study under the Fraser River Flood Control Program.



A request for proposals for engineering studies for the Elk River and Michel Creek project A.3.89/90 and for project A.2.6, Similkameen River at Princeton and at Keremeos, were sent to consulting engineering firms on October 5, 1993. Consultants were selected and advised that the projects would be contracted in 1994/95.

A contract for One-D model enhancements was not pursued in 1993/94.


4.5 River Surveys

Office preparation for project A.3.12, Cowichan River, was completed during 1993/94.

Field surveys were undertaken during September 1993 for project A.3.67, Chilako River. Office preparation is scheduled for completion by May 1994.

Field surveys for Naver Creek near Hixon, project A.3.69, were undertaken in July/August 1993. Office preparation of the survey results is scheduled for completion by June 1994.

Field surveys for the Somass River project A.3.58 were undertaken in February/March 1994. High water data from floods occurring in early March 1994 were also obtained. Office preparation of data is scheduled for completion by June 1994.



High water level data were obtained by BC Environment staff for the following projects in March 1994:


	Project
A.3.12	Cowichan River (Riverbottom Road area, Vancouver Island)
A.3.45	Seymour River (North Vancouver)
A.3.56	Little Qualicum River (Vancouver Island)

A field visit was made by BC Environment staff to review river survey requirements in the following project areas:

	Project
A.3.31	Bonaparte River at Cache Creek
A.3.38	Kettle River
A.3.56	Little Qualicum River
A.3.84	Duncan/Lardeau Rivers

4.6 Base Mapping

Surveys and Resource Mapping Branch (SRMB) awarded a digital base mapping project for the Shuswap River A.3.63 in anticipation of federal approval of the Amending Agreement. The aerial triangulation part of the project was completed in November 1993. Due to uncertainty with regard to federal approval of the amending agreement, the mapping production portion of the project has been held in abeyance until 1994/95.



The following mapping projects from 1992/93 were received during 1993/94:

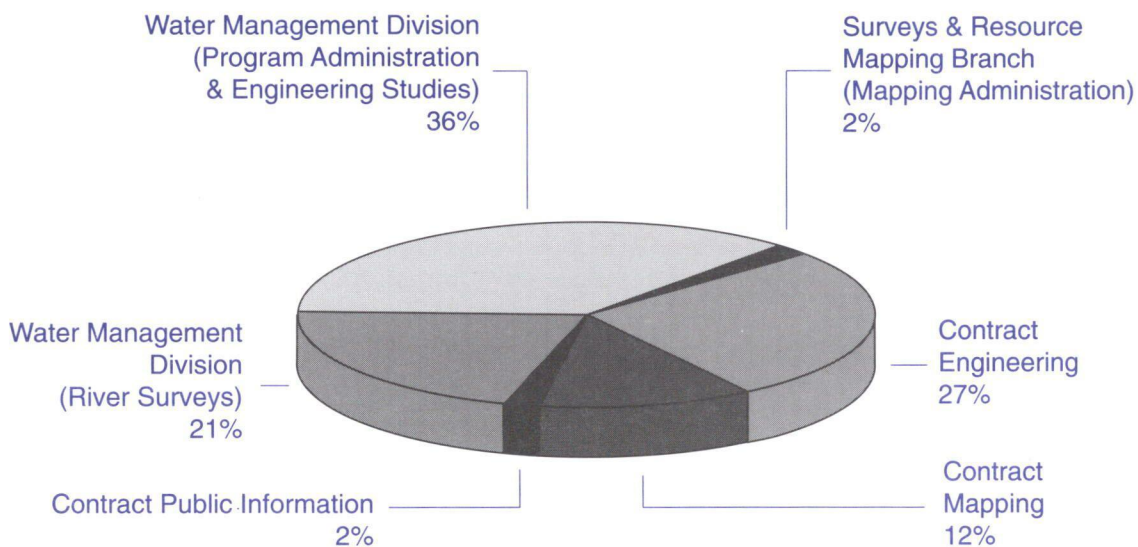
	Project
A.3.31	Bonaparte River at Cache Creek
A.3.38	Kettle River
A.3.56	Little Qualicum River
A.3.69	Naver Creek near Hixon

5.0 DESIGNATIONS

Appendix 2 is a list of the seventy floodplain areas designated or interim designated by the ministers by March 31, 1994. Three of these areas, involving twenty-one mapping sheets, were designated during 1993/94 as indicated in Appendix 2.

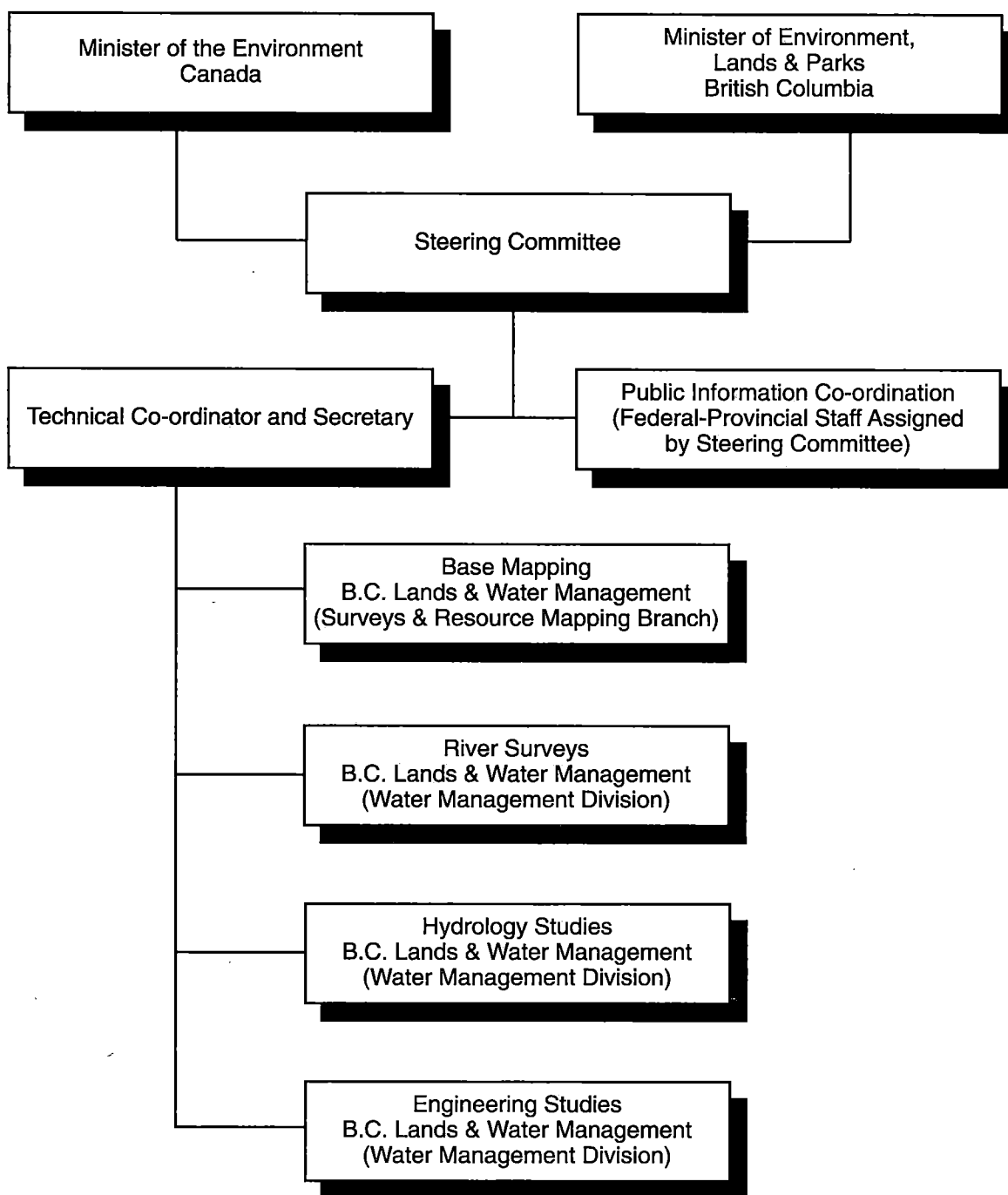
6.0 1994/95 PROGRAM APPROVAL

The steering committee approved a program of work and budget for the 1994/95 fiscal year subject to the approval by the parties of the amending agreement. The 1994/95 program is summarized below:
Total \$700,000.



Appendices 3 and 4 list the areas identified in schedules A.2 and A.3 of the agreement along with the activities completed and proposed for the 1994/95 program.

Figure 1
ORGANIZATION
CANADA - BRITISH COLUMBIA FLOODPLAIN MAPPING AGREEMENT



Appendix 1
EXPENDITURE SUMMARY 1993/94

PROJECT		TOTAL EXPENDITURE (\$)
A.1.7	Cowichan Lake	1,924.85
A.1.8	Cowichan/Koksilah Rivers at Duncan	1,949.11
A.1.15	Salmon/White Rivers	26,868.11
A.2.3	Kettle/Granby Rivers	8.24
A.2.6	Similkameen River	3,087.83
A.2.16	Lillooet River	2,076.32
A.3.3	Nicola River	1,326.97
A.3.8	Salmon River	528.44
A.3.9	Okanagan River	123.90
A.3.11	Quatse River	6,721.30
A.3.12	Cowichan River	29,622.01
A.3.23	Nakusp Creek	3.60
A.3.28	Skeena River	2,166.36
A.3.29	Lakelse Lake	96.62
A.3.31	Bonaparte River at Cache Creek	2,968.41
A.3.38	Kettle River	1,590.15
A.3.40	Tahsis River	359.96
A.3.43/47	Serpentine/Nicomekl Rivers	36,497.74
A.3.45	Seymour River	6,399.60
A.3.46	Bear River	1,468.03
A.3.50	Whistler Area	31.13
A.3.55	Sooke River	20,047.05
A.3.56	Little Qualicum River	5,233.20
A.3.58	Somass River	47,355.74
A.3.63	Shuswap River	11,705.75
A.3.67	Chilako River	51,639.44
A.3.69	Naver Creek near Hixon	51,961.36
A.3.84	Duncan/Lardeau Rivers	2,131.16
A.3.89/90	Elk River and Michel Creek	196.30
Total Project		316,088.68
General & Administration		91,635.13
Total Expenditures		407,723.81

Appendix 2 (Page 1 of 3)
DESIGNATED FLOODPLAIN AREAS IN THE PROVINCE OF BRITISH COLUMBIA

DESIGNATED AREA (December 3, 1987) (From Schedule A.1 of the Agreement)		Issue Date
A.1.1	Chilliwack: Vedder River to Slesse Creek	81-02
A.1.2	Columbia River: Columbia-Windermere Lakes	80-10
A.1.3	Columbia River at Golden	79-02
A.1.4	Columbia River: Windermere Lake-Radium	82-04
A.1.5	Coquitlam River: Coquitlam Lake-Fraser River	76-10
A.1.6	Courtenay River	79-07
A.1.7	Cowichan Lake	84-06
A.1.8	Cowichan & Koksilah Rivers at Duncan	81-05
A.1.9	Eagle River	79-01
A.1.10	Elk River at Fernie	79-05
A.1.11	Elk River at Sparwood	80-03
A.1.12	Kitimat River	82-03
A.1.13	Kootenay River: Kootenay Lake-U.S. Border	81-08
A.1.14	North Thompson River: Kamloops-Vavenby	82-12
A.1.15	Salmon & White Rivers	80-12
A.1.16	Shuswap River: Mara Lake to Mabel Lake	80-06
A.1.17	Skeena River: Lakelse-Terrace-Usk	82-10
A.1.18	South Thompson River: Kamloops-Chase	76-06
A.1.19	Thompson River: Kamloops Area	76-06
A.1.20	Tulameen River: Coalmont-Tulameen	81-04
A.1.21	Okanagan Lake: Westbank to Peachland	82-09
A.1.22	Columbia River at Revelstoke	83-11
A.1.23	Fraser and Nechako Rivers: Prince George	83-09
A.1.24	Kaslo River at Kaslo	84-03
A.1.25	Squamish River	83-10
A.1.26	Goat River	84-09
A.1.27	Mission Creek	84-09
A.1.28	Nanaimo River	84-05
A.1.29	Nechako River at Vanderhoof	84-07
A.1.30	Bulkley and Telkwa Rivers	84-12
A.1.31	Bulkley River at Houston	85-10
A.1.32	Cheakamus River	86-04
A.1.33	Zymoetz (Copper) River	85-06
A.1.34	Englishman River	85-04
A.1.35	Vedder River (Vedder Canal to Vedder Crossing)	85-12

Appendix 2 (Page 2 of 3)
DESIGNATED FLOODPLAIN AREAS IN THE PROVINCE OF BRITISH COLUMBIA

DESIGNATED AREA (SEPTEMBER 30, 1988) (From Schedule A.2 of the Agreement)		Issue Date
A.2.1	Fraser and Quesnel Rivers at Quesnel*	87-05
A.2.5	Shawnigan Lake*	79-09
A.2.7	Coquihalla River at Hope*	85-06
A.2.8	Oyster River*	84-05
A.2.10	Salmon River near Prince George*	86-01
A.2.11	Peace River*	85-12
A.2.12	Fraser River near Hope*	87-07
A.2.13	Crawford Creek	87-06
A.2.15	Bulkley River: Quick Area*	86-11
DESIGNATED AREA		Designation (Issue) Date
A.3.1	Bella Coola River*	89-09
A.3.3	Nicola River - Spences Bridge to Canford*	89-09
	- Canford to Nicola Lake	89-09
A.3.6	Elk River near Elkford*	89-09
A.3.2	Beaver Creek*	90-04
A.3.5	Slocan River	90-04
A.3.10	Campbell/Quinsam Rivers	90-04
A.2.16	Lillooet River	90-09
A.3.48	Williams Lake*	90-09
A.3.29	Lakelse River and Lake	90-09
A.3.51	Courtenay, Puntledge and Tsolum Rivers	91-09
A.3.54	Chemainus River	91-09
A.3.49	Seymour River at Seymour Arm	91-09
A.2.9	Alouette and North Alouette Rivers	91-09
A.3.62	Christina Lake*	91-09
A.3.7	Stuart River*	91-09
A.3.39	Salmo River	91-09
A.3.83	Kootenay River-Columbia Lake	91-09
A.3.8	Salmon River (Salmon Arm - Spa Creek)	91-09

* Interim Designation

Appendix 2 (Page 3 of 3)
DESIGNATED FLOODPLAIN AREAS IN THE PROVINCE OF BRITISH COLUMBIA

DESIGNATED AREA		Designation (Issue) Date
A.3.40	Tahsis River	92-09
A.2.3	Kettle and Granby Rivers	92-09
A.3.8	Salmon River (Spa Creek to Falkland)	92-09
A.3.21	Zeballos River*	92-09
A.3.87	Fraser and Quesnel Rivers at Quesnel*	92-09
A.3.9	Okanagan River*	93-09
A.3.50	Whistler Area*	93-09
A.3.46	Bear River at Stewart*	93-09

* Interim Designation

**Appendix 3
SCHEDULE A.2**

Area to be Remapped		Activity				
		Mapping			River Surveys	Engineering Studies
		Air Photo	Field Control	Base Mapping		
A.2.2	Fitzsimmons Creek (Whistler area)	1988/89	1988/89	(see Appendix 4 - A.3.50)		
A.2.3	Kettle and Granby Rivers (Grand Forks)			1989/90	1990/91	1991/92-D
A.2.4	Nicola and Coldwater Rivers (Merritt)			(see Appendix 4 - A.3.3)		
A.2.6	Similkameen River (U.S. border-Princeton)	1988/89	1989/90	1991/92	1992/93	(1994/95)
A.2.9	Alouette River	C	C	1988/89	C	1990/91-D
A.2.14	Bella Coola River	(see Appendix 4 - A.3.1)				
A.2.16	Lillooet River	C	C	C	C	1989/90-D

C = Completed Prior to the Agreement
D = Designated or Interim Designated

Appendix 4 (Page 1 of 4)
SCHEDULE A.3

Area	Activity				
	Mapping			River Surveys	Engineering Studies
	Air Photo	Field Control	Base Mapping		
1. Bella Coola River	C	C	C	C	1988/89-D
2. Beaver Creek near Fruitvale	C	C	C	C	1988/89-D
3. Nicola River	C	C	C	C	1988/89-D
4. Coldstream Creek near Vernon	-	-	-	-	-
5. Slocan River	C	C	C	C	1988/89-D
6. Elk River (ext. of existing mapping)	C	C	C	C	1988/89-D
7. Stuart River	C	C	C	1989/90	1990/91-D
8. Salmon River					
(Salmon Arm to Spa Creek)	C	C	C	C	1990/91-D
(Spa Creek to Falkland)	C	C	C	C	1991/92-D
9. Okanagan River	C	C	C	C	1992/93-D
10. Campbell and Quinsam Rivers - Van. Island	C	C	C	C	1988/89-D
11. Keogh and Quatse Rivers - Van. Island	C	C	C	1988/89	1993/94
12. Cowichan River (ext. of existing mapping)	1989/90	1989/90	1990/91	1993/94	(1994/95)
13. Nechako River (ext. of existing mapping)	C	C	C	-	-
14. Kelowna Creek	-	-	-	-	-
15. Fortune and Deep Creeks near Vernon	-	-	-	-	-
16. Chilliwack River (ext. of existing mapping)	-	-	-	-	-
17. Duhamel Creek	C	C	1988/89	-	-
18. Shuttleworth Creek near Penticton	-	-	-	-	-
19. Silverton Creek - Slocan Lake	C	C	1988/89	-	-
20. Carpenter Creek - Slocan Lake	-	-	-	-	-
21. Zeballos River - Van. Island	C	C	1988/89	1990/91	1991/92-D
22. Bridge Creek	-	-	-	-	-
23. Nakusp Creek	C	C	C	(1994/95)	-

C = Completed Prior to the Agreement
D = Designated or Interim Designated

Appendix 4 (Page 2 of 4)

SCHEDULE A.3

Area	Activity				
	Mapping			River Surveys	Engineering Studies
	Air Photo	Field Control	Base Mapping		
24. Bessette Creek	-	-	-	-	-
25. Gold River - Van. Island	-	-	-	-	-
26. Chilanko River - Cariboo	-	-	-	-	-
27. Dawson Creek	-	-	-	-	-
28. Skeena River - Usk to Hazelton	C	C	C	1991/92	1993/94
29. Lakelse Lake near Kitimat	C	C	C	1988/89	1989/90-D
30. Thompson River at Ashcroft	-	-	-	-	-
31. Bonaparte River at Cache Creek	1991/92	1991/92	1993/94	(1994/95)	-
32. Centurion Creek at Chetwynd	-	-	-	-	-
33. Clinton Creek at Clinton	-	-	-	-	-
34. Harrison Lake	-	-	-	-	-
35. Fraser River at Lillooet	-	-	-	-	-
36. Fraser River at Lytton	-	-	-	-	-
37. Fraser River at McBride	-	-	-	-	-
38. Kettle River at Midway	1991/92	1991/92	1992/93	-	-
39. Salmo River	C	1988/89	1989/90	1988/89	1990/91-D
40. Tahsis River - Vancouver Island	C	C	1988/89	1990/91	1991/92-D
41. Swift Creek at Valemont	-	-	-	-	-
42. Boundary Creek at Greenwood	-	-	-	-	-
43. Nicomekl River at Langley	-	-	-	-	-
44. Mark Creek at Kimberley	C	C	C	-	-
45. Lynn Creek, Capilano River, Seymour River	1990/91	1990/91	1992/93	1992/93	(1994/95)
46. Bear River at Stewart	1989/90	1989/90	1990/91	1991/92	1992/93-D
47. Serpentine-Nicomekl Rivers	1988/89	1988/89	1989/90	1991/92	1993/94
48. San Jose River at Williams Lake	C	C	C	C	1989/90-D
49. Seymour River at Seymour Arm	C	C	C	C	1989/90-D
50. Whistler Area	C	C	C	1988/89	1992/93-D
51. Tsolum River - Vancouver Island	C	C	1988/89	1988/89	1989/90-D
52. Vernon Creek	-	-	-	-	-

C = Completed Prior to the Agreement

D = Designated or Interim Designated

Appendix 4 (Page 3 of 4)

SCHEDULE A.3

Area	Activity				
	Mapping			River Surveys	Engineering Studies
	Air Photo	Field Control	Base Mapping		
53. Okanagan Lake (ext. of existing mapping)	-	-	-	-	-
54. Chemainus River	C	C	C	C	1989/90-D
55. Sooke River	C	C	C	1992/93	(1994/95)
56. Little Qualicum River	1990/91	1990/91	1992/93	-	-
57. French Creek	-	-	-	-	-
58. Somass River	1990/91	1990/91	1991/92	1993/94	-
59. Kanaka, Wilson and Chapman Creeks	C	C	C	-	-
60. Hatzic Lake	C	C	C	C	-
61. Stawamus River	C	C	C	C	-
62. Christina Lake	C	C	C	N/A	1990/91-D
63. Shuswap River (Mara to Sugar Lake)	1990/91	1992/93	(1994/95)	-	-
64. Heffley Creek	-	-	-	-	-
65. Barriere River	-	-	-	-	-
66. North Thompson River (ext. to Vavenby)	-	-	-	C	-
67. Chilako River (near Prince George)	1990/91	1990/91	1991/92	1993/94	-
68. Kitsumkalum River (near Terrace)	-	-	-	-	-
69. Naver Creek (near Hixon)	1989/90	1990/91	1992/93	1993/94	(1994/95)
70. Silverdale Creek	-	-	-	-	-
71. Fraser River	-	-	-	-	-
72. Nechako River	C	-	-	-	-
73. Endako River	-	-	-	-	-
74. Willow River	-	-	-	-	-
75. Crooked River	-	-	-	-	-
76. Bulkley River (Quick to Houston)	C	C	C	-	-
77. Pine River	-	-	-	-	-
78. Muskwa and Prophet Rivers	-	-	-	-	-

C = Completed Prior to the Agreement

D = Designated or Interim Designated

Appendix 4 (Page 4 of 4)
SCHEDULE A.3

Area	Activity				
	Mapping			River Surveys	Engineering Studies
	Air Photo	Field Control	Base Mapping		
79. McLennan River	-	-	-	-	-
80. Halfway River	-	-	-	-	-
81. Columbia River (U.S. border to Trail)	C	-	-	-	-
82. Kootenay River (Columbia R.to Kootenay L.)	-	-	-	-	-
83. Kootenay River (Canal Flats to Ft.Steele)	C	C	C	1989/90	1990/91-D
84. Duncan and Lardeau Rivers	1988/89	1988/89	1991/92	(1994/95)	-
85. Columbia River (Donald Station to Radium)	1992/93	1992/93	(1994/95)	-	-
86. Fraser River (Tidewater to Hope)	-	-	-	-	-
87. Fraser and Quesnel Rivers (at Quesnel)	C	C	C	1989/90	1991/92-D
88. Goat River and Kitchener Creek	-	-	-	-	-
89. Elk River near Sparwood	C	C	C	1991/92	(1994/95)
90. Michel Creek near Sparwood	C	C	C	1991/92	(1994/95)
91. Moyie River near Yahk	-	-	-	-	-
92. Fraser River at Prince George	C	C	C	-	-

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