

Falls at low water on Little Qualicum River
about three miles below Cameron lake.

DOMINION WATER POWER BRANCH
DEPARTMENT OF THE INTERIOR
OTTAWA, CANADA.

WATER RESOURCES PAPER No. 14

R E P O R T

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY

FOR

THE CALENDAR YEAR 1914

BY

R. G. SWAN, B.A. Sc.

Chief Engineer

Prepared under the direction of the Superintendent of Water Powers.



OTTAWA

PRINTED BY J. DE L. TACHÉ, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1915

*To Field Marshal His Royal Highness Prince Arthur William Patrick Albert,
Duke of Connaught and of Strathearn, K.G., K.T., K.P., etc., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR ROYAL HIGHNESS:

The undersigned has the honour to lay before Your Royal Highness the British Columbia Hydrographic Survey Report for 1914.

Respectfully submitted,

W. J. ROCHE,
Minister of the Interior.

OTTAWA, May 1, 1915.

DEPARTMENT OF THE INTERIOR,

OTTAWA, May 1, 1915.

The Honourable W. J. ROCHE, M.D.

Minister of the Interior.

SIR,—I have the honour to submit the British Columbia Hydrographic Survey Report for 1914, and to recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

I have the honour to be, sir,

Your obedient servant,

W. W. CORY,

Deputy Minister of the Interior.

DEPARTMENT OF THE INTERIOR, WATER POWER BRANCH,

OTTAWA, May 1, 1915.

W. W. CORY, Esq., C.M.G.,

Deputy Minister of the Interior,

SIR,—I have the honour to submit the attached report by R. G. Swan, B. A.Sc., Chief Engineer of the British Columbia Hydrographic Survey.

In view of its important bearing on the industrial development of southern British Columbia, I would recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

Respectfully submitted,

J. B. CHALLIES,

Superintendent, Dominion Water Power Branch.

OTTAWA, May 1, 1915.

J. B. CHALLIES, Esq.,
Superintendent,
Dominion Water Power Branch,
Department of the Interior,
Ottawa.

SIR,—I have the honour to transmit herewith my Annual Report of the British Columbia Hydrographic Survey for the calendar year 1914, together with the reports of engineers in charge of divisions.

Your obedient servant,

R. G. SWAN,
Chief Engineer.

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MAP.

Southern British Columbia, showing gauging stations..... Inside back cover.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER I
REPORT OF R. G. SWAN, B.A.Sc.
Chief Engineer.

CHAPTER I.

REPORT OF THE CHIEF ENGINEER.

SCOPE OF WORK.

The study of water supply may be said to be carried on for three purposes, viz.: Irrigation, Domestic and Municipal Water Supply, and Water-power development. The agricultural development of the semi-arid sections of the province is dependent on the amount of water available. The rapid settlement of the province, due to new railroad lines, demands a close study of both the quality and quantity of the water supply, for the progress of any industrial centre is practically dependent on the cost of power available for its manufactures and benefits and conveniences for its residents. The variation in the run-off from year to year necessitates a close study of stream flow for a number of years before any estimate can be made of the annual discharge of any stream. In connection with many undertakings, costly mistakes have been made owing to the fact that a careful study of the stream flow was not made before commencing construction operations.

The hydrographic work in British Columbia covers fairly well the southern half of the province, the stations being established on the rivers which are considered of the most importance, and of which the flow is likely to be utilized in the near future.

In the Railway Belt we have co-operated with the Dominion Lands Branch, reporting on all engineering works in connection with irrigation and drainage projects, foreshore applications for leases in connection with quarrying, the removal of sand and gravel, marine docks, and elevators. Numerous surveys have also been made for the setting aside of Dominion lands for the protection of municipal water supply.

The Conservation Commission of Canada has been furnished with all the hydrographic data required in its forthcoming report on British Columbia water-powers. The furnishing of this data has involved a very considerable amount of extra work, not only in having additional copies of the data made available in the form desired by the Commission, but also in having the various field officers of the survey carry on work incident to the particular requirements of the Commission.

The co-operation between the Provincial Water Rights Branch and this Survey has been extensive and of mutual value. The provincial engineers have rendered every reasonable assistance to the engineers of this survey. Many valuable suggestions as to organization and scope of work have been received from the Comptroller of Water Rights, Mr. William Young, and have been incorporated in our work.

No small amount of time has been given by the chief engineer and the various divisional engineers to free consultation in connection with hydrographic questions that have arisen throughout the province. It is felt that this work, requiring as it does the exercise of much patience and tact, has given permanent satisfaction to the interested portion of the public.

ORGANIZATION.

DIVISION OF WORK.

Mention was made in my report for 1913 of the establishment of divisional officers with a view to facilitating the work as much as possible. The section of the province covered by the survey in 1914 was divided into three divisions,

namely, Coast, Kamloops, and Nelson. In establishing divisional officers at Vancouver, Kamloops, and Nelson, the most central points were chosen for the successful working of each division. A glance at the accompanying map will give a better idea than can be given in a general description of the areas covered by each division. In the past the most expensive feature of field work in British Columbia has been that of transportation. In an endeavour to overcome this, each division was again divided into three districts, the work in the districts being in charge of district hydrographers who remain in the field for practically the entire season, thus economizing in time and transportation expenditures.

COAST DIVISION.

C. G. Cline, Division Engineer.

The three districts comprising the Coast division are the Southern, the Vancouver Island, and the Lillooet. A general description of each district will be found on pages 19 to 23 of the division engineer's report.

The Southern district has been in charge of C. G. Cline, B.A.Sc.

The Vancouver Island district has been in charge of C. E. Webb, B.A.Sc.

The Lillooet district has been in charge of H. C. Hughes, B.Sc.

Practically all the stations in the Southern district were established under the organization of the Railway Belt Hydrographic Survey, and are consequently fairly well rated. For this reason, Mr. Cline has had sufficient time to generally supervise the work of the other two districts.

Owing to the fact that the Vancouver Island and Lillooet districts comprise new territory, a great deal of work in the establishment of gauging stations has been necessitated. To relieve this pressing work, Mr. Cotton has assisted Mr. Webb and Mr. Hughes until the latter part of August. By this time the work was well established, and Mr. Cotton having volunteered for active service it was not necessary to fill the vacancy so caused.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district and checked by the division engineer.

COAST DIVISION.—List of Regular Gauging Stations.

SOUTHERN DISTRICT.

Station Number.	Name.	Location.
1000	Belnap creek	Tp. 6, R. 7, W. 7 M.
*1063	Black creek	Near Howe sound
1063	Belnap creek	Tp. 7, R. 7, W. 7 M.
1001	Boulder creek	Tp. 3, R. 27, W. 6 M.
1002	Brandt creek	Tp. 7, R. 7, W. 7 M.
1021	Brandt creek	Tp. 7, R. 7, W. 7 M.
1023	Capilano creek	Near North Vancouver
1003	Chehalis river	Tp. 4, R. 30, W. 6 M.
1004	Chilliwack river	Tp. 23, E. C. M.
1005	Coquihalla river	Tp. 5, R. 26, W. 6 M.
1007	Fraser river	Tp. 5, R. 26, W. 6 M.
1009	Hixon creek	Tp. 6, R. 7, W. 7 M.
1064	Hixon creek	Tp. 6, R. 7, W. 7 M.
1010	Jones creek	Tp. 3, R. 27, W. 6 M.
1046	Lynn creek	Near North Vancouver
1011	Mesliloet river	Tp. 7, R. 7, W. 7 M.
1058	Nicolium river	Tp. 4, R. 5, W. 6 M.
1013	Norton creek	Tp. 7, R. 7, W. 7 M.
1022	Seymour creek	Near North Vancouver
1017	Silver-Pitt creek	Tp. 4, R. 5, W. 7 M.
1033	Stollicum river	Tp. 5, R. 28, W. 6 M.
1018	South Lillooet river	Tp. 12, E. C. M.
*1065	Skagit river	4 miles from international boundary
1056	Sumallo river	Near Railway Belt boundary
1057	Sumallo river	Tp. 3, R. 24, W. 6 M.
1020	Young creek	Tp. 7, R. 7, W. 7 M.

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

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COAST DIVISION.—List of Regular Gauging Stations.

VANCOUVER ISLAND DISTRICT.

Station Number.	Name.	Location.
1032	Big Qualicum river	One and one-half miles from mouth, Prov. Water Dist. 1.
1042	Campbell river	At Campbell lake
1027	Chemainus river	One mile from mouth near Chemainus
1054	Cowichan river	At Cowichan lake
1030	Englishman river	One and one-half miles from mouth, near Parksville
1029	Haslam creek	Two miles from mouth, near Ladysmith
1026	Koksilah river	Two miles from mouth
1051	Little Qualicum river	At Cameron lake
1028	Nanaimo river	Six miles from mouth
1040	Oyster river	One mile from mouth
1036	Puntledge river	One mile from mouth, near Courtenay
1063	Puntledge river	Diversion dam above Canadian Collieries power plant.
1025	Shawnigan creek	At Shawnigan lake, Koenigs
1051	Sproat river	At Sproat lake
1052	Stamp river	At Great Central lake
*1053	Stamp river	One-half mile above Stamp falls.
1039	Tsolum river	Three miles from mouth, near Courtenay

NOTE.—Stations marked with an asterisk (*) have been only recently established and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded and run-off data will be returned in the report for 1915.

COAST DIVISION.—List of Regular Gauging Stations.

LILLOOET DISTRICT.

Station Number.	Stream.	Location.
1045	Bridge river	Thirty miles from mouth
1048	Cayuse creek	Above Seton creek
1034	Cheakamus river	One mile above mouth
1047	Fountain creek	Above irrigation ditches
1035	Green river	Above Nairn falls
1041	Green river	Below Green lake
1050	Laluwinn creek	Above irrigation ditches
1038	Lillooet river	Six miles above Lillooet
1043	Riley creek	Above irrigation ditches
1049	Seton creek	Below Seton lake
1061	Six Mile creek	Near Mouth
1037	Soo river	One mile from mouth
1044	Texas creek	One mile from mouth

COAST DIVISION.—List of Miscellaneous Gauging Stations.

SOUTHERN DISTRICT.

Name.	Location.
Trout—East	Hastings township
Trout—West	Hastings township
Windermere	Bidwell bay, Burnird inlet
Capilano	Intake from Capilano creek

VANCOUVER ISLAND.

Ash	Mouth
Sooke	Sooke inlet

KAMLOOPS DIVISION.

E. M. Dann, Divisional Engineer.

The three districts comprising the Kamloops division are the Kamloops, the Okanagan, and the Ashcroft. A general description of each district will be found on pages 35 and 36 of the division engineer's report.

Kamloops district has been in charge of E. H. Tredcroft, C.E.

Okanagan district has been in charge of K. G. Chisholm, B.Sc.

Ashcroft district has been in charge of C. B. Corbould, B.A.Sc.

The transportation facilities in this division are much better than in the Coast and Nelson divisions, and Mr. Dann has availed himself of these facilities to assist and supervise the establishment of new stations in the extension of this work.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district, and checked by the division engineer.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

KAMLOOPS DISTRICT.

Station Number.	Name.	Location.
2002.....	Bolean creek.....	Tp. 18, R. 12, W. 6 M..... Prov. Water Dist. 2.
*2068.....	Boulder creek.....	Near Chu Chua..... " " "
2004.....	Campbell creek.....	Tp. 19, R. 16, W. 6 M..... " " "
2057.....	Canyon creek.....	Tp. 21, R. 15, W. 6 M..... " " "
2047.....	Clearwater river.....	Near Raft river..... " " "
2056.....	Little Clearwater river.....	Near Raft river..... " " "
2005.....	Cherry creek.....	Tp. 19, R. 19, W. 6 M..... " " "
2011.....	Essell creek.....	Tp. 17, R. 14, W. 6 M..... " " "
*2067.....	Fishtrap creek.....	Near Barriere..... " " "
2014.....	Guichon creek.....	Near Mamit lake..... " " 3
2019.....	Hefley creek, (below Hefley lake).....	Tp. 22, R. 16, W. 6 M..... " " 2
2018.....	Hefley creek (Lower).....	Tp. 22, R. 17, W. 6 M..... " " "
2020.....	Ingram creek.....	Tp. 17, R. 13, W. 6 M..... " " "
2022.....	Jamieson creek.....	Tp. 22, R. 17, W. 6 M..... " " "
2023.....	Louis creek.....	Tp. 23, R. 15, W. 6 M..... " " "
2026.....	Monte creek (Division to Summit lake).....	Tp. 18, R. 14, W. 6 M..... " " "
2025.....	Monte creek (below Division to Summit lake).....	Tp. 13, R. 14, W. 6 M..... " " "
2024.....	Monte creek (above Bostock diversion).....	Tp. 19, R. 15, W. 6 M..... " " "
*2069.....	Myrtle river.....	Near Raft river..... " " "
2032.....	Paul creek (below Paul lake).....	Tp. 20, R. 16, W. 6 M..... " " "
2055.....	Raft river.....	Near Raft river..... " " "
2058.....	Siwash creek.....	Tp. 22, R. 16, W. 6 M..... " " "
2040.....	Thompson river (Kamloops).....	Tp. 20, R. 17, W. 6 M..... " " "
*2041.....	N. Thompson river (above Jamieson creek).....	Tp. 22, R. 17, W. 6 M..... " " "
*2059.....	N. Thompson river (above Clearwater river).....	Near C.N.R. Mile 71 north of Kamloops..... " " "
2043.....	Tranquille river.....	Tp. 20, R. 19, W. 6 M..... " " "
*2066.....	Whitewood river.....	Near Barriere..... " " "

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

*Owing to certain discrepancies between the results found on the two North Thompson river stations, the data for 1914 on both these stations is withheld until the difficulties can be adjusted in the open season.

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KAMLOOPS DIVISION.—List of Regular Gauging Stations—*Con.*

OKANAGAN DISTRICT.

Station Number.	Name.	Location.	
2090	Adams river	Tp. 23, R. 12, W. 6 M.	Prov. Water Dist. 2.
2065	Ashnola creek	Near Ashnola	" " 4.
2048	Boundary creek	At Greenwood	" " 5.
2050	Celeste creek	Near Albas	" " 2.
2051	Crazy creek	Tp. 23, R. 5, W. 6 M.	" " 2.
2010	Eagle river	Tp. 23, R. 6, W. 6 M.	" " 2.
2064	Granite creek	Near Coalmont	" " 4.
2052	Kettle river (N. Fork)	At Grand Forks	" " 5.
2045	Kettle river (W. Fork)	Near West bridge	" " 5.
2046	Kettle river (Nicholsons Bridge)	Near Kettle Valley	" " 5.
2049	Kettle river (Carson)	At Carson	" " 5.
2031	Niskonlith creek	Tp. 21, R. 13, W. 6 M.	" " 2.
2053	Okanagan river	Near Fairview	" " 4.
*2061	Seymour river	Near Seymour Arm.	" " 2.
2054	Similkameen river	Near Ashnola	" " 4.
2034	Shuswap river	Tp. 18, R. 9, W. 6 M.	" " 2.
2063	South Similkameen river	At Princeton	" " 4.
2055	Tulameen river	At Coalmont	" " 5.
2042	Thompson river (Chase)	Tp. 21, R. 13, W. 6 M.	" " 2.

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

ASHCROFT DISTRICT.

Station Number.	Name.	Location.	
2001	Barnes creek	Tp. 20, R. 24, W. 6 M.	Prov. Water Dist. 2.
2003	Bonaparte river	Tp. 21, R. 24, W. 6 M.	" " 2.
2007	Criss creek	Tp. 22, R. 22, W. 6 M.	" " 2.
2006	Coldwater river	At Merritt	" " 3.
2008	Deadman river	Tp. 22, R. 22, W. 6 M.	" " 2.
2012	Fraser river (Lytton)	Tp. 15, R. 27, W. 6 M.	" " 1.
2016	Hat creek (above Hammond's diversion)	Tp. 19, R. 26, W. 6 M.	" " 2.
2028	Nahatlatch river (Upper)	Tp. 12, R. 27, W. 6 M.	" " 1.
2027	Nahatlatch river (Lower)	Tp. 12, R. 27, W. 6 M.	" " 1.
2029	Nicola river (Merritt)	At Merritt	" " 3.
2030	Nicola river (Mouth)	Tp. 17, R. 25, W. 6 M.	" " 3.
2037	Spius creek	Tp. 13, R. 23, W. 6 M.	" " 3.
2039	Thompson river (Spences Bridge)	Tp. 17, R. 25, W. 6 M.	" " 3.

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

KAMLOOPS DISTRICT.

Name.	Location.	Prov. Water Dist.
Alkali.....	Tp. 19, R. 19, W. 6 M.....	2.
Bear.....	Near Raft river.....	" " 2.
Beaver river.....	Near Raft river.....	" " 2.
Cahilly.....	Tp. 23, R. 15, W. 6 M.....	" " 2.
Candle.....	Near Raft river.....	" " 2.
Chartrand.....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Chartrand (Springs).....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Cherry creek (Cornwall ranch).....	Tp. 19, R. 19, W. 6 M.....	" " 2.
Dupuis.....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Edwards.....	Tp. 22, R. 16, W. 6 M.....	" " 2.
Greenstone creek.....	Tp. 17, R. 20, W. 6 M.....	" " 3.
Gordon.....	Tp. 22, R. 21, W. 6 M.....	" " 2.
Guichon creek (Chartrand's diversion).....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Guichon creek (F. Allen's ranch).....	Tp. 18, R. 21, W. 6 M.....	" " 3.
Guichon creek (Chartrand's ranch).....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Hemp.....	Near Raft river.....	" " 2.
Hedley creek (Anderson's diversion).....	Tp. 22, R. 16, W. 6 M.....	" " 2.
Meadow.....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Noble.....	Tp. 21, R. 17, W. 6 M.....	" " 2.
Paul creek (at outlet of lake).....	Tp. 20, R. 16, W. 6 M.....	" " 2.
Pendleton.....	Tp. 19, R. 19, W. 6 M.....	" " 2.
Quenville.....	Tp. 17, R. 21, W. 6 M.....	" " 3.
Three Mile.....	Tp. 20, R. 20, W. 6 M.....	" " 2.
Witch.....	Tp. 18, R. 21, W. 6 M.....	" " 3.

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

OKANAGAN DISTRICT.

Name.	Location.	Prov. Water Dist.
Cinnemousun.....	Tp. 23, R. 7, W. 6 M.....	2.
Quest.....	Tp. 24, R. 7, W. 6 M.....	" " 2.
Scotch.....	Tp. 22, R. 11, W. 6 M.....	" " 2.
Seymour creek.....	Near Seymour Arm.....	" " 2.
Sixmile.....	Near Granite creek.....	" " 4.
Twenty Mile.....	Near Hedley.....	" " 4.

ASHCROFT DISTRICT.

Hat creek (Hammond's diversion).....	Tp. 19, R. 26, W. 6 M.....	Prov. Water Dist. 2.
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NELSON DIVISION.

C. E. Richardson, Division Engineer.

The three districts comprising the Nelson division are the Nelson, the Revelstoke, and the Cranbrook. A general description of each district will be found on pages 48 and 49 of the division engineer's report.

Nelson district has been in charge of C. E. Richardson, B.A.Sc.

Revelstoke district has been in charge of J. A. Elliot, B.A.Sc.

Cranbrook district has been in charge of D. O'B. Gill, B.Sc.

A considerable number of gauging stations were established throughout this division by the Provincial Water Rights Branch, and on some of the small over-recorded irrigation streams the hydrographic work is still continued by that branch.

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Toward the end of October, Mr. Gill left the staff for active service with the Royal Engineers.

Computations for the Nelson and Revelstoke districts have been made by Mr. Richardson and Mr. Elliott, while the computations for the Cranbrook district have been made by Mr. Beeston, office engineer. All work was checked by the division engineer.

NELSON DIVISION—List of Regular Gauging Stations.

NELSON DISTRICT.

Station Number.	Name.	Location.	
3057.....	Cariboo creek.....	Near Burton City.....	Prov. Water Dist. No. 6
3024.....	Carpenter creek.....	Near New Denver.....	" " 6
3025.....	Carpenter creek.....	Near Sandon.....	" " 6
3004.....	Columbia river (Castlegar).....	Near Castlegar.....	" " 6
3007.....	Columbia river (Trail).....	Near Trail.....	" " 6
*3066.....	Duncan creek.....	Near Howser.....	" " 6
3027.....	Four Mile creek (below mill).....	Near Silverton.....	" " 6
3028.....	Four Mile creek (above intake).....	Near Silverton.....	" " 6
*3070.....	Fry creek.....	Near Johnstones Landing 12 miles from Kaslo).....	" " 6
*3071.....	Glacier creek.....	Near Howser.....	" " 6
3031.....	Goat river.....	Near Erickson.....	" " 6
3029.....	Kaslo creek.....	Near Kaslo.....	" " 6
3022.....	Kooskanax creek.....	Near Nakusp.....	" " 6
3075.....	Kootenay river.....	Near Bonnington falls.....	" " 6
3076.....	Kootenay river.....	Near Bonnington pool.....	" " 6
3077.....	Kootenay river.....	Near Nelson.....	" " 6
3014.....	Kootenay river.....	Near Glade.....	" " 6
*3068.....	Lardeau river.....	Near Howser.....	" " 6
3021.....	Nakusp creek.....	Near Nakusp.....	" " 6
3017.....	Pend d'Oreille river.....	Near Waneta.....	" " 6
3026.....	Sawmill creek.....	Near New Denver.....	" " 6
3018.....	Slocan river.....	Near Crescent Val.....	" " 6
*3023.....	Wilson creek.....	Near Roseberry.....	" " 6

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data for 1914 will be returned in the report for 1915.

NELSON DIVISION.—List of Regular Gauging Stations.

REVELSTOKE DISTRICT.

Station Number.	Name.	Location.
3000	Akokolex river	Tp. 22, R. 1, W. 6 M. Prov. Water Dist. No. 8
3001	Beaver river	Tp. 29, R. 25, W. 5 M. " " 8
3002	Blasberry river	Tp. 28, R. 22, W. 5 M. " " 8
3003	Bugaboo creek	Near Spillimacheen. " " 8
*3051	Canyon creek	Tp. 25, R. 22, W. 5 M. " " 8
3005	Columbia river (Golden)	Tp. 27, R. 22, W. 5 M. " " 8
3007	Columbia river (Revelstoke)	Tp. 23, R. 2, W. 6 M. " " 8
3035	Dutch creek	Near Fairmont Springs. " " 8
3062	Field Springs (No. 1)	Tp. 28, R. 18, W. 5 M. " " 8
3063	Field Springs (No. 2)	Tp. 28, R. 18, W. 5 M. " " 8
3064	Field Springs (No. 3)	Tp. 28, R. 18, W. 5 M. " " 8
3036	Forslay creek	Near Thunder Hill. " " 8
3038	Horseshief creek	Near Wilmer. " " 8
3008	Hospital creek (Weir)	Tp. 27, R. 22, W. 5 M. " " 8
3053	Illecillewaet river (Glacier)	Tp. 26, R. 26, W. 5 M. " " 8
3010	Illecillewaet river (Revelstoke)	Tp. 23, R. 2, W. 6 M. " " 8
3030	Incomapleux river	Near Beaton. " " 8
3011	Kicking Horse river (Golden)	Tp. 27, R. 22, W. 5 M. " " 8
3012	Kicking Horse river (Field)	Tp. 28, R. 18, W. 5 M. " " 8
3013	Kicking Horse river (No. 2 Tunnel)	Tp. 28, R. 18, W. 5 M. " " 8
3015	No. 2 Creek	Near Wilmer. " " 8
*3074	Salmon river	Near Beaton. " " 8
3034	Sinclair creek	Near Sinclair. " " 8
3019	Spillimacheen river	Near Spillimacheen. " " 8
*3060	Shuswap river	Near Athalmer. " " 8
*3061	Stoddart creek	Near Athalmer. " " 8
3020	Toby creek	Near Athalmer. " " 8
3032	N. Vermillion creek	Near Edgewater. " " 8
3033	S. Vermillion creek	Near Edgewater. " " 8
*3054	Washout creek	Near Galena. " " 8
3055	Windermere creek	Near Windermere. " " 8

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

NELSON DIVISION.—List of Regular Gauging Stations.

CRANBROOK DISTRICT.

Station Number.	Name.	Location.
3039	Bull river	Near Bull river. Prov. Water Dist. No. 7
3038	Cherry creek	Near Wasa. " " 7
3048	Elk river	Near Elko. " " 7
3047	Gold creek	Near Newgate. " " 7
3041	Kootenay river	Near Wardner. " " 7
3045	Linklater creek	Near Newgate. " " 7
3037	Mark creek	Near Marysville. " " 7
*3056	Moyie creek	Near Kingsgate. " " 7
3044	Mud creek	Near Elko. " " 7
3046	Phillips creek	Near Roosville. " " 7
3049	Rock creek	Near Baynes. " " 7
3042	Big Sand creek	Near Jaffray. " " 7
3043	Little Sand creek	Near Jaffray. " " 7
3050	St. Marys river	Near Wycliffe. " " 7

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NELSON DIVISION—List of Miscellaneous Gauging Stations.

NELSON DISTRICT

Name.	Location.
Kootenay river.....	Near Taghun..... Prov. Water Dist. No. 6

REVELSTOKE DISTRICT.

Boulder creek.....	Tp. 3, R. 27, W. 6 M.....	Prov. Water Dist. No. 8
Columbia river.....	Near Athalmer.....	" " 8
Field river.....	Tp. 28, R. 18, W. 5 M.....	" " 8
Horse.....	Tp. 26, R. 21, W. 5 M.....	" " 8
Hospital.....	Tp. 27, R. 22, W. 5 M.....	" " 8

CRANBROOK DISTRICT.

Little Bull.....	Near Bull river.....	Prov. Water Dist. No. 7
Lewis.....	Near Wasa.....	" " 7
Sheep.....	Near Wasa.....	" " 7
Skookumchuk.....	Near Wasa.....	" " 7

EXPLANATION OF TABLES.

For each regular gauging station the following data are given so far as available:—

1. Description of station.
2. Table of discharge measurements.
3. Daily gauge-height discharge table.
4. Tables of monthly discharges and run-off.

Under the description of stations is given the location, general information regarding the equipment, and the time the station has been maintained. Regarding stations established this year, is given briefly, the source, description of drainage area, and present uses of the river. In addition, the description covers ice conditions and their effect on the relation of gauge height to discharge.

The table of discharge measurements gives the number of measurements made during the year, the date measurement was made, name of hydrographer, the width and area of the cross section and the discharge in cubic feet per second. The zero of the gauge is placed in an arbitrary datum, and has no relation to the zero flow or bed of the river. In general, the zero is located below the lowest known flow.

The daily gauge-height discharge table gives the daily elevation of the surface of the river above the zero of the gauge, and the daily discharge in cubic feet per second for the observed gauge height.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gauge height was highest. As the gauge height is the mean for the day, there may have been short periods when the gauge height and corresponding discharges were higher than given in this column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day when the mean gauge height was lowest. The column headed "Mean" is the average flow for each second during the month. On this the computations for the remaining columns are based.

DEFINITIONS OF TERMS.

The volume of water flowing in a stream called the run-off or "discharge" is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second feet, gallons per minute, and run-off in second feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre feet.

The units used in this report are second-feet, second-feet per square mile, run-off in inches, and acre-feet.

"Second-foot" is an abbreviation for a cubic foot per second (c.f.s.) and is the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the following table of equivalents.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

"Acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. It is a common unit of measurement of quantity, and is generally used in connection with storage.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:—

- 1 second-foot equals 35.71 British Columbia miner's inches.
- 1 second-foot equals 6.23 British imperial gallons per second; equals 538,472 gallons for one day.
- 1 second-foot equals 7.48 United States gallons per second; equals 646,272 gallons for one day.
- 1 second-foot for one year covers 1 square mile 1.131 feet or 13.572 inches deep.
- 1 second-foot for one year equals 31,536,000 cubic feet; equals 724 acre-feet.
- 1 second-foot equals about 1 acre-inch per hour.
- 1 second-foot for one day equals 86,400 cubic feet; equals 1.983 acre-feet.
- 1 second-foot for one 28-day month equals 55.52 acre-feet.
- 1 second-foot for one 29-day month equals 57.50 acre-feet.
- 1 second-foot for one 30-day month equals 59.48 acre-feet.
- 1 second-foot for one 31-day month equals 61.46 acre-feet.
- 1 second-foot for one 28-day month covers 1 square mile 1.041 inches deep.
- 1 second-foot for one 29-day month covers 1 square mile 1.079 inches deep.
- 1 second-foot for one 30-day month covers 1 square mile 1.116 inches deep.
- 1 second-foot for one 31-day month covers 1 square mile 1.153 inches deep.
- 100 British imperial gallons per minute equals 0.268 second-feet.
- 100 United States gallons per minute equals 0.223 second-feet.
- 1,000,000 British imperial gallons per day equals 1.86 second-feet.
- 1,000,000 United States gallons per day equals 1.55 second-feet.
- 1,000,000 British imperial gallons equals 3.68 acre-feet.

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- 1,000,000 United States gallons equals 3.07 acre-feet.
 1,000,000 cubic feet equals 22.95 acre-feet.
 1 acre-foot equals 43,560 cubic feet.
 1 acre-foot equals 271,472 British imperial gallons.
 1 acre-foot equals 325,850 United States gallons.
 1 inch deep on 1 square mile equals 2,323,200 cubic feet.
 1 inch deep on 1 square mile equals 0.0737 second-foot per year.
 1 acre equals 43,560 square feet.
 1 cubic foot equals 6.23 British imperial gallons.
 1 cubic foot equals 7.48 United States gallons.
 1 cubic foot of water weighs 62.4 pounds.
 1 horse-power equals 550 foot-pounds per second.
 1 horse-power equals 746 watts.
 1 horse-power equals 1 second-foot falling 8.80 feet.

To calculate water power quickly:

$$\frac{\text{sec.-ft.} \times \text{fall in feet}}{11} = \text{net horse-power on water wheel, realizing 80 per cent of theoretical power.}$$

ACCURACY AND RELIABILITY OF DATA.

Practically all discharge measurements made under fair conditions are well within 5 per cent of the true discharge of the time of observation. Inasmuch as the errors of meter measurements are largely compensating, the mean rating curve, when well defined, is much more accurate than the individual measurements.

In order to give information regarding the probable accuracy of the computed results, an accuracy column is inserted in the monthly discharge table. Accuracy "A" indicates that the mean accuracy is probably accurate within 5 per cent; "B" within 10 per cent; "C" within 15 per cent; "D" within 15 to 25 per cent. Special conditions are covered by foot notes.

The accuracy in many cases is not as great as we would wish, the area covered is very large, and a large number of the stations have been maintained for less than a year. Future observations may render necessary a certain amount of revision of the data here supplied.

The topographic surveys of the province are very incomplete, and the drainage areas are, in many cases, only approximate; consequently the figures showing discharge per square mile, and run-off depth in inches may be somewhat in error.

METHODS OF MEASURING STREAM FLOW.

It is not intended to enter into a discussion of these methods in the report. The methods used are practically identical with those used by the Water Resources Branch of the United States Geological Survey, recognized the most up-to-date method of stream flow measurement. The text of "River Discharge" by Holt and Grover amply illustrates the methods employed.

CO-OPERATION AND ACKNOWLEDGMENTS.

Thanks are due to Mr. G. R. G. Conway, of the British Columbia Electric Railway Company; Mr. R. F. Hayward, of the Western Canada Power Company, Vancouver; and Mr. Wm. Young, Comptroller of Water Rights, Department of Lands, Victoria, B.C., for stream flow and other data submitted with this report. Thanks are also due Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, by whose courtesy our current-meters have been rated each year.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 2

Coast Division

REPORT OF C. G. CLINE, B.A.Sc., D.L.S.
Division Engineer.

CHAPTER II.

COAST DIVISION.

TERRITORY.

The boundaries of the Coast division follow the lines of the watersheds as much as possible in order to facilitate the work of stream measurement. The districts into which the Coast division has been divided follow the same plan. For this reason it is rather difficult to exactly outline the boundaries of the division and districts.

The Coast division includes the southwestern portion of British Columbia as far as North Bend on the Canadian Pacific railway, and Lillooet on the Pacific Great Eastern Railway; It also includes the whole of Vancouver island. All stations numbered between 1,000 and 1,065 are in the Coast division. Reference to the key map will show the general extent of the territory covered.

USES OF WATER.

In this division the chief use to which water may be put is for power, and a large number of streams are commercially valuable for this purpose only.

PRESENT WATER-POWER DEVELOPMENTS.

A small portion only of the power available is at present developed, and a list of the streams on which water power is being developed is included in this report. Some of these plants are described herein, but most of the descriptions were given in the report for 1913. In such cases the description is not repeated, but proper references are given.

POSSIBLE WATER-POWER DEVELOPMENTS.

In last year's report a list was given of a number of streams with water-power possibilities, supplemented in most cases by a general description of a practicable scheme of development. In this report, this list is reprinted and amplified, but descriptions are not reprinted; proper references are, however, inserted. Streams not included in last year's list are described in detail herein. This list is being made as complete as possible as new ground is covered from year to year.

MUNICIPAL SUPPLY.

Every city and municipality of any size requires a good supply of clear, uncontaminated water for domestic purposes. At present regular measurements are being made on a number of streams used in this way, and a list of these is included herein. As the country develops the number of streams required for such a purpose will naturally increase.

RECLAMATION.

In certain parts of the division there are tracts of land, which, though they are at present of comparatively little value for agricultural purposes could be reclaimed at a reasonable expense. In constructing a system of dykes and

making channel improvements to reclaim such land, there is generally some stream which must be controlled. Accurate records of the run-off of such rivers is of prime importance. A number of these streams are being gauged at present a list of which is appended.

IRRIGATION.

In the vicinity of Lillooet it is necessary to irrigate the farms, and water from a number of streams is used for this purpose. A list is here given of the irrigation streams on which regular measurements are being made during the irrigation season, and includes a number of streams which are not used for irrigation at present, but which may be used at some time in the future, when the necessary engineering works have been constructed.

LOCATION OF STATIONS.

Gauging stations are generally established close to possible future points of diversion for water supply, irrigation or power. On some streams, however, the desired location is so difficult of access that the cost of maintaining a gauging station would be prohibitive; in such cases, stations are established at more convenient places and from the records so obtained the stream flow at the desired site is estimated.

PRECIPITATION AND TEMPERATURE.

Records have been prepared showing the monthly precipitation and the mean monthly temperatures for 1914 at the various stations, and the variation from the average where the records have been kept for a sufficient number of years to render these figures of any value is also given. A study of these tables will show the general effect of these important factors on the flow of the streams, and the figures for the variation from the average for a number of years will indicate to some extent, the general characteristics of the stream flow for 1914 as compared with other years.

COMPARISON OF STREAM MEASUREMENTS.

A table is also included, giving the monthly discharges of a number of gauging stations for the past two or three years, thus providing a ready means for the comparison of yearly run-off. The continuance of the stream measurement work will make comparisons of this nature increasingly valuable from year to year.

One of the outstanding features in 1914 was the very heavy freshet which, with the exception of the Fraser river, occurred early in January on nearly all the streams in the Coast division. A winter flood of this nature is not an uncommon occurrence in this part of the country, although it is not usually so great as during this past year.

DISTRICTS.

The territory comprising the Coast division has been divided into three districts. The Southern district includes that portion of the Railway Belt which lies in the Coast division, and some contiguous watersheds not included in either of the other districts. The Lillooet district includes the streams along the route of the Pacific Great Eastern railway from the head of Howe sound to the vicinity of Lillooet. Beyond Lillooet the territory is included in the Kamloops division. Vancouver island constitutes a district by itself.

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Work was started in the Southern district in the Railway Belt late in the fall of 1911, so that on some of the streams there are now three years' complete measurements—1912, 1913, and 1914. The monthly and yearly discharges at these stations are tabulated in this report for the purpose of comparing the flow for 1914 with that of the previous two years. Such comparisons should be of considerable value in considering streams on which there are measurements for one year only. The work in the Southern district was extended during 1913 and 1914 to include a number of streams outside the Railway Belt.

Work was started in the Lillooet district in the fall of 1913, so that on some of the streams there is one year's complete records. A number of other stations were established in 1914, and the list will probably be somewhat increased in 1915. Transportation conditions in this district have until recently been very poor, and on that account the work has been delayed. The completion of the Pacific Great Eastern railway from Squamish to Lillooet will greatly better conditions during 1915, and will ensure a much greater number of measurements in a shorter time.

On Vancouver island, work was started by the engineers of this survey in the spring and summer of 1914. On some of the streams the stations had already been established by the engineers of the Provincial Water Rights Branch, and in such cases records are available for a whole year. Some of the stations were not established until after the spring freshet, so that the rating curves are not well defined for the higher stages; this will be remedied during 1915.

General descriptions have been prepared by the engineers in charge of each district, covering more especially the local conditions and particulars of the work peculiar to each district.

SOUTHERN DISTRICT.

The general characteristics of the Southern district are determined mainly by the mountainous nature of the country and its proximity to the Pacific ocean.

The commercial and industrial activities of the cities and harbours of the Burrard peninsula have been developed within a few miles of large areas of virgin forests and snow-capped mountains. The settlement is confined mainly to the Fraser valley, and the valleys of the tributary streams are almost entirely unoccupied. The transportation facilities in the valleys are very poor, and it is hard to find any one to read the gauges, and it is both difficult and expensive to maintain gauging stations except near the mouths of these streams.

The influence of the mountains is shown in the local variations in the precipitation. In the lower Fraser valley the average rainfall is about 60 inches. At Ladner and Steveston, which are not near the hills, it is only 40 inches or less. It increases rapidly as the hills are approached, sometimes doubling in amount within a few miles. At Coquitlam junction the average is about 70 inches, while at lake Coquitlam, some 10 miles farther north, the average is about one hundred and fifty. This is the largest average precipitation recorded at any of the stations, though even this amount is probably exceeded on some of the mountains.

The effect of the ocean is seen in the mildness of the climate in the lower Fraser valley. Near sea-level there is very little ice and snow in winter, and the summer is not exceedingly hot, the seasonal variation at any one place being comparatively small. There is, however, a considerable difference of temperature at different altitudes, with the result that though there is little or no snow at sea-level, there is a very heavy fall of snow among the hills. On the mountain peaks snow remains nearly all summer.

A reference to the tables of precipitation and temperature for the Southern district will show more definitely the special characteristics of the weather for 1914. The stations near the top of the tables are the ones nearest the coast, while those near the bottom are the ones farther east. The first four stations, Britannia Beach, Vancouver, Steveston, and Ladner are all on the coast, with Britannia Beach farthest north and Ladner farthest south. One set of tables gives the total monthly and annual precipitation and the mean monthly and annual variation from the corresponding averages for the last ten years or more.

This second set of tables shows how the precipitation and temperature for 1914 compared with the average. On the whole, the year was somewhat drier and considerably warmer than usual. The most unusual occurrence was the extra heavy precipitation in January, accompanied by warm weather. This caused a very large run-off during the month, and as a result the amount of snow on the hills was considerably reduced. The warmer weather during the spring and summer resulted in an earlier melting of the snow than usual, with a consequent earlier low-water period toward the end of the summer, while on the other hand the heavier precipitation of September and October ended the low-water stage at an earlier date than usual. The warm weather of November was followed by a cold snap in the latter part of December.

The effect of these variations in the weather is seen in the flow of the streams, the table of comparison of monthly discharges gives the average monthly discharges for certain streams for the last three years. It shows a larger discharge for 1914 during January and also in March and April. The flow fell off for July, and the summer low-water came in August and early in September. There were freshets in September and October and high water in November. Towards the end of December the streams were low. For the whole year, the warmer weather caused a larger run-off than usual on the streams which have very extensive snowfields; on the others, the lighter precipitation was reflected in the somewhat smaller discharge. The Fraser river, having such an extensive drainage area, responds only to variations common to the greater part of the country through which it flows.

LILLOOET DISTRICT.

This district includes the country along the Pacific Great Eastern railway from Squamish to Lillooet. Squamish is situated on tidewater at the head of Howe Sound. Lillooet is on the Fraser river, 120 miles inland, and at an elevation of 850 feet. Midway between the two is the Lillooet river, with a broad valley known as Pemberton Meadows.

From Squamish, the railroad climbs up through the canyon of the Cheakamus river to the lakes at the summit, rising 2,000 feet in 38 miles. There are four lakes at practically the same elevation, and they extend about 8 miles. Green lake is the largest and discharges through Green river into the Lillooet river, falling 1,400 feet in 14 miles. Nairn falls is located about 8 miles from the mouth, and has a drop of some two hundred feet in a quarter of a mile. Soo river and Sixmile creek empty into Green river above the falls.

The Lillooet river flows for a considerable distance through the Pemberton Meadows, and enters Lillooet lake just below the mouth of Green river. During this part of its course the Lillooet river has very little fall, it consequently overflows its banks, flooding most of the bottom land in the meadows. There is a large area of very fertile land in the Lillooet valley, and when some system of controlling the river is put in operation it should develop into a very important agricultural district.

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The town of Lillooet is on the west side of the Fraser river, 3 miles east of Seton lake. It has a population of about 600 and is situated in quite an extensive farming district. The climate is very dry, so that irrigation is absolutely necessary for the production of crops. The large amount of bright sunshine and warm weather during the summer, combined with the general fertility of the soil, produces very rapid growth when the necessary moisture is supplied by irrigation. Measurements are being made on a number of irrigation streams in this vicinity.

VANCOUVER ISLAND DISTRICT.

The Vancouver Island district comprises the whole of Vancouver island. The island has an area of approximately 12,900 square miles, being some 260 miles in length, with an average width of 50 miles. Vancouver island lies off the southern coast of British Columbia, and trends N. 50° W. along the coast.

Vancouver island is divided into two principal drainages, those of the east and west coast, by the Beaufort range of mountains. This range extends from a group in the south of which mount Arrowsmith at an altitude of 5,900 feet predominates to a much larger group in the north, several of whose peaks rise over 7,000 feet. Glaciers are to be found on several of the higher peaks. With the mountainous interior and a comparatively narrow coastal plane, the rivers, for the most part, are short and have considerable fall. This is most advantageous for hydro-electric developments. The streams which do not rise from lakes are mostly flashy.

The climate is moderate, the mean temperatures of each month varying from a minimum of about 30 degrees to a maximum of 65 degrees, except in the higher altitudes. The precipitation is least on the southeast coast, averaging some 30 inches. It increases rapidly especially up to the west coast, to a precipitation of about 130 inches at the north end of the island. The rainfall is usually least in the months of July and August and greatest in the month of November in all parts of Vancouver island.

The accompanying tables show the temperatures and precipitation at five different localities for the year 1914. Tables giving the monthly variation, for 1914, from the monthly average temperature and precipitation for the past ten years or more, are also shown. From these tables it is seen that the temperature on the whole island was above the average, while the precipitation was also higher.

The means of transportation are improving rapidly. The Esquimalt and Nanaimo Railway, which has been operating between Victoria, Nanaimo, and Port Alberni, opened its extension from Parksville to Courtenay in August, 1914. The Canadian Northern Pacific railway line from Victoria to Alberni is nearing completion and a line is located as far as Campbell river. The Great Northern operates a line on the Saanich peninsula from Sidney to Victoria. The Canadian Northern also has a line under construction from Victoria to Patricia bay on the Saanich peninsula. There is a good coastal service maintained by several navigation companies. These, with the excellent government highways, will greatly assist in the further development of Vancouver island.

The excellent agricultural possibilities on the island, due to the richness of the soil and the abundant rainfall, is well exemplified by the fine farms in the older settlements of the Saanich, Cowichan, and Comox districts.

Vancouver island is rich in mineral wealth. The large coal deposits in the vicinity of Nanaimo and Cumberland are all being extensively mined. On the west coast, valuable deposits of gold and copper have been found. Cement is manufactured extensively in the Saanich district. Good pottery clay is found near Victoria; pottery to the value of \$90,000, and bricks to \$140,000 were manufactured in 1913. Two powder factories have plants on the island.

The timber wealth of the island is its greatest asset. Considerable timber has already been cut, but the lumber industry may still be considered in its infancy.

The British Columbia Electric Railway Company installed the first hydro-electric plant on Vancouver Island on the Goldstream river in 1898, about 15 miles from Victoria. This plant at present develops 3,000 horse-power. There are four units: two 350 k.w., one 500 k.w., and one 1,000 k.w. Current is generated at 700 volts, and is stepped up to 17,500 volts. The development consists of one pipeline of 33 inch pipe, 4,000 feet long, branching into 30 inch pipes at the back of power-house. The head is 680 feet.

Another more recent development of the British Columbia Electric Company is at the mouth of Jordan river, where 25,000 horse-power is developed from three units: two 6,000 horse-power and one 13,000 horse-power. The plant works under a high pressure head of 1,145 feet. The pipeline for the first two units (4,000 k.v. a. generator, and Doble wheel) is 2,600 feet in length. It is 50 inches in diameter at intake, and Ys to 36-inch pipes, which are reduced to 30 inches at the power-house. The third unit (8,000 k.v.a. generator, and Pelton Doble wheel) uses a 54-inch pipe at the intake, reduced to 44 inches at the power-house. Current is generated at 2,200 volts and is stepped up to 60,000 volts.

Both these plants are used to supply light and power in the city of Victoria and surrounding district.



Impounding dam of Puntledge River Hydro-Electric Installation on Puntledge river near outlet from Comox lake.

The Puntledge River Hydro-Electric Installation, owned by the Canadian Collieries (Dunsmuir) Limited, is located on the Puntledge river about 6 miles above Courtenay. The plant is operated under a static head of 350 feet. The pipeline is 10,500 feet in length. The line consists of a single 8 foot wooden stave pipe from forebay, to a Y for two 6 foot pipes; only one is used at present and leads to a Y from which two 50 inch pipes carry water to the power-house.



Diversion dam showing flume to intake, of Puntledge River Hydro-Electric Installation on Puntledge river about two miles below impounding dam.

Present installation developing 12,500 horse-power, consists of one-half of ultimate plant. The generators are 4,400 k. v. a., 13,200 volt machines. The turbines are of Francis reaction type with single runner on horizontal axis.

This plant supplies light and power for the mines and the several towns of Cumberland, Bevan, Union Bay, and Courtenay.

The Campbell River Power Company have made extensive surveys in view of a large development at the falls on Campbell river, about 7 miles from the mouth.

The Ritchie Agnew Power Company contemplates the installation of a plant to develop about 35,000 horse-power on the Stamp river at Stamp falls, about 8 miles from Alberni.

There are many other streams on which surveys have been made, and which offer good possibilities for hydro-electric development, notably, Little Qualicum river, Nanaimo river, and Sproat river.

Owing to the abundant rainfall, practically no water is required for irrigation. The uses of water on Vancouver island are principally confined, therefore, to municipal water supply and power development.

The numerous large lakes which are located throughout the island afford a cheap means of assembling the timber cut from their shores, as well as good storage for large developments. Many ranchers have small hydro-electric plants to supply light and power for their own use. This is made practicable by the many small streams coming from the hills and cheap developments are possible. For the manufacture of electric chemicals, Vancouver island offers several excellent developments. On Cowichan river, the Government have a large fish hatchery, and the Cowichan river has been reserved for fishing.

Stream measurements were started in May, 1914, on Vancouver island, by the British Columbia Hydrographic Survey. Previous to that time, work had been done by the Provincial Water Rights Branch. Sixteen regular metering

stations were maintained and rated during the year. The Provincial Water Rights Branch gave every assistance possible and supplied much valuable data on many of the streams on which they had already done work.

During 1915 it is hoped to extend the work to the west coast and north end of the island, besides maintaining the stations already established.

DEVELOPED WATER-POWERS.

These plants are described either in this report or in the report for 1913, i.e., Water Resources Paper No. 8. This list will show where these descriptions can be found. The measurements taken in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

Coquitlam river.....	1913 report (Water Resources Paper No. 8).		
Gilley creek.....	1913	“	“
Power river.....	1913	“	“
Stave river.....	1913	“	“

LILLOOET DISTRICT.

McGillivray creek.....	1914 report (Water Resources Paper No. 14)		
	Seton creek.		

VANCOUVER ISLAND.

Puntledge river.....	1914 report (Water Resources Paper No. 14).		
Jordan river.....	1914	“	“
Goldstream river.....	1914	“	“

POSSIBLE WATER-POWER DEVELOPMENTS.

A general description of each possible development has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The stream-flow data are included in the 1914 report.

SOUTHERN DISTRICT.

Chehalis river.....	1913 report (Water Resources Paper No. 8).		
Chilliwack river.....	1913	“	“
Coquihalla river.....	1913	“	“
Jones Creek.....	1913	“	“
Mesliloet (Indian river).....	1913	“	“
Mesliloet river tributaries.....	1913	“	“
Nicolum river.....	1914	“	“
North Lillooet river.....	1913	“	“
Rainbow creek.....	1913	“	“
Raven creek.....	1913	“	“
Samallow river.....	1914	“	“
Silver-Hope creek.....	1913	“	“
Silver-Pitt creek.....	1913	“	“
Slollicum creek.....	1913	“	“
South Lillooet river.....	1913	“	“

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LILLOOET DISTRICT.

Bridge river.....	1913	report (Water Resources Paper No. 8).	
Cheakamus river.....	1913	“ “	
Cayuse creek.....	1914	“ “	14
Green river.....	1913	“ “	
Little Blackwater river.....	1914	“ (Seton) “	
Soo river.....	1914	“ “	

VANCOUVER ISLAND.

Campbell river.....	1914	report (Water Resources Paper No. 14).	
Stamp river at falls.....	1914	“ “	
Little Qualicum river.....	1914	“ “	
Nanaimo river.....	1914	“ “	
Sproat river.....	1914	“ “	
Stamp river at Great Central lake	1914	“ “	

IRRIGATION STREAMS.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where the description may be found. The measurements made in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

Silver-Hope creek, 1913 report. (Water Resources Paper No. 8).

LILLOOET DISTRICT.

Cayuse creek.....	1914	report (Water Resources Paper No. 14).	
Fountain creek.....	1914	“ “	
Laluwessin creek.....	1914	“ “	
Riley creek.....	1914	“ “	
Texas creek.....	1914	“ “	

VANCOUVER ISLAND.

No irrigation.

MUNICIPAL WATER SUPPLY.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The measurements for 1914 are given in the 1914 report.

SOUTHERN DISTRICT

Capilano creek.....	1913	report (Water Resources Paper No. 8).	
Lynn creek.....	1913	“ “	
Seymour creek.....	1913	“ “	
Silver-Pitt creek.....	1913	“ “	
Trout Creek.....	Miscellaneous measurements only—1914 report.		
Windermere creek.....	Miscellaneous measurement only—1914 report.		

VANCOUVER ISLAND.

Shawnigan creek.....1914 report.
Soo river.....Miscellaneous measurements only.

RECLAMATION AND DRAINAGE

The data for 1914 of the streams which are of interest in connection with reclamation and drainage projects is given in this report and the description in the 1913 report.

SOUTHERN DISTRICT.

Chilliwack river.
Silver-Pitt creek.

LILLOOET DISTRICT.

Lillooet river.

TOTAL MONTHLY PRECIPITATION, Southern District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia Beach.....	16-85	3-80	5-86	5-32	1-48	2-08	0-48	0-77	8-25	14-42	14-94	2-45	76-70
Vancouver.....	10-56	4-57	3-33	3-28	0-74	3-58	0-42	0-75	6-86	6-37	10-18	2-54	53-78
Steveston.....	8-41	2-10	1-44	2-46	0-53	2-44	0-13	0-37	3-60	4-41	6-17	2-59	34-65
Ladner.....	5-45	2-60	1-90	1-65	0-45	1-90	0-35	0-20	2-65	2-60	6-35	0-95	27-05
Buntzen lake.....	19-29	7-82	8-04	5-08	3-38	4-69	0-80	1-13	10-99	15-25	18-90	3-59	98-96
Coquitlam lake.....	26-51	9-54	10-00	6-92	4-71	5-26	0-57	1-30	13-85	20-27	25-37	5-28	129-58
Coquitlam junction.....	13-21	5-69	4-09	4-70	1-36	4-19	0-77	0-88	7-98	.....	12-09	3-23	.....
New Westminster.....	9-95	4-78	3-27	3-95	1-04	4-11	0-56	0-68	5-57	5-62	10-95	2-44	52-02
Stave Falls.....	12-22	4-72	5-60	7-49	2-65	4-18	0-87	0-54	9-86	7-63	15-20	3-13	74-09
North Nicomen.....	17-01	4-44	5-09	5-00	2-61	3-08	0-08	0-51	8-15	6-45	12-64	2-70	67-76
Agassiz.....	13-96	4-06	3-12	2-94	3-55	5-18	0-15	0-60	6-29	7-53	14-72	0-53	62-63
Jones creek.....	15-19	4-46	8-87	6-22	7-15	5-21	1-06	0-89	7-01	5-50	14-75	2-31	78-62
Chilliwack.....	14-68	3-27	4-49	3-94	1-97	3-14	0-17	0-45	6-35	4-71	9-87	2-08	55-12
Hope.....	10-94	4-31	5-01	3-62	3-10	1-96	0-11	0-79	.....	3-83	10-25	1-70	.....

MEAN MONTHLY TEMPERATURE, Southern District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia Beach.....	38-8	38-9	46-3	49-2	55-8	55-0	59-8	59-6	53-9	53-5	42-2	37-0	49-2
Vancouver.....	40-5	38-7	44-9	50-6	56-4	58-7	63-5	61-8	54-8	52-5	44-5	36-4	50-3
Steveston.....	40-6	38-0	42-6	47-8	53-1	57-1	61-6	58-8	53-8	50-6	43-8	34-2	45-5
Ladner.....	43-4	38-8	45-1	50-4	55-0	56-8	62-5	60-4	55-9	51-2	45-1	34-5	50-2
New Westminster.....	38-8	37-7	44-7	50-6	57-4	59-3	64-1	63-5	55-0	53-1	43-2	35-1	50-2
Stave Falls.....	38-2	36-1	43-4	49-7	58-1	60-5	65-9	64-3	55-4	53-0	43-6	33-7	50-2
North Nicomen.....	38-6	38-1	46-0	52-0	58-8	59-9	64-7	64-4	55-2	53-5	44-1	34-6	50-8
Agassiz.....	38-0	39-6	45-0	51-6	56-3	57-2	62-1	63-0	54-2	50-4	42-6	35-2	49-6
Jones lake.....	30-0	29-0	34-0	40-0	50-0	51-0	60-0	61-0	50-0	45-0	35-7	25-5	42-6
Chilliwack.....	36-9	37-3	45-1	51-2	54-8	58-3	63-2	61-7	54-7	52-0	43-3	34-1	49-4
Hope.....	33-6	34-2	42-4	51-2	56-5	58-6	65-3	64-7	50-4	40-1	29-8

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DIFFERENCE FROM AVERAGE PRECIPITATION, Southern District, 1914.

(Difference of Total for month from monthly average for previous ten years or more.)

Locality.	No. Years Records	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Vancouver.....	14	2-38	-1-91	-1-15	1-14	2-74	0-77	-1-20	-1-04	2-54	0-63	-1-27	-4-72	-6-57
Steveston.....	17	2-92	-1-79	-1-00	0-58	-1-73	0-55	-0-81	-0-77	1-12	1-06	-0-87	-2-72	-3-46
Ladner.....	14	0-66	-0-60	-1-11	0-16	-1-87	0-24	-0-78	-0-95	-0-11	-1-51	0-19	-3-95	-9-95
Buntzen lake.....														-14-1
Coquitlam lake.....														-25-8
Coquitlam Junction.....														
New Westminster.....	27	1-38	-0-32	-1-26	0-63	-1-18	0-98	-0-75	-1-28	1-94	0-22	1-82	-5-57	-3-39
North Nicomen.....	21	8-25	-3-89	-0-95	0-24	-1-95	-0-99	-1-86	-1-75	3-52	-1-02	0-42	-6-97	-6-95
Agassiz.....	24	7-16	-1-56	-1-89	-1-23	-0-96	0-36	-2-15	-2-15	1-63	1-73	5-81	-6-84	-0-09
Chilliwack.....	11	6-16	-3-10	0-06	0-23	-1-72	0-00	-1-56	-1-65	2-25	-1-22	0-53	-6-63	-6-95

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE FROM AVERAGE TEMPERATURE, Southern District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

Locality.	No. Years Records	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Vancouver.....	14	3-0	0-3	2-8	1-6	2-8	1-0	0-4	0-3	-0-9	3-1	2-2	-2-5	-14-1
Steveston.....	19	4-8	-0-3	1-9	1-3	0-8	0-5	-3-3	-0-4	0-1	2-6	1-6	-4-8	-11-4
Ladner.....	14	9-6	1-3	3-5	3-5	2-5	-0-4	1-0	1-3	1-3	5-0	1-4	-4-0	-23-4
New Westminster.....	27	2-2	-0-4	1-8	2-2	3-2	0-1	1-6	1-0	-1-7	3-7	1-6	-2-5	-12-8
North Nicomen.....	21	3-7	0-6	3-4	3-2	3-8	0-9	0-1	1-0	2-5	3-2	1-1	-3-9	-14-6
Agassiz.....	24	3-6	1-8	1-0	5-1	2-1	-1-8	-1-9	-0-3	-2-6	-0-4	1-5	-2-0	-6-1
Chilliwack.....	11	6-7	-0-2	2-6	1-4	-0-4	-1-1	-0-9	-1-5	-2-2	1-5	2-0	-3-2	-4-7

N.B.—All quantities are plus unless otherwise designated.

COMPARISON OF MONTHLY DISCHARGES, Southern District, 1914.

Locality.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Coquihalla river.....	1912	942	981	415	884	2,662	2,059	799	460	365	471	1,004	587	969
	1913	557	592	391	1,195	3,330	3,961	1,705	580	1,000	1,665	1,248	719	1,412
	1914	1,350	560	1,560	2,850	3,980	2,630	720	279	444	345	1,460	674	1,405
Chilliwack river...	1912	1,518	1,870	865	980	4,581	6,387	3,089	1,386	956	893	2,347	1,232	2,175
	1913	1,208	1,942	1,064	1,557	4,416	4,779	5,724	2,303	2,664	2,770	2,533	1,857	2,710
	1914	4,280	1,170	2,250	3,110	4,170	4,000	3,140	1,320	1,310	1,510	3,080	1,340	2,560
Chehalis river.....	1912			248	425	904	760	386	310	390	631	2,127	999	
	1913	551	1,350	1,080	1,465	2,460	1,693	916	441	1,011	1,765	3,295	1,615	1,467
	1914	4,230	1,570	3,800	3,610	1,980	1,130	690	270	990	2,040	4,480	730	2,130
Fraser river.....	1912			16,150	40,720	150,000	186,000	136,000	113,000	70,170	53,000	39,300	27,800	
	1913	17,800	25,300	19,000	34,400	82,300	306,800	201,000	177,000	113,900	60,500	27,200	27,000	92,150
	1914	39,500	29,600	34,600	72,800	187,000	243,600	216,000	119,000	76,000	70,800	64,300	41,100	99,500
Jones creek.....	1912	86	136	55	64	192	270	207	177	96	82	154	98	135
	1913	60	69	68	91	238	395	350	199	178	201	175	94	180
	1914	173	67	109	158	223	221	213	119	114	96	215	71	148
South Lillooet river..	1912	1,412	1,393	210	455	802	817	387	620	533	733	2,111	1,062	872
	1913	593	1,180	693	872	1,238	1,095	757	303	826	1,621	2,608	908	954
	1914	1,450	632	1,040	1,030	594	367	161	108	656	1,216	2,288	387	818

TOTAL MONTHLY PRECIPITATION, Lillooet District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Pemberton hatchery.....	5-85	1-51	2-81	2-34	1-58	1-57	0-34	0-41	5-41	4-35	8-44	0-98	35-32
Pemberton Meadows.....	10-73	2-28	3-03	2-46	0-76	1-35	0-28	0-08	4-63	5-46	9-23	1-65	41-99
15-mile ranch (Pavilion).....	1-40	0-46	0-39	0-24	0-89	1-18	0-44	0-10	1-92	0-37	2-50	0-45	10-54

MEAN MONTHLY TEMPERATURE, Lillooet District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Pemberton hatchery.....	30-4	30-4	39-4	48-5	54-7	58-7	64-9	64-8	53-4	48-4	37-0	27-3	46-5
Pemberton Meadows.....	27-9	27-2	37-5	47-6	56-2	59-9	64-4	62-3	53-6	49-1	36-3	20-8	45-2
15-mile ranch (Pavilion).....	24-6	24-2	39-3	50-3	57-1	60-9	69-7	69-3	55-2	48-6	34-8	18-8	46-0

TOTAL MONTHLY PRECIPITATION, Vancouver Island District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria.....	8-47	1-56	2-05	1-04	0-18	1-67	.....	0-18	1-98	2-58	5-83	0-59	.....
Sooke.....	14-22	3-60	.....	2-65	0-58	2-93	0-06	0-36	3-42	6-22	9-48	1-42	.....
Shawnigan lake.....	13-29	2-42	2-99	2-31	0-88	2-61	0-11	0-10	3-16	5-18	8-22	1-75	43-02
Cobble Hill.....	11-32	1-99	1-93	2-33	0-36	2-08	0-11	0-15	2-72	4-40	8-73	1-02	37-14
Cowichan (Tzouhalem).....	13-04	2-35	2-08	2-78	0-31	2-29	0-15	0-26	3-40	5-15	9-40	1-53	42-74
Ladysmith.....	17-34	4-40	2-55	3-85	0-31	2-11	0-38	0-07	4-48	10-26	10-71	1-69	58-15
Nanaimo.....	10-89	2-60	2-54	2-60	0-16	1-70	0-10	0-33	4-03	6-13	7-62	2-16	40-86
Nanoose bay.....	9-17	2-26	2-60	2-60	0-14	3-15	0-16	0-25	4-61	6-12	7-36	1-44	39-86
Campbell beach.....	7-75	2-38	2-34	2-88	0-39	2-41	0-28	0-34	4-77	8-01	7-15	1-07	39-77
Campbell lake.....	.....	.....	.....	.....	.....	.....	.....	.....	3-90	8-42	13-29	.....	.....
Alberni.....	16-29	5-72	8-14	7-07	1-07	3-64	0-31	0-17	7-08	16-08	14-18	2-51	82-26
Alert bay.....	6-13	3-84	5-00	3-60	1-04	0-86	1-25	1-00	4-00	6-88	9-42	2-74	45-76
Clayoquot.....	21-55	11-59	13-72	14-08	2-65	3-08	1-05	1-66	9-11	19-44	24-35	7-44	129-72
Quatsino.....	18-46	5-76	12-42	9-36	3-83	1-34	0-74	1-05	.....	14-51	17-35	.....	.....
Holberg.....	23-89	9-57	17-94	11-80	7-15	2-06	3-50	2-66	6-97	19-56	26-47	5-57	137-14

MEAN MONTHLY TEMPERATURE, Vancouver Island District, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria.....	42-1	42-0	46-9	50-5	55-9	55-9	59-7	59-5	53-6	52-7	45-0	39-6	50-2
Sooke.....	39-7	41-0	.....	48-6	53-4	55-2	59-6	59-5	58-9	52-2	44-2	38-3	.....
Shawnigan lake.....	37-0	37-8	43-6	48-7	55-5	57-8	69-2	64-1	54-1	50-6	40-9	33-9	49-4
Cobble Hill.....	38-8	38-1	43-5	47-9	54-4	56-5	60-5	59-0	53-2	55-4	42-6	36-2	48-8
Cowichan (Tzouhalem).....	40-2	39-8	45-4	50-0	55-5	58-7	63-9	62-4	55-4	50-1	43-8	36-0	50-1
Ladysmith.....	37-7	37-6	44-4	49-6	56-0	57-8	62-6	62-7	54-1	51-7	41-8	35-3	49-3
Nanaimo.....	39-8	39-6	44-7	49-6	57-0	58-8	64-4	63-7	54-7	51-8	43-6	36-9	50-3
Nanoose bay.....	38-0	38-1	43-4	48-3	54-4	56-9	62-5	61-7	50-7	50-8	42-1	35-2	48-5
Campbell beach.....	37-1	36-4	42-1	46-8	53-5	56-6	62-4	61-3	52-9	50-3	40-5	32-1	47-7
Campbell lake.....	.....	.....	.....	.....	.....	.....	.....	.....	53-1	50-6	40-8	.....	.....
Alberni.....	36-1	37-1	44-2	49-4	54-3	57-7	63-6	66-9	55-5	53-0	42-6	34-4	49-5
Alert bay.....	38-4	42-3	45-1	50-4	53-0	54-6	57-2	57-9	53-4	53-8	45-3	38-1	49-1
Clayoquot.....	41-1	42-3	45-2	48-9	54-8	54-4	58-8	59-1	54-2	53-1	45-5	41-2	50-0
Quatsino.....	37-6	39-8	42-9	47-6	51-7	54-5	58-9	59-2	.....	51-6	43-4	35-8	.....
Holberg.....	37-8	39-7	43-6	47-7	52-8	54-1	58-5	61-4	54-8	54-2	44-7	36-2	48-8

SESSIONAL PAPER No. 25e

DIFFERENCE FROM AVERAGE PRECIPITATION, Vancouver Island District, 1914.

(Difference of Total for month from monthly average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria.....	3.93	-2.01	-0.14	-0.76	-1.17	-0.71	-0.35	-0.41	-0.12	0.32	-0.24	-5.68	-7.34
Nanaimo.....	6.24	-1.54	-0.53	0.92	-1.94	-0.74	-0.65	-0.43	1.96	3.04	-1.15	-5.01	0.17
Alberni.....	6.29	-2.62	2.56	2.51	-1.89	1.27	-0.66	-0.97	3.99	10.34	1.79	-8.11	14.50
Clayoquot.....	6.96	-1.06	2.89	5.13	-3.74	-1.12	-0.96	-1.88	2.05	6.65	4.77	-8.95	10.74
Quatsino.....	5.59	-7.09	3.01	.....	-1.99	-3.29	-2.32	-3.00	.....	2.91	0.10	-12.16	.....

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE FROM AVERAGE TEMPERATURE, Vancouver Island District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria.....	2.0	1.9	2.9	1.6	2.4	-0.2	-1.2	-0.8	-3.0	1.2	-0.9	-3.2	2.7
Nanaimo.....	4.0	2.0	2.8	3.1	3.9	1.1	1.3	0.3	-2.4	2.3	0.4	-2.3	16.5
Alberni.....	2.4	-0.6	2.0	2.2	-0.4	-1.1	-1.6	1.9	-2.3	2.2	1.8	-2.8	3.7
Clayoquot.....	1.6	1.5	2.7	3.3	4.0	1.1	0.6	-0.6	1.4	2.3	0.4	-1.0	15.7
Quatsino.....	-2.3	1.8	1.1	.....	0.3	1.1	1.4	1.4	.....	3.2	1.2	-4.5	.....

N.B.—All quantities are plus unless otherwise designated.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 3

Kamloops Division

REPORT OF E. M. DANN, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER III.

THE KAMLOOPS DIVISION.

TERRITORY.

The Kamloops division covers practically the whole of the great interior plateau lying between the Hope range of mountains in the vicinity of Lytton, and the Gold range near Revelstoke on the main line of the Canadian Pacific railway. Speaking broadly, the territory is drained by the Thompson river with its north and south branches; the former heading in the vicinity of the Yellowhead pass, the latter in Shuswap lake and its surrounding hills.

In addition to the vast catchment area of the Thompson, in whose valley flow some of the most important and contentious sources of water supply throughout the whole of British Columbia, the Kamloops division also covers a small portion of the Columbia River basin lying north of the international boundary, and drained by the Kettle, Similkameen, and Okanagan rivers.

The total area of the Kamloops division is 33,000 square miles.

USES OF WATER.

IRRIGATION.

The principal industry carried on throughout this division is agriculture in all its varied forms. Owing to the semi-arid nature of most of the country the principal need of water is for irrigation, and any other use to which it may be put is directly or indirectly, connected with that science. The community which uses hydro-electric power, for example, depends for its existence upon agriculture, and this could not be carried on without irrigation. Further, without irrigation there would be little demand for water for domestic and municipal supply.

Thus it will be seen that in the Kamloops division the great natural resource, water, is used pre-eminently for irrigation.

WATER-POWER DEVELOPMENT.

Most of the power derived from falling water is developed outside the most arid section of the division, although, notably in the instance of the Kamloops municipal plant on the Barrier river, power is sometimes transmitted through irrigation areas. A discussion of the hydro-electric plants in the Kamloops division has been made in other reports, although a short description of each is appended hereto.

WATER-POWER POSSIBILITIES.

The latest possibilities of water-power development within the division are many times more important than the development powers. It is doubtful if any stream in the province has as many splendid sites for future development as the Clearwater river and its principal tributary the Myrtle, a full description of which may be found in this report. (See "Hydrographic Data of Stream Flow," Clearwater and Myrtle rivers.) The power capacities of many other large streams are shown elsewhere in this report and in Water Resources Papers Nos. 1 and 8 published by the Dominion Water Power Branch.

There is, however, in the development by farmers and others, of power upon the smaller streams, a very great immediate future. The rational handling of irrigation water may enable a rancher to operate a small plant, producing sufficient power at a very low cost for his farm needs. Power to light house and barns, power for cooking purposes, power for wood-sawing and for a hundred and one necessities, lies at many a door, and is capable of very cheap and efficient development.

MUNICIPAL SUPPLY.

In every large centre of the province the intelligent selection of a source of municipal water supply is of vast importance. The supply must be pure, in the broad sense of that word, and regular. In this particular area, as in fact throughout the whole of British Columbia, little trouble arises from impurity of supply, and our mountain streams carry, generally speaking, a quality of water ideal for domestic use. The quantity therefore is that which is of particular interest to the public at large, and throughout the division studies are being commenced of streams where a knowledge of the amount of water is of much importance in this relation.

TOPOGRAPHY OF THE KAMLOOPS DIVISION.

The wide valley of the Thompson is bordered on either side by bench lands and table-like plateaus at the lower elevations, through which the erosive effect of surface run-off has literally cut hundreds of deep gulches. The appearance of the surface soil in midsummer is barren and uninviting save where irrigation water has painted an oasis of verdant green. To get the best idea of the topography of the area of which Kamloops is the centre, and to realize to what extent it is in fact a plateau, one must view it from a mountain top. Mount Tod (7,000 feet) is the highest peak in this part of the division. From it one may see gentle sloping and park-like tablelands cut by small streams whose waters, shaded from the sun by a covering of willows, seek their way to the larger arteries of flow in the bottom valleys. To the west the mountains of the Hope range; to the east the Gold range—the wardens of the Selkirks—reach out to the sky, snow-capped; while between, stretches this splendid plateau like the deck of a vast suspension bridge hanging between mighty towers.

Of similar topography are the Okanagan and Kettle River valleys.

The Similkameen valley presents a marked contrast to the country just described. Here the hills rise steeply on either side of the river to a height of 5,000 and 6,000 feet above the sea. They are well covered with timber, particularly on their northern slopes and, except in the bottom lands where some irrigation is required, there is very little agriculture carried on.

PRECIPITATION AND CLIMATE.

Precipitation and climate are very closely related, and both are to a large extent dependent on topography. With increasing altitude we have lower temperature and higher precipitation. The remarkably small precipitation in the Kamloops division is due to the fact that there are no high mountains to cause condensation of the moisture laden winds from the Pacific.

Tables are to be seen elsewhere in this report showing the precipitation and temperatures for certain meteorological stations in the province for each month; the variation from the average is also tabulated for those stations where records are available for a sufficiently long period to render these average figures of some value.

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It is well to bear in mind while scanning these records, that in general these stations are located in centres of population which are as a rule at low altitudes. This means that for any considerable area the mean monthly precipitation is greater, and the mean monthly temperature less, than the figures given for the centre of population for that area.

The greater part of the Kamloops division lies within the dry belt, where the mean annual precipitation varies from a minimum of 5 inches per annum near Ashcroft to a maximum of probably 35 or 40 inches at the highest altitude in the section. Outside the dry belt, however, on some of the higher elevations of the clearwater drainage basin in the north, and the peaks of the Hope and Hagameen ranges which feed the Tulameen and South Similkameen rivers, the precipitation is thought to be over 50 inches, although no accurate records have been taken at these high points.

DISTRICTS AND STAFF.

For the purpose of organizing stream measurement work in a simple and systematic manner, the division has been split up into three arbitrary districts, the boundaries of which are largely determined by transportation routes. An assistant engineer is directly responsible for the maintenance of station equipment and of the acquirement of data on all streams of importance throughout the district.

KAMLOOPS DISTRICT.

The Kamloops district is such a large and important area, that in view of the establishment of many new stations on streams tributary to the North Thompson river it was found advisable to divide it into two sections with an assistant engineer in charge of each.

The section immediately around Kamloops was supervised by Mr. C. B. Corbould, B.A.Sc., Assistant Engineer, and included the many contentious irrigation streams in the vicinity of Kamloops, Grand Prairie and Mamit lake. The vast importance of irrigation interests in this country, and the thorough knowledge of stream flow necessary to intelligent development, warrants a much more complete investigation than, with the present assistance and funds available, it has been possible to give.

The suddenness of the freshet and its short duration, coupled with the fact that the peak occurs simultaneously on widely separated streams, renders the work exceedingly difficult in this section.

Work in the North Thompson section was supervised by Mr. E. H. Trederoft, C.E., Assistant Engineer, and a desultory train service on the newly built Canadian Northern Pacific railway, rendered the streams more accessible than hitherto. Stations were established on the North Thompson river (above its confluence with the Clearwater), on Raft river, on Myrtle river and on Boulder, Whitewood, Fishtrap, and Little Clearwater creeks. In the early spring a cable station was built on the Clearwater river at Brookfield's ranch and hydrographic work was continued with good results.

Owing to its inaccessibility and the limited funds available, it was impracticable to rate the Myrtle river during 1914. Gauge readings were however commenced and a record of the flow during the latter part of 1914 will be developed when a rating curve is defined.

The importance of this district for the future production of water-power is very great, the wonderful Helmcken falls on the Myrtle river being the most important of many power sites in the Clearwater country. At this point the Myrtle river plunges headlong over a sheer cliff, 450 feet in height, to a rocky

canyon below, presenting a sight which will classify the Helmcken falls among the scenic beauties of the world. Its distance from the Canadian Northern Pacific main line at Mile 71, north of Kamloops, is about 40 miles. At present the only means of access is by pack trail (see photographs, and description of Myrtle river under "hydrographic data of stream flow").

THE ASHCROFT AND NICOLA DISTRICT.

The streams in the vicinity of Ashcroft are of inestimable importance, owing to the extreme aridity of the climate and the consequent higher "duty" of irrigation water. Hydrographic work was carried on throughout this section with Mr. Corbould as assistant engineer.

In the Nicola valley, Mr. K. G. Chisholm, B.Sc., Assistant Engineer, was in charge of field work. New stations were established on Spius creek and the Coldwater river, both of which are capable of power development.

THE OKANAGAN DISTRICT.

Acquisition of field data on streams of the southern Okanagan, of the Kettle valley, and of the Similkameen country was in the hands of Mr. Chisholm, and field work was vigorously carried on. Stations were established on the more important streams and in nearly all cases first-class rating curves were defined during the season. This section is of particular interest on account of the fact that its larger waterways are of an international character, the Kettle river, for example, crossing the United States boundary line three times.

In the Shuswap lake section, the tributary streams are only accessible by motor boat. It was possible to make but two trips around this section, so that very limited information is available about the outlying streams; gauge readings are being taken regularly, however, and records of flow will be published at a later date on such streams as Seymour river, which has latent power possibilities.

On the Adams river, another power stream of importance, an automatic, self-recording gauge was installed in October, 1914, by Mr. Trederoft, and has given good service, no trouble from ice conditions having been encountered. Owing to the artificial regulation of the flow of this stream at Adams lake, by the Adams River Lumber Co., and the sluicing operations which the company has carried on, the fluctuation in stage was erratic, and it was found impracticable to secure precise results through the services of a gauge reader.

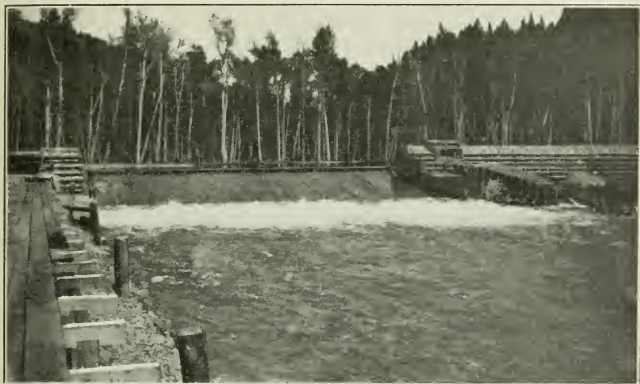
KAMLOOPS OFFICE.

Suitable office accommodation was procured in the Acadia block, Kamloops, where compilation, checking and plotting of field work is carried on. Unpublished data for the year are gladly compiled and made available for the public at any time. The division engineer visited and inspected most of the field stations in each district throughout the year, and kept constantly in touch with all gauge readers, supervising office work and assisting in the checking of field data. Miss B. B. Allan, as stenographer and office clerk, had charge of all filing, indexing, and gauge readers' returns.

INSPECTIONS.

In addition to actual stream flow work, all irrigation projects, involving Dominion Lands, within the Railway Belt of British Columbia, were inspected in co-operation with the Dominion Lands agent, by the division engineer at Kamloops. The construction of irrigation works in connection with such applications was supervised, and several surveys carried out in the field for the purpose of defining land covered by storage works and served by irrigation ditches.

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Dam, Barriere River Development, City of Kamloops.



Exterior Barriere Hydro-Electric Power House—Municipal plant for City of Kamloops, British Columbia.

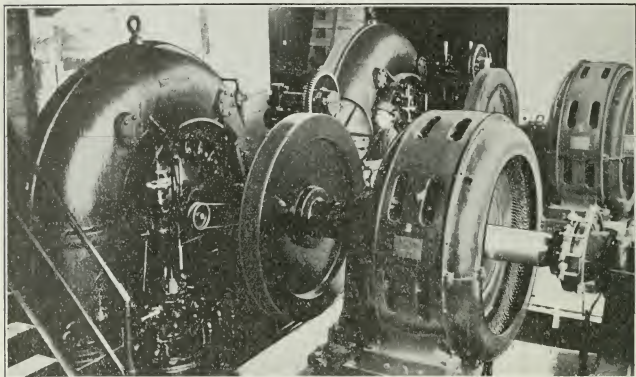
Photograph by courtesy of Messrs. Duane, Dutcher & Co., Consulting Engineers, Vancouver.

A timber flume (8' x 4') some three and a half miles long gives a concentrated head of 190 feet on the turbines. There are two penstocks of wood stave construction. The power house is of concrete.

DEVELOPED WATER-POWERS.

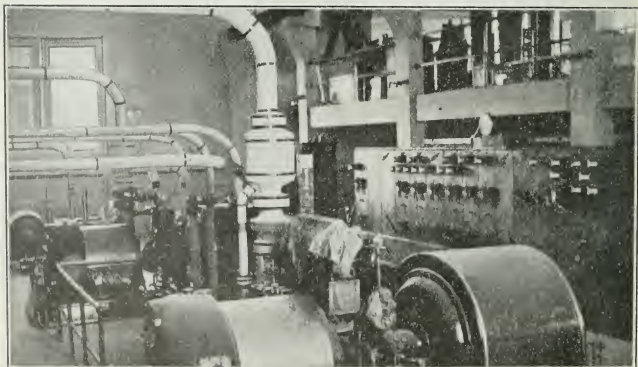
BARRIERE RIVER.

A 2,200 horse-power development has just been completed on the Barriere river, some 40 miles north of that city, by the municipality of Kamloops, with



Interior Barriere River Hydro-Electric Power House, Municipal plant for City of Kamloops. Photograph by courtesy of Messrs. Ducane, Dutcher & Co., Consulting Engineers, Vancouver.

The present development has two 1,100 H. P. Platt Iron Works Victor-Francis turbines operating under 190' head, with 750 K.V.A. Canadian Westinghouse Co. 2,200 volts, 3 phase 60 cycle generators (600 R.P.M.) with direct connected 40 K. W. Exciter.



Interior Sub-Station, City of Kamloops.

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Messrs. Ducane, Dutcher & Co., of Vancouver as engineers. A timber flume $3\frac{1}{2}$ miles long gives a concentrated head of 190 feet on the turbine, of which there are two of the Victor-Francis type. The penstocks are of wood stave, and are buried. The power-house is of concrete, and the plant itself is of exceptionally compact design.

An unfortunate landslide, such as British Columbian engineers are often called upon to deal with, has, at the time of writing, caused the plant to be temporarily shut down, a portion of the flume having settled with the slide. This matter is being adjusted and it is hoped the development will shortly be in operation again.

An auxiliary steam plant at Kamloops looks after the demand for power, during the winter period, when it is expected that the hydro-electric plant will be shut down for a period of six weeks to two months.

BOUNDARY CREEK.

There is a small hydro-electric development at Boundary falls, by which the city of Greenwood derives light and power. The plant operates under a head of 130 feet and has a capacity of 250 horse-power.

CRAZY CREEK.

At Taft, B.C., the Forest Mills of British Columbia, Ltd., has a small Pelton wheel development of 150 horse-power. Water is diverted through a 7-inch wood stave pipeline and operates under a head of about 150 feet. The power is used in connection with the sawmill as well as for fire protection, lighting, and domestic purposes.

FORTUNE OR DAVIS CREEK.

Near the city of Armstrong, B.C., on Fortune (or Davis) creek there is a small Pelton wheel development of about 200 horse-power, municipally owned, and used for lighting and power purposes. It operates under a head of 500 feet, water being carried from the storage reservoir by a pipeline, a distance of three-quarters of a mile to the power house. A transmission line carries power at 2,200 volts to the city of Armstrong.

KETTLE RIVER AT CASCADE.

The West Kootenay Power and Light Co., operates a plant on the Kettle river with a capacity of 3,900 horse-power under a head of 155 feet which is maintained in conjunction with the plants at Bonnington falls on the Kootenay river. Power is used at Grand Forks, Phoenix, and Nelson for lighting, and for the mines and smelters.

KETTLE RIVER (NORTH FORK).

A 700 horse-power plant operating under a 30-foot head is maintained and used by the Granby smelter near Grand Forks.

MURRAY CREEK.

A Pelton wheel development of 100 horse-power operating under a 220-foot head delivers light and power to the town of Spences Bridge. Water is taken to wheel direct from Murray creek in a 16-inch riveted steel pipe, the upper 175 feet of pipe being laid through a rock tunnel.

NAKALLISTON CREEK.

The Mount Olie Light and Power Plant develops some 30 horse-power from Nakalliston creek for the use of that settlement, which is about 50 miles north of Kamloops, B.C. Six hundred feet of 16-inch wood stave pipeline carries water to a small turbine acting under a 50-foot head.

SIMILKAMEEN RIVER.

The Daly Reduction Co., which owns and operates the well-known Nickel Plate Gold Mine at Hedley, B.C., has during 1914, completed the construction of a hydro-electric plant with a capacity of 1,800 horse-power. By means of a dam and a 3-mile wooden flume, a head of 67 feet is obtained. This installation superseded a plant on Twenty-mile creek, which proved of little service during low-water periods, and in conjunction with which an auxiliary steam plant had to be used

TOTAL Monthly Precipitation, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	1-68	2-18	0-26	0-38	1-31	0-54	0-53	0-38	1-09	0-79	1-01	0-58	10-73
Monte creek	0-84	2-08	.....	0-15	0-60	1-09	0-98	0-38	1-20	0-76	1-00	0-78	.....
Salmon Arm	3-08	1-36	0-87	1-27	1-36	1-34	0-73	0-19	2-17	1-54	3-02	1-55	18-48
Vernon	1-25	1-22	0-51	0-42	1-07	1-05	0-62	0-53	1-96	1-18	1-46	1-15	12-42
Keremeos	2-20	0-66	0-72	1-05	0-50	1-31	0-49	0-20	1-31	0-73	1-21	0-65	11-03
Kelowna	2-34	2-98	0-30	0-20	0-87	1-07	0-20	0-26	2-65	0-70	1-43	0-48	13-48
Penticton	2-13	0-49	0-46	1-26	1-22	1-24	0-35	0-31	2-16	0-81	1-25	0-76	12-44
Princeton	2-36	1-16	0-73	0-65	1-32	0-88	0-21	0-12	1-39	1-00	2-04	0-96	12-82

MEAN Monthly Temperature, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	29-8	25-2	39-9	51-6	58-0	63-9	70-9	68-7	56-5	49-9	37-7	21-5	.....
Monte creek	32-1	23-8	.....	49-0	51-9	62-2	69-0	60-0	52-8	47-1	35-8	18-8	.....
Salmon Arm	30-2	26-2	37-9	48-7	55-1	61-4	67-0	64-8	54-0	47-5	37-2	23-2	.....
Vernon	29-4	25-0	38-3	49-1	55-5	61-2	68-6	67-1	55-1	46-8	36-5	21-3	.....
Keremeos	31-8	28-3	41-7	52-1	59-0	61-5	71-3	70-0	56-5	49-4	38-1	20-2	.....
Kelowna	30-8	27-2	39-4	48-8	55-1	62-6	68-6	63-7	54-1	48-2	39-5	26-0	.....
Penticton	34-3	30-4	41-0	50-3	56-4	62-2	69-6	67-8	56-2	49-8	40-3	26-1	.....
Princeton	24-5	23-9	35-5	46-8	52-6	56-9	64-6	62-1	51-4	45-5	33-6	15-6	.....

SESSIONAL PAPER No. 25e

DIFFERENCE from Average Precipitation, 1914.

(Difference of Total for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	0.73	1.37	-0.06	0.00	0.28	-0.74	-0.73	-0.65	0.10	0.26	-0.11	-0.97	-0.58
Salmon Arm	0.44	0.02	0.25	0.43	0.03	-0.52	.....	-0.79	0.46	0.07	.....	-0.56	.....
Vernon	0.09	1.10	-0.15	-0.08	-0.21	-0.60	-0.68	-0.83	0.58	0.39	-0.03	-0.12	-0.54
Kelowna	0.88	1.76	-0.29	-0.98	-0.21	-0.33	-0.86	-0.77	1.48	-0.15	0.56	-0.90	-0.93
Princeton	1.05	0.16	0.13	0.11	-0.02	-0.17	-0.89	-0.82	0.34	0.17	0.17	-0.38	-0.15

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	5.1	-2.6	2.2	1.7	-0.4	0.1	1.2	0.6	1.9	1.4	2.7	-7.3	6.6
Salmon Arm	11.4	0.4	2.9	3.0	-2.3	1.7	.....	1.3	-1.9	4.2	.....	-5.9	.....
Vernon	7.8	-0.8	2.9	2.5	1.0	0.8	2.3	2.0	0.1	1.5	2.5	-6.5	16.1
Kelowna	5.2	1.5	2.7	2.1	-0.3	3.1	2.1	0.0	-0.7	3.4	3.1	-4.3	17.9
Princeton	7.7	0.7	2.9	2.6	0.7	0.3	1.7	0.8	-1.7	2.1	2.6	-6.7	13.7

N.B.—All quantities are plus unless otherwise designated.

RÉPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 4

Nelson Division

REPORT OF C. E. RICHARDSON, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER IV.

NELSON DIVISION.

GENERAL REMARKS.

Mr. J. C. Hoyt, M. Am. Soc., C.E., Hydraulic Engineer in charge Division of Surface Waters, United States Geological Survey, and Mr. N. C. Grover, Chief Engineer United States Geological Survey, in their book on "River Discharge", makes the following statement:—

The hydraulic engineer is interested in water from the time it reaches the earth in the form of rain or snow until it returns again to the atmosphere in the form of an invisible vapour.

The magnitude of this statement reveals the immense amount of data that the hydraulic engineer must collect in an endeavour to determine the most economical method of procedure with his work. The statement that each stream is a law unto itself is particularly true in the Nelson Division.

NELSON DIVISION.

The Nelson division comprises that part of British Columbia known as East and West Kootenay districts. The whole division is drained by Columbia river, and with the exception of Okanagan and Kettle rivers, comprises the total drainage of the Columbia in Canada. The East and West Kootenays are divided by Selkirk range of the Rockies, and the Selkirks are encompassed on the north, south, east, and west by Columbia river and one of its tributaries, the Kootenay. The Columbia rises in Columbia and Windermere lakes, 90 miles south of the C.P.R. main line at Golden, and flows in a northwesterly direction for about 200 miles to the mouth of Canoe river at Big Bend. From Canoe river the Columbia flows practically south for about 250 miles, past Revelstoke, through Arrow lakes, crossing the international boundary near Waneta, B.C. Kootenay river rises in Beaverfoot range of the Rockies, about 20 miles south of the C.P.R. main line at Palliser, B.C., and flows practically south for 175 miles, passing within 1 mile of Columbia lake, and crossing the international boundary near Newgate, B.C. It flows through Montana into Idaho, U.S.A., re-entering British Columbia (West Kootenay district), 60 miles west of Newgate and 20 miles south of Kootenay Landing, at which point it loses itself in Kootenay lake. From the west arm of Kootenay lake the river flows in a southwesterly direction, discharging in Columbia river near Castlegar, about 20 miles north of the international boundary.

The total area of the Nelson Division (East and West Kootenay), is approximately 29,000 square miles. Of this some 15,000 square miles are drained by the Columbia river above the mouth of the Kootenay. The Kootenay river drains approximately 13,000 square miles in British Columbia. The remaining 1,000 square miles are drained by Pend d'Oreille river, of which Flathead river in southeast Kootenay is a tributary; the Pend d'Oreille discharges into Columbia river near Waneta, 200 yards above the International boundary.

CLIMATIC CONDITIONS.

Run-off is relative directly to topography and climatic conditions. Climatic conditions are themselves partially dependent on topography. In the study of stream flow it is essential to be familiar with these two factors. The topogra-

phy, however, remains a constant factor, and the variation in the flow of streams is due directly to climatic conditions. In the opening paragraphs of the report the following remark was made:—"The statement that each stream is a law unto itself is particularly true in the Kootenays." This statement is based on the fact that in the Kootenays there is a greater variation in climatic conditions, even within a radius of a very few miles. It is impossible, therefore, to describe the climatic conditions in a general way and consider them for any one locality. Although there is no direct relation between the various localities, there are marked variations between some of the districts. The following tables and remarks are intended to show these striking variations, and in comparison with them a general resemblance may be seen between other districts.

The attached tables of precipitation for various points in the Kootenays are compiled from the monthly reports for 1914 of the Meteorological Survey, Mr. R. F. Stupart director. One table shows the monthly precipitation, while the other shows the difference from the average for the past ten years or more.

In these tables a comparison is shown between ten points, five in East Kootenay and five in West Kootenay, for 1914. Of these ten points, eight are in the valleys of the Columbia and Kootenay rivers. Glacier in West Kootenay and Fernie in East Kootenay are near the summits of the Selkirks and Rockies, respectively. Although marked variations may be noted in this table, it also shows conclusively that the precipitation in West Kootenay is much greater than in East Kootenay.

The cause of the variation in precipitation at these points may be partially explained as follows:—

Practically all the precipitation which falls in the Kootenays comes from the west. The moisture laden clouds coming from the Pacific first hit the heavily-timbered Coast range. The result is that on the west slope of the Coast range the precipitation is very heavy. These clouds then pass over the rolling hills in the central division of Yale district. The precipitation there is so light that the country is semi-arid. Gold range is only high enough to reach the lower clouds, and the precipitation on the west slope of Gold range is not very heavy though considerably greater than around Kamloops. After the Gold range comes the Selkirks. The Selkirks, particularly in the north half of the Kootenays, are high and heavily timbered. They reach well into the moisture laden clouds and the result is a heavy precipitat on on the west slope or in West Kootenay. The lower clouds have been precipitated by the Selkirks, and hence when the Rockies are reached by the remaining clouds a smaller per cent will be affected. Thus the precipitation in East Kootenay will be less. This is correct for the northern part of the Kootenays. In the south, however, the Rockies are higher than the Selkirks, and around Fernie the precipitation is very heavy. To offset this, the Valley of the Kootenay in this vicinity is wide, and around Cranbrook the precipitation is very light.

A comparison of East and West Kootenay has just been made. It might be interesting to compare the precipitation in the Kootenays along the Columbia and Kootenay valleys from south to north. In East Kootenay from Elko to the Windermere country, the precipitation is about the same. Proceeding north from Windermere (Wilmer on table), the precipitation in the Columbia valley increases slightly to Spillimacheen. From there to Golden it is fairly constant. From Golden north the precipitation gradually increases till within a few miles of the Big Bend. Captain Armstrong, a member of the Public Works Department (Canada) at Nelson, and a man well informed on the Kootenays, made the following statement:—

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PRECIPITATION.

It was early in May, 1894. Proceeding north from Golden the snow became gradually deeper. At Kimbasket lake it was about 4 feet deep and well packed. Past Kimbasket lake the depth of snow still increased, till we came to a point immediately below the mouth of Wood river. Within a distance of a quarter of a mile there was a pronounced change, from 8 feet of snow to green grass. The lower valley of Canoe river appeared very dry. Jack pine was present.

Captain Armstrong accounted for this change by the fact that the Selkirks had practically disappeared, and the mountains to the east, west, and north were not high, and the moisture-laden clouds were not penetrated until about Wood river. It is possible, however, that this sudden change might have been produced by Chinook winds.

CHINOOK WINDS.

Captain Armstrong also gave a very interesting description of the Chinook winds in East Kootenay. They come from the south, up Kootenay valley, and touch Tobacco plains near Newgate at the international boundary. From Tobacco plains they appear to rise and are not apparent again till in the vicinity of Columbia lake, the source of Columbia river. Their effect is noticed very much around Windermere lake and at the mouth of Toby creek. In January, 1901, in the valley around Windermere lake the thermometer reached 65° F., and the snow all disappeared. Toby creek valley was affected till an altitude of about 5,000 feet was reached, the height of the Chinook clouds. Above 5,000 feet there was not any effect from the Chinook. When the temperature in the valley was as high as 65° F. at the Paradise mine on Toby creek, 8,000 feet altitude, the thermometer ranged from -20° F. to -26° F. day and night. North of Toby creek the Chinook appears to lift or die out, and is not again very evident.

In West Kootenay the precipitation seems rather similar in the valley at most points as far north as Nakusp. Farther north, however, it increases considerably.

SNOWFALL DATA ALONG THE C.P.R. IN SELKIRK RANGE.

The C.P.R. have kept snowfall records each year since 1887 at various points along the main line in the Selkirks. The following table is taken from these records, and shows the annual snowfall in feet and inches. The location of the points at which records were taken is denoted by the number of miles and direction from Roger pass, the summit of the Selkirks

SNOWFALL TABLE.

Date.	Revel- stoke 35 M. SW.	Laurie tunnel 12 S.W.	Cambie 3½ S.W.	Glacier 2½ S.	22 Shed 2½ S.	18 Shed 1½ S.	14 Shed 1 N.E.	Cu. band.
	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.
1888-9						28 0		14 8
1889-90						33 3		20 9
1890-91								17 6
1891-92						36 3		21 0
1892-93						38 10		23 11
1893-94				43 4				23 9
1894-95				28 11				16 4
1895-96								27 8
1896-97				34 11				
1897-98				27 6				
1898-99				43 2				18 11
1899-1900				26 9				18 10
1900-01				32 1		34 11		17 10
1901-02				28 6		35 3		19 3
1902-03				32 0		28 9		22 11
1903-04				31 11		46 8		24 1
1904-05				16 7		17 0		17 0
1905-06	4 9			15 4		15 5		13 10
1906-07	11 2			39 8		28 7		18 10
1907-08	8 4	24 4		37 11	26 6	31 8		20 5
1908-09	12 9			34 0	29 10	30 11		23 5
1909-10	11 5	25 2		36 9	32 1	32 2		29 5
1910-11	15 8	24 7		40 7	36 8	39 2		21 7
1911-12	11 2	21 2		32 7	33 2	32 5		15 9
1912-13	15 10	27 1	41 5	45 1	47 2	44 11	37 4	23 8
1913-14	11 7	21 6	33 0	35 0		35 11		23 10

TEMPERATURE.

The attached tables show the average monthly temperature for the same localities for which the precipitation tables were compiled. The variation from the average for the past ten years for each month is also shown.

It may be seen from this table, that in the valleys, the temperature in East Kootenay is lower than in West Kootenay. There is no doubt that variation in elevation has a great deal to do with variation in temperature. It has been stated on good authority that at high elevations, such as 7,000 or 8,000 feet in the Rockies near Golden, there is much less variation in temperature than there is at Golden (2,500). During cold spells at Golden the temperature will be lower than at a point 4,500 or 5,500 feet above. At other times the temperature is lower for the higher elevation. Insufficient study has been carried on to go more deeply into this interesting problem.

CO-OPERATION.

Before the advent of the British Columbia Hydrographic Survey in the Kootenays considerable amount of work had been done by the Railway Belt Hydrographic Survey in the Railway Belt; and by the Provincial Water Rights Branch in other parts of the division.

The Provincial Water Rights Branch has three district engineers in the Nelson division. Mr. H. B. Hicks in Cranbrook district, Mr. W. J. E. Biker in Nelson district, and Mr. O. J. Bergoust in Revelstoke district. These engineers have given their earnest co-operation in obtaining data on many streams in this division.

HYDROGRAPHIC DISTRICTS.

At the opening of the 1914 season (April) the staff of the Nelson division consisted of a division engineer, two assistant engineers, and an office assistant. The division was divided into three districts, Mr. Gill was put in charge of the

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Cranbrook district, Mr. Elliott in charge of the Revelstoke district, while Mr. Beeston and the division engineer both attended to the Nelson district. Many new stations were established during the spring and early summer. Owing to the loss of one of the staff in August the work was considerably curtailed for the rest of the year, with the result that it was impossible to obtain discharge curves for all the streams in the division. Another year's work, however, will make it possible to rate all these stations.

PROBLEM OF TRANSPORTATION.

Owing to the size of the Nelson division and the varying nature of the country, the problem of transportation is of vital importance. The streams in



Cranbrook District (H)—Photograph showing support for cable way and platform attachment for cable car.

the vicinity of Nelson are reached, for the most part, by boat. In the Upper Columbia valley and Cranbrook districts, many of the streams are remote from the railroads; to cover these districts horses are of little use on account of the great distance to be covered in a trip, but by using an automobile of its own, this survey could greatly reduce the cost of the work in these two districts.



Cranbrook District (III).—Photograph showing cable car and method of operating.

WINTER MEASUREMENTS.

Winter measurements are absolutely essential on the majority of streams in the Nelson division. In East and North-west Kootenay the streams are frozen or affected by ice from November or December to March or April. In South-west Kootenay the streams seldom freeze over for more than a week or so at a time, and in the larger rivers ice conditions do not exist except during extremely cold spells.

There are two periods of low water in this division in the late summer or early fall, and during the winter. On all glacial fed streams and on a great many others low water occurs during the winter and renders winter measurements necessary.

It is not intended here to enter into a discussion on stream gauging under ice conditions, but, should any one be interested in this work, reference is made to United States Water Supply Paper No. 337, by Mr. W. G. Hoyt. In this paper the most advanced methods and theories are discussed.

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It is a much more difficult matter to obtain reliable measurements under ice conditions than during the open season, for the following reasons:—

(1.) *The Personal Equation.*—Particularly during very cold weather it is a most uncomfortable undertaking. The engineer should be supplied with the warmest clothing outfit, such as shoepacks, etc., and several pairs of gloves.

(2.) *Frazil Ice.*—In the Kootenays when ice conditions exist, frazil ice is generally present. The best metering sections are always above a riffle, and these sections or parts of them are always packed with frazil ice. It is a hard proposition to determine if there is any water flowing through the ice and also the width of the channel free from this packed frazil ice. Again, when this ice is flowing downstream it is liable to affect the action of the meter.

(3.) *Meter.*—During cold weather the meter is very liable to freeze when it is out of the water.

Needless to say, the cost of winter measurements is much in excess of the open season work. Transportation is more difficult, ice has to be chopped and the measurement takes much longer.

Not many winter measurements were made in 1914. Mr. Webb covered the streams in Revelstoke district in February. In Nelson district streams on which regular gauging stations were established were all metered at various times throughout the winter. The larger of these streams, such as the Kootenay, Pend d'Oreille, Columbia, and Slokan, did not freeze, so the open season curve was applicable for the whole year. In December, Messrs. Elliott and Corbould metered the power streams in Cranbrook district during a cold spell. All measurements were made in cold weather from 0°F to -20°F. Frazil ice was flowing in practically all the streams they metered and caused much trouble. The results, however, should be fairly reliable and are of value. It is an established fact that the run-off during the winter months varies with the temperature. In most years the low flow in the Kootenays occurs in February or March and, it is believed, takes place shortly after the last cold spell of the season. Particular attention will be paid to winter measurements during the latter part of February and early March in 1915.

TOTAL Monthly Precipitation, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden.....	3.65	0.20	1.37	0.75	1.10	1.09	0.42	0.45	1.73	1.35	1.67	0.75	14.53
Wilmer.....	2.18	0.45	0.44	1.30	1.32	1.51	1.96	0.82	2.54	0.88	1.23	0.53	15.69
Glacier.....	10.45	4.95	9.00	4.25	2.93	3.37	1.86	0.88	3.33	2.55	9.10	3.55	56.22
Revelstoke.....	9.89	2.06	3.23	2.42	1.25	2.53	0.97	1.19	3.87	2.23	7.09	1.65	38.38
Nakusp.....	5.24	1.54	0.96	3.07	1.65	2.43	1.57	0.93	2.90	1.98	3.31	1.58	27.16
Nelson.....	6.10	1.00	1.58	3.07	1.95	2.56	1.05	0.24	3.44	1.85	4.03	0.70	27.57
Waneta.....	5.01	1.20	2.36	2.33	2.87	3.36	1.36	0.00	3.93	1.33	2.99	1.43	28.17
Cranbrook.....	3.63	0.15		0.79	1.08	2.02	0.97	0.44	1.27	1.57	2.47	0.80	
Elko.....	1.91	0.50	1.66	1.48	2.01	2.74	0.90	1.62	1.39	2.45	2.08	0.80	18.94
Fernie.....	10.94	1.23	2.93	2.66	1.64	1.38	1.45	2.15	4.77	4.47	7.09	0.81	42.52

MEAN Monthly Temperature, 1914.

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden.....	20.5	20.1	30.8	44.4	50.5	56.7	63.4	59.5	50.5	43.4	30.3	8.4	39.9
Wilmer.....	22.6	20.4	32.0	43.6	50.9	56.6	64.4	61.1	50.8	41.4	30.9	11.4	40.5
Glacier.....	20.5	18.6	26.3	36.4	43.8	51.1	57.5	55.7	45.0	40.0	27.5	11.0	36.1
Revelstoke.....	27.8	24.8	33.9	44.9	53.5	58.6	65.1	62.4	52.7	45.2	35.4	18.8	43.5
Nakusp.....	33.9	26.7	35.0	45.3	52.5	56.1	64.0	61.2	50.5	44.5	36.3	22.3	44.0
Nelson.....	30.0	28.3	39.1	48.5	55.0	58.5	68.8	68.6	53.1	46.1	37.5	23.6	46.4
Waneta.....	29.0	25.1	37.3	47.1	53.5	58.0	67.8	66.6	52.1	45.4	35.4	18.5	44.7
Cranbrook.....	25.9	19.6		46.0	52.4	57.5	64.5	61.5	51.9	43.4	34.8	10.4	
Elko.....	30.7	24.3	37.4	50.4	53.8	59.3	69.1	67.3	54.8	45.8	37.1	14.9	45.4
Fernie.....	25.7	18.6	31.4	42.7	49.6	55.3	62.9	59.7	49.1	42.1	53.4	11.8	40.2

DIFFERENCE from Average Precipitation, 1914

(Difference of Total for month from monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden.....	-2.36	-0.68	0.48	0.19	0.21	-0.55	-0.95	-1.18	0.08	-1.12	-1.00	-0.78	-7.14
Glacier.....	1.80	-2.76	1.30	1.31	1.15	0.58	-0.53	-1.49	-0.81	-1.37	0.00	-4.52	-5.34
Revelstoke.....	4.35	-2.62	0.50	0.47	-0.97	-0.56	-1.62	-1.21	0.51	-1.88	1.40	-2.91	-6.54
Nelson.....	3.48	6.86	-0.05	1.65	-0.21	-0.23	-1.87	-1.70	1.62	-0.45	0.52	-1.84	0.06
Elko.....	1.31	-0.65	-0.02	0.52	-0.25	0.15	-0.65	0.28	0.05	1.46	0.11	-0.45	0.86

N. B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Golden.....	11.8	1.2	1.3	2.8	-0.8	-0.3	2.1	1.3	0.8	3.0	1.9	-10.5	14.6
Glacier.....	2.0	0.6	0.8	0.9	-0.9	-0.1	0.5	1.2	-1.1	4.8	1.8	-7.5	3.0
Revelstoke.....	7.3	2.1	1.0	1.7	1.5	0.2	2.1	1.1	0.2	2.2	1.1	-8.1	12.0
Nelson.....	-5.7	-0.4	2.1	1.5	1.3	-2.2	2.2	5.7	-2.9	1.1	0.9	-6.9	-3.3
Elko.....	8.1	-1.8	3.0	5.0	0.9	-0.7	2.6	4.0	4.6	2.8	1.3	-13.6	16.2

N. B.—All quantities are plus unless otherwise designated.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 5
Coast Division—Hydrographic Data

CHAPTER V.

COAST DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

BELKNAP CREEK AT BELKNAP LAKE (1000).

Location.—Just at lower end of Belknap lake in section 36, township 6, range 7, west of 7th meridian.

Records Available.—Measurements were started in October, 1912, and have been more or less continuous ever since.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Bed of stream strewn with rocks and boulders, giving uneven bottom, but permanent control.

Discharge Measurements.—Nine meter measurements made during 1912, 1913, and 1914 define the rating curve very well except for extreme low and extreme high water.

Winter Flow.—Very heavy snowfall but very little ice, so that open-water conditions obtain practically all winter.

Accuracy.—D. Poor because the gauge readings were not taken very frequently.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS of Belknap Creek, Belknap Lake, 1912-1913-1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft	Ft. persec.	Feet.	Sec.-ft
1912.							
Oct. 21.....	C. G. Cline.....	1,046	33	51	0.7	1.60	34
1913.							
June 4.....	H. C. Hughes.....	1,673	35	101	2.7	3.20	257
" 11.....	do.....	1,673	34	85	1.8	2.70	148
" 25.....	do.....	1,673	34	88	1.8	2.65	147
July 22.....	do.....	1,673	36	106	2.0	2.92	202
" 31.....	do.....	1,673	35	74	1.0	2.02	75
Sept. 22.....	F. MacLachlan.....	1,673	35	50	0.8	1.55	41
1914.							
Aug. 1.....	C. G. Cline.....	1,933	33	66	0.8	1.72	50
Nov. 15.....	H. C. Hughes.....	1,933	35	71	0.5	1.50	34

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DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake for 1914.

DAY.	February.		March.		April.		May.		June.		July.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		9		23		20		81		109		170
2	0.8	9		26		27		84		112	2.85	183
3		9		28		33		86		116		165
4		9	1.45	30		42		89		120		147
5		9		33		49		91		100		129
6		9		36	1.8	57	2.2	93	2.1	83		111
7		10		39		58		101		83	2.2	93
8		10		40		59		109		83		93
9		10		42		60		117		83	2.2	93
10		10		44		61		125		83		102
11		10		45		62		133	2.1	83		111
12		10		47		63		141		93		119
13		11		49		64		149		105		127
14		11		51		65		157		117		116
15		11		53		66		165		129		105
16		11		55		67		173	2.6	141	2.2	93
17		11		57		68		181		134		99
18	1.0	11		59		69		189	2.5	127	2.32	105
19		11	1.85	61		70		197		126		97
20		12		56		71		205		125		89
21		13		51		73		213		124		81
22		14		46	2.0	74	3.05	222		123		73
23		15		41		74		207		122		65
24		15		40		75		192		121	2.8	57
25		16		37		75		177		120	1.83	60
26		17		33		76		162		119		60
27		19		29		77		147		117	1.86	61
28		20		22		77		132		115		55
29				18		78		117	2.4	114		52
30				15	2.05	79	2.3	103	2.7	156	1.7	49
31			1.05	12				106			1.7	49

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DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake for 1914.

DAY.	August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-72	50	1-26	20		70		300		50
2.....		50		22		60	3-90	410	1-65	45
3.....		50		25	1-75	53		400		40
4.....		50		27		50		300	1-45	30
5.....		50		30		45		200		30
6.....		50		32		40		150		25
7.....	1-75	53		35		35		150		20
8.....		50	1-55	37		30	2-65	150		15
9.....		45	1-65	45		25		100	1-0	11
10.....	1-60	41		50	1-30	22		90		11
11.....		45		50		30		80		11
12.....	1-70	49		50		40	1-85	60		11
13.....	1-70	49		50		50		50		10
14.....		49		100		100		40		10
15.....	1-70	49		300		200	1-50	33		10
16.....		45		500		400		35		10
17.....		40		600		500		40		10
18.....	1-46	30	5-00	630	4-80	590		40		10
19.....		30		500		500		45		10
20.....	1-44	29	3-40	300		400		45		10
21.....		29		250		200	1-70	49		10
22.....	1-44	29		200		100		80		10
23.....		29		150		70	2-40	115		10
24.....		25		120	1-80	57		120		10
25.....	1-35	25		120		55		140		10
26.....		25		120		50		150		9
27.....		24		115		50	2-70	155		9
28.....		23	2-40	115	1-70	49		150		9
29.....	1-31	22		100		50		120	0-8	9
30.....		21		90		100		100		10
31.....		21				200			1-1	13

MONTHLY DISCHARGE of Belknap Creek at Belknap Lake for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
February.....			12	D
March.....			39	D
April.....	79	20	63	D
May.....	222	81	143	D
June.....	156	83	113	C
July.....	183	49	97	C
August.....	53	21	38	C
September.....	630	20	159	D
October.....	590	22	136	D
November.....	410	33	130	D
December.....	50	9	16	D

BELKNAP CREEK BELOW ANN LAKE (1063).

Location.—About half way between Ann lake and Belknep lake, near the proposed site for the diversion dam, and in section 36, township 6, range 7, west of 7th meridian.

Records Available.—June to December, 1914.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Boulders and gravel.

Discharge Measurements.—Five meter measurements made during 1913 and 1914 define the rating curve accurately except for very high stages.

Winter Flow.—Stream freezes at gauging section for a week or two in very cold weather.

Accuracy.—D. Poor on account of the infrequency of the gauge readings.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS OF Belknep Creek below Ann Lake, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1913.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 24.....	H. C. Hughes.....	1,673	27	76	1.8	2.52	135
Aug. 1.....	do	1,673	32	91	0.9	2.08	82
Sept. 19.....	F. MacLachlan.....	1,673	30	60	0.5	1.20	30
1914.							
Aug. 1.....	C. G. Cline.....	1,933	31	83	0.6	1.55	50
Nov. 10.....	H. C. Hughes.....	1,933	31	59	0.5	1.12	28

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DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake,
1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1					1-55	48	1-05	24		60		200
2			2-75	170		48		26		50	3-20	250
3				150		48		28	1-45	43		200
4				130		50		30		40		150
5				120		50		32		40		140
6				100		50		34		35		130
7			2-15	90		50		36		30		120
8				95	1-58	50	1-35	38		25	2-40	117
9				100	1-45	43		40	1-05	24		100
10				110	1-42	42		50		30		80
11	1-9	70		115		44		60		50		70
12				120	1-50	46		70		60		50
13			2-45	125	1-55	48		80		70	1-50	46
14				110	1-50	46		100		80		40
15				100	1-50	46		200		100		30
16	2-5	130	2-15	90		40		400		200	1-10	26
17				100		35		500		400		30
18	2-4	117	2-25	160	1-23	32	5-10	600	4-55	500		35
19			2-28	100	1-23	32		400		300		40
20				90	1-23	32	3-05	220		200		45
21				80	1-23	32		200		100	1-55	48
22				70	1-23	32		150		80		70
23				60		30		100		50	2-15	90
24			1-76	60		30		100	1-55	48		100
25				60	1-13	27		90		45		110
26				60		27		90		45		120
27			1-76	60		26		90		45	2-45	125
28				55		26	2-10	85	1-45	48		100
29	2-3	105		50	1-10	26		80		50		80
30	2-6	145	1-55	48		25		70		100		60
31				48		25				200		

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake,
for 1914.—*Concluded.*

DAY.	December.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1.....		50
2.....	1-55	48
3.....		45
4.....	1-40	40
5.....		35
6.....		30
7.....		30
8.....		25
9.....	1-05	24
10.....		23
11.....	1-00	22
12.....		22
13.....		22
14.....		20
15.....		20
16.....		20
17.....		20
18.....		20
19.....		20
20.....		20
21.....		18
22.....		18
23.....		18
24.....		18
25.....		18
26.....		18
27.....		18
28.....		18
29.....		18
30.....		18
31.....	0-85	18

MONTHLY DISCHARGE of Belknap Creek below Ann Lake, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
July.....	170	48	89	C
August.....	50	25	38	C
September.....	600	24	134	D
October.....	500	24	101	D
November.....	250	26	93	D
December.....	50	18	24	D

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BOULDER CREEK (1001).

Location.—Near mouth of creek and near Jones lake in section 28, township 3, range 27, west of 6th meridian.

Records available.—Daily discharges from January, 1913, to December, 1914.

Drainage Area.—Not known.

Gauge.—A fine wire is stretched tightly across the stream, and the distance to the water surface is measured with a graduated rod. These figures are subtracted from 15.00 to give the direct readings.

Channel.—Bed of stream covered with large rocks, giving an uneven bottom but good control.

Winter Flow.—The stream freezes over for a month or two each winter.

Accuracy.—Below 100 cubic feet per second, "B". Above 100 cubic feet per second, "C".

Co-operation.—The records on this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the Vancouver Power Company.

DISCHARGE MEASUREMENTS of Boulder Creek near mouth, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1911.							
Nov. 3.....	K. N. Smith.....	1,057	28	24	0.5	4.20	12.6
1912.							
Sept. 8.....	C. G. Cline.....	1,046	30	24	0.5	4.25	13.4
1913.							
July 24.....	K. G. Chisholm.....	1,055	27	52	1.6	4.90	84.6
Sept. 11.....	K. G. Chisholm and F. Mac- Lachlan.....	1,055	32	34	1.0	4.60	34.6
1914.							
July 24.....	C. G. Cline.....	1,933	30	34	0.7	4.40	22.7

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DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4-25	15	4-3	16	4-8	65	4-45	25	5-1	120	5-25	150
2	4-25	15	4-3	16	4-65	44	4-45	25	5-4	180	5-25	150
3	4-25	15	4-4	22	4-55	33	4-8	65	5-45	190	5-15	130
4	5-3	160	4-4	22	4-5	28	5-0	105	5-15	130	4-9	85
5	5-6	220	4-4	22	4-45	25	5-25	150	5-05	115	4-8	75
6	6-0	300	4-95	95	4-4	22	5-05	110	5-0	105	4-75	58
7	5-35	170	4-7	50	4-4	22	5-05	110	5-05	115	4-7	50
8	4-95	95	4-55	33	4-6	37	5-1	120	5-1	120	4-7	50
9	4-75	57	4-5	28	4-6	37	5-1	120	5-2	140	4-8	65
10	4-7	50	4-4	22	4-5	28	5-1	120	5-3	160	4-75	58
11	4-65	43	4-25	15	4-5	28	5-05	110	5-25	150	4-9	85
12	4-6	37	4-25	15	4-5	28	5-0	105	5-25	150	5-05	115
13	4-55	33	4-2	13	4-8	65	5-05	110	5-3	160	5-05	115
14	4-55	33	4-2	13	5-3	160	5-1	120	5-5	200	5-05	115
15	4-5	28	4-25	15	4-8	65	5-3	160	5-3	160	5-1	120
16	4-5	28	4-3	16	5-0	105	5-0	105	5-2	140	5-15	130
17	4-4	22	4-3	16	5-1	120	4-85	75	5-2	140	5-05	115
18	4-4	22	4-3	16	5-0	105	4-85	75	5-2	140	5-0	105
19	4-4	22	4-3	16	4-95	95	5-4	180	5-15	130	4-9	85
20	4-35	19	4-35	19	5-1	120	5-1	120	5-2	140	4-9	85
21	4-35	19	4-4	22	5-1	120	4-9	85	5-2	140	4-8	65
22	4-35	19	4-5	28	5-0	105	4-85	75	5-25	150	4-8	65
23	4-35	19	4-45	25	4-9	85	4-85	75	5-3	160	4-75	58
24	4-35	19	4-45	25	4-85	75	4-8	65	5-25	150	4-8	65
25	4-40	22	4-45	25	4-7	50	4-75	58	5-15	130	4-85	75
26	4-4	22	4-4	22	4-8	65	4-75	58	5-0	105	4-85	75
27	4-4	22	4-6	37	4-6	37	4-75	58	5-0	105	5-1	120
28	4-4	22	4-5	28	4-55	33	4-75	58	4-9	85	4-9	85
29	4-4	22	4-55	33	4-7	50	4-8	65	4-95	95
30	4-4	22	4-5	28	4-85	75	4-9	85	4-95	95
31	4-35	19	4-5	28	5-1	120

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DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4.95	95	4.3	16	4.05	9	4.35	19	5.3	160	4.6	37
2	4.95	95	4.25	15	4.05	9	4.35	19	5.1	120	4.5	23
3	4.95	95	4.25	15	4.05	9	4.3	16	5.1	120	4.5	28
4	4.9	85	4.25	15	4.05	9	4.3	16	5.25	150	4.4	22
5	4.8	65	4.25	15	4.05	9	4.25	15	5.0	105	4.4	22
6	4.7	50	4.25	15	4.05	9	4.25	15	4.8	65	4.4	22
7	4.7	50	4.3	16	4.05	9	4.2	13	4.7	50	4.35	19
8	4.7	50	4.45	25	4.4	22	4.2	13	4.8	65	4.35	19
9	4.7	50	4.3	16	4.45	25	4.2	13	4.9	85	4.3	16
10	4.7	50	4.25	15	4.35	19	4.2	13	4.8	65	4.3	16
11	4.7	50	4.25	15	4.5	28	4.4	22	5.15	130	Frozen	15
12	4.7	50	4.2	13	4.35	19	4.35	19	4.9	85	.....	15
13	4.7	50	4.2	13	4.3	16	4.4	22	4.6	37	.....	15
14	4.7	50	4.2	13	4.35	19	4.3	16	4.6	37	.....	15
15	4.7	50	4.15	12	4.6	37	4.25	15	4.6	37	.....	15
16	4.6	37	4.15	12	4.5	28	4.2	13	4.5	28	.....	15
17	4.6	37	4.15	12	4.5	28	4.8	65	4.5	28	.....	15
18	4.6	37	4.15	12	5.0	105	4.7	50	4.45	25	.....	15
19	4.6	37	4.15	12	4.85	75	4.85	75	4.6	37	.....	15
20	4.6	37	4.15	12	4.7	50	4.65	44	4.7	50	.....	15
21	4.55	33	4.15	12	4.65	44	4.5	28	4.8	65	.....	10
22	4.5	28	4.15	12	4.5	28	4.45	25	4.8	65	.....	10
23	4.45	25	4.1	10	4.45	25	4.4	22	4.8	65	.....	10
24	4.4	22	4.1	10	4.35	19	4.4	22	4.85	75	.....	10
25	4.4	22	4.1	10	4.3	16	4.4	22	4.95	95	.....	10
26	4.4	22	4.1	10	4.25	15	4.35	19	5.10	120	.....	10
27	4.4	22	4.1	10	4.6	37	4.3	16	5.05	115	.....	15
28	4.35	19	4.05	9	4.45	25	4.25	15	4.90	85	.....	15
29	4.3	16	4.05	9	4.4	22	4.25	15	4.75	60	.....	15
30	4.3	16	4.05	9	4.35	19	4.5	28	4.65	44	.....	15
31	4.3	16	4.05	9	.....	.....	4.9	85	.....	.....	Frozen	15

MONTHLY DISCHARGE of Boulder Creek near mouth for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			RUN-OFF.	
	F ³ .			Total in acre-feet.	Accuracy
	Maximum.	Minimum.	Mean.		
January	300	15	52	3,200	C
February	95	13	25	1,390	B
March	160	22	61	3,750	B
April	180	25	92	5,470	C
May	200	65	135	8,300	C
June	150	50	91	5,410	C
July	95	15	44	2,700	B
August	25	9	13	800	B
September	105	9	26	1,550	B
October	85	13	25	1,540	B
November	160	25	75	4,520	C
December	37	10	17	1,050	C
The year	300	9	55	39,680	C

BRANDT CREEK AT MOUTH (1002)

Location.—Section 4, township 7, range 7, west of the 7th meridian.

Records Available.—October 19 to December 31, 1912; January 1 to December 31, 1913; January 1, to September 11, 1914, station abandoned, and new station above Young creek used.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, nailed to tree. Generally five or six readings a week.

Channel.—Rocky bed, giving a rough bottom but permanent control.

Discharge measurements.—Rating curve well defined by nine meter measurements made during 1912 and 1913.

Winter Flow.—Open all year.

Accuracy.—B, when gauge readings were taken frequently enough.

Co-operation.—Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek at mouth, 1912-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1912.							
Oct. 19.....	C. G. Cline.....	1046	30	25	1.5	2.02	37
1913.							
May 29.....	H. C. Hughes.....	1673	40	53	2.3	2.63	122
June 9.....	do.....	1673	36	49	1.9	2.45	94
June 18.....	do.....	1673	36	45	1.7	2.35	75
June 27.....	do.....	1673	36	53	2.2	2.57	115
July 3.....	do.....	1673	36	42	1.4	2.26	59
July 29.....	do.....	1673	19	20	0.6	1.62	13
Sept 24.....	F. MacLachlan.....	1673	21	19	0.5	1.48	9
*Nov. 7.....	do.....	1521	41	27	1.3	2.08	36
Nov. 12.....	do.....	1521	40	23	1.1	1.91	25
Nov. 13.....	do.....	1521	40	21	1.1	1.84	24
1914.							
May 15.....	do.....	1521	41	46	2.3	2.56	102

* Different section.

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-00	33	1-8	21	3-0	190	1-9	26	2-5	100	2-5	100
2	2-55	110	1-7	16	2-5	100	1-92	28	2-65	130	2-4	83
3	2-45	90	1-7	16	2-5	100	2-6	120	2-6	120	2-2	53
4	5-20	610	1-7	16	2-25	60	2-7	140	2-3	67	2-08	40
5	3-20	230	1-65	14	2-05	37	2-8	155	2-25	60	1-95	30
6	3-30	245		15	2-0	33	2-55	110	2-3	67	1-9	26
7	2-90	175		15		40	2-5	100	2-3	67		30
8		150	1-7	16		50	2-45	90	2-5	100		35
9		100		16		60	2-50	100	2-45	90		40
10		80	1-7	16		70	2-5	100	2-35	75	2-1	42
11		60	1-7	16		80	2-5	100		100	2-2	53
12		50	1-75	18		90	2-3	67		120	2-2	53
13		40	2-05	37		100	3-5	280	2-7	140	2-3	67
14	2-0	33	1-9	26		110	3-0	190	2-6	120	2-5	100
15		35	1-9	26		120	3-4	265	2-4	83	2-6	120
16		40	1-92	27	2-65	130	2-9	175	2-5	100	2-2	53
17	2-1	42	1-97	31	2-60	120		160	2-25	60	2-1	42
18	2-1	42	1-95	30	2-50	100	2-7	140	2-25	60		40
19	2-1	42	2-0	33	2-65	130	3-4	265	2-25	60	2-05	38
20	1-95	30	2-0	33	2-70	140	2-5	100	2-4	83	2-05	38
21	1-9	26	2-3	67	2-65	130	2-3	67	2-45	90	2-00	33
22		20	2-4	83	2-50	100	2-25	60	2-7	140	2-00	33
23	1-75	18	2-7	140	2-30	67	2-3	67	2-5	100	2-00	33
24	1-7	16	2-5	100	2-20	53	2-25	60	2-3	67	2-10	42
25	1-7	16	2-2	53	2-10	42	2-1	42	2-7	140	2-68	135
26	2-15	48	2-1	42	2-0	33		45	3-3	245	2-40	83
27	1-9	26	2-3	67	1-9	26		45	2-7	140	2-70	140
28	1-8	21	2-2	53	1-9	26	2-15	48	2-3	67		130
29	1-8	21			2-3	67	2-15	48	2-1	42		120
30	1-95	30			2-1	42	2-3	67	2-3	67		110
31	1-9	26			2-0	33			2-6	120		

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

Day.	July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-1	42		7		
2		40		6	1-10	5
3		40	1-3	6		
4		30		6		
5		30		7		
6	1-9	26		7		
7		26		7	1-10	5
8		24		7		
9		22		8		
10		20	1-44	8	1-80	21
11		18		8	1-60	12
12		16		8		
13	1-7	16		7		
14	1-9	26		7		
15	1-8	21	1-40	7		
16		20		6		
17		18	1-24	6		
18		15		6		
19		12		6		
20		10		6		
21	1-45	8		6		
22	1-42	7		6		
23	1-45	8		6		
24		8	1-25	6		
25		8		6		
26		8		6		
27		8		5		
28	1-45	8		5		
29		8		5		
30		8	1-10	5		
31		7		5		

MONTHLY DISCHARGE of Brandt Creek at mouth for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy
	Maximum.	Minimum.	Mean.	
	January	610	16		81	D
February	140	14	37	B
March	190	26	80	C
April	280	26	109	B
May	245	42	97	B
June	140	26	65	C
July	42	7	18	D
August	8	5	6	D

BRANDT CREEK ABOVE YOUNG CREEK (1021).

Location.—A few hundred feet above the mouth of Young creek, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Part of 1914, with interruptions.

Drainage Area.—Not known.

Gauge.—The original staff gauge has been replaced by a chain gauge mounted on a pole which is fastened to trees and projects over the stream.

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Channel.—Solid rock at control.

Discharge measurements.—Nine meter measurements were made during 1913 and 1914, but most of them were referred to the old gauge which was washed out.

Winter Flow.—Very heavy snowfall but practically no ice, so that open water conditions obtain all winter.

Accuracy.—D.

Co-operation.—Gauge readers are maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek above Young Creek, 1913-1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
June 3	H. C. Hughes	1673	11	21.5	3.3	1.70	73.5
" 10	do	1673	11	16.5	2.2	1.50	37.0
" 18	do	1673	11	18.0	3.1	1.60	54.2
July 7	do	1673	10	12.9	1.6	1.30	21.0
" 30	do	1673	10	8.4	0.6	0.70	4.7
Sept. 30	F. MacLachlan	1673	9	8.4	0.3	0.51	2.4 ¹
1914.							
May 18	F. MacLachlan	1521	12	15.7	1.5	1.88	23.1
July 31	C. G. Cline	1933	8	1.1	0.7	0.70	0.8
Nov. 14	H. C. Hughes	1933	10	10.4	0.6	1.64	6.0 ²

¹ First staff gauge washed out January 6, 1914. Replaced the same month.

² Second gauge washed out October 19, 1914. Replaced November 14, 1914, by chain gauge.

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young for 1914.

DAY.	February.		March.		April.		May.		June.		July.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0.8	1.5						15		14		40
2								16		12	2.15	52
3								17		12		40
4								18	1.6	12		30
5			1.05	3.5				19		10		20
6					1.9	25.0	1.8	20	1.35	6		15
7								20		6		10
8								20		8	1.40	7
9								20		10		7
10								21		10	1.40	7
11								21	1.6	12		7
12								21		12		6
13								21	1.6	12	1.3	6
14								22		14		5
15								22		16		4
16								22		18	1.0	3
17								23	1.75	18		3
18	1.1	4.0					1.85	23		16	0.94	2.5
19			1.9	25.0				25	1.7	15		2
20								30		15	0.85	1.8
21								40		15		1.6
22					1.6	12.0	2.1	42		14		1.4
23								40		13		1.2
24								40		12	0.78	1.0
25								35		11		1
26								30		10		2
27								25		10	0.9	2
28								20		9		2
29								15	1.5	9		1
30					1.65	14.0	1.7	15		20	0.71	0.8
31			1.1	4.0				15			0.71	0.8

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young Creek, 1914.

DAY.	August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		0.8	0.57	0.4					1.70	
2		0.8		0.6						
3	0.7	0.8		0.8	0.90	2.00				
4		0.8		1.0						
5		0.7		1.2					1.60	6
6		0.7		1.4						
7		0.6		1.6						
8		0.6	0.85	1.8					1.50	
9		0.5	0.98	2.8						
10	0.6	0.5		4	0.90	2.00			1.50	
11		0.5		6			2.40			
12		0.5		10						
13		0.5		20						
14	0.6	0.5		50			1.60	6	1.55	
15	0.6	0.5		100						
16		0.5		150			1.50			
17		0.5		200						
18	0.6	0.5	3.20	250	3.20	2.50			1.45	
19		0.5		100						
20	0.6	0.5	1.80	20						
21		0.5		15			2.50		1.45	
22	0.6	0.5		10						
23		0.5		10			2.70		1.35	
24		0.5		8						
25	0.6	0.5		8						
26		0.5		6			2.00			
27	0.6	0.5		4						
28		0.5	1.05	3.5			2.15		1.40	
29	0.6	0.5		3						
30		0.5		3					2.35	
31		0.4								

MONTHLY DISCHARGE of Brandt Creek above Young Creek, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
May	42	15	24	D
June	20	6	12	D
July	52	0.8	9.1	C
August	0.8	0.4	0.6	C
September	250	0.4	33	D

CAPILANO CREEK (1023).

Location.—Just above the Vancouver intake about 6 miles from the mouth of the creek.

Records Available.—Daily discharges from November, 1913, to date.

Drainage Area.—Fifty-five square miles, estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Vertical staff, readings twice a day.

Channel.—Rocky bed, water swift at high stages. At low water a small temporary dam is sometimes placed in the channel below the gauge. The gauge readings have been corrected to allow for the backwater caused by it.

Discharge Measurements.—Eight meter measurements during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings taken by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Capilano Creek above city intake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
April 23.....	H. J. E. Keys, F. MacLachlan and C. G. Cline	1057	89	344	2.17	5-10	745
May 28.....	C. G. Cline.....	1521	90	354	2-10	5-15	717
June 19.....	do.....	1933	86	343	1-91	5-10	633
Aug. 13.....	do.....	1933	60	92	1-10	4-10	100 ¹
Sept. 9.....	do.....	1933	59	95	1-10	4-70	102 ¹
Oct. 8.....	C. E. Webb.....	1057	82	115	1-66	4-05	191
" 19.....	H. C. Hughes.....	1057	113	529	7-85	7-70	4,100
" 26.....	do.....	1933	54	206	2-00	4-40	407

¹ Affected by backwater from dam.

DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	6-00	1,570	5-05	700	7-75	4,250	4-50	400	5-80	1,350	6-05	1,630
2.....	6-65	2,420	4-85	580	6-55	2,300	5-70	1,250	6-15	1,760	5-95	1,500
3.....	6-80	2,650	4-75	520	6-50	2,230	5-75	1,300	5-85	1,400	5-65	1,200
4.....	10-10	8,350	4-55	420	5-75	1,300	6-00	1,580	5-40	950	5-15	770
5.....	9-25	6,900	4-50	400	5-50	1,050	6-60	2,350	5-25	840	4-75	520
6.....	10-40	8,900	4-50	400	5-35	900	5-80	1,350	5-40	950	4-55	420
7.....	7-55	3,900	4-50	400	5-15	750	5-20	800	5-40	950	5-33	900
8.....	7-10	3,120	4-50	400	5-60	1,150	5-60	1,150	5-60	1,150	5-17	780
9.....	7-15	3,200	4-50	400	5-50	1,050	5-70	1,250	5-50	1,050	5-60	660
10.....	6-95	2,870	4-50	400	5-30	870	5-70	1,250	5-25	840	4-92	610
11.....	6-15	1,760	4-65	470	5-50	1,050	5-60	1,150	5-45	1,000	5-08	670
12.....	5-85	1,400	4-85	580	5-60	1,150	5-50	1,050	5-65	1,200	5-25	840
13.....	5-90	1,480	5-00	660	5-75	1,300	7-05	3,050	6-05	1,630	5-25	840
14.....	5-65	1,200	5-05	700	7-70	4,150	6-75	2,570	6-15	1,760	5-50	1,050
15.....	5-35	900	5-10	720	5-55	1,100	6-70	2,500	6-00	1,580	6-00	1,580
16.....	6-80	2,650	5-10	720	5-50	1,050	5-85	1,400	5-65	1,200	5-92	1,500
17.....	5-95	1,530	5-10	720	5-70	1,250	5-45	1,000	5-50	1,050	5-67	1,220
18.....	5-90	1,480	5-10	720	5-50	1,050	5-85	1,400	5-45	1,000	5-58	1,120
19.....	5-70	1,250	5-20	800	5-70	1,250	5-25	1,900	5-35	900	5-17	780
20.....	5-20	800	5-20	800	5-95	1,500	5-80	1,350	5-75	1,300	4-96	630
21.....	5-10	720	5-35	900	5-85	1,400	5-30	870	6-00	1,580	5-17	780
22.....	4-95	630	6-15	1,750	5-70	1,250	5-15	760	6-10	1,700	5-17	780
23.....	4-80	550	6-25	1,900	5-15	760	5-15	760	6-00	1,580	5-00	660
24.....	4-80	550	6-95	2,880	4-95	630	5-20	800	5-50	1,050	5-00	660
25.....	5-55	1,100	5-90	1,480	4-75	520	4-85	580	5-85	1,400	5-83	1,400
26.....	6-30	1,950	5-50	1,050	4-65	470	4-75	520	6-05	1,760	5-25	840
27.....	5-10	730	6-15	1,750	4-60	450	4-90	600	5-85	1,400	5-08	670
28.....	4-90	690	5-70	1,250	4-50	400	4-80	550	5-20	800	5-08	670
29.....	4-75	520	4-70	4-70	500	4-70	500	4-85	580	5-46	1,000
30.....	5-35	900	4-60	450	5-05	690	4-95	630	5-62	1,170
31.....	5-05	700	4-55	420	5-75	1,300

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DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5-67	1,220	3-46	80	3-17	80	4-9	600	9-0	6,400	5-1	725
2	5-75	1,300	3-46	80	3-07	55	5-5	1,050	8-7	5,900	4-8	550
3	5-46	1,000	3-42	80	3-12	55	4-8	550	6-2	1,825	4-8	550
4	5-04	680	3-33	70	3-07	55	4-2	275	7-0	2,950	4-6	450
5	4-79	550	3-37	70	2-82	40	4-1	240	5-6	1,150	4-3	315
6	4-75	520	3-76	140	2-95	45	4-0	205	5-2	800	4-2	275
7	4-67	490	3-80	150	2-95	45	4-0	205	5-3	875	4-1	240
8	4-62	460	3-88	170	3-95	190	3-9	175	7-4	3,600	4-0	205
9	4-46	380	3-67	120	3-45	80	3-9	175	6-2	1,800	4-0	205
10	4-47	370	3-56	100	3-74	135	4-1	240	5-9	1,500	3-9	175
11	4-47	370	3-60	105	3-70	125	4-3	315	6-0	1,600	3-8	150
12	4-47	370	3-60	105	3-37	70	8-0	4,700	5-2	800	3-8	150
13	4-34	330	3-60	105	3-16	60	8-5	5,600	5-0	660	3-6	105
14	4-42	360	3-60	105	3-45	80	5-8	1,350	4-6	450	3-6	105
15	4-30	315	3-60	105	3-95	190	5-1	725	4-2	275	3-6	105
16	4-13	250	3-60	105	3-53	90	9-0	6,400	4-2	275	3-7	125
17	4-30	315	3-52	90	4-12	250	8-1	4,900	4-1	240	3-5	85
18	4-38	350	3-32	70	7-65	4,060	10-2	8,500	4-0	205	3-5	85
19	4-34	330	3-40	75	8-52	5,620	8-3	5,200	5-4	950	3-3	65
20	3-92	180	3-40	75	6-32	1,970	6-7	2,500	5-2	800	3-3	65
21	3-76	140	3-40	75	5-19	790	5-8	1,350	5-4	950	3-3	65
22	3-72	130	3-40	75	4-52	410	5-1	725	5-5	1,350	3-2	60
23	3-84	160	3-40	75	4-19	270	4-8	550	6-5	2,225	3-2	60
24	3-88	170	3-32	70	4-07	235	4-2	275	6-5	2,225	3-1	55
25	3-88	170	3-32	70	3-90	175	4-2	275	6-8	2,650	3-1	55
26	3-97	200	3-32	70	4-82	560	4-2	275	6-0	1,575	3-2	60
27	3-76	140	3-26	65	5-57	1,120	4-2	275	6-0	1,575	3-4	75
28	3-67	120	3-30	65	5-40	950	4-1	240	6-4	2,075	3-4	75
29	3-46	80	3-30	65	4-82	560	4-0	205	5-4	950	4-3	315
30	3-50	85	3-30	65	4-98	650	5-4	950	5-0	660	4-5	400
31	3-50	85	3-30	65			6-5	2,225			4-5	400

MONTHLY DISCHARGE of Capilano Creek at Intake for 1914.

(Drainage area, 55 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	8,900	520	2,170	39-50	45-50	133,000	C
February	2,800	400	875	15-90	16-60	48,600	C
March	4,250	400	1,225	22-30	25-70	75,300	C
April	3,050	400	1,220	22-20	24-80	72,600	C
May	1,760	580	1,215	22-10	25-50	74,700	C
June	1,630	420	930	16-90	18-90	55,300	C
July	1,300	80	375	6-82	7-80	23,100	C
August	170	65	90	1-63	1-88	5,500	C
September	5,620	40	635	11-55	12-90	37,800	C
October	8,500	175	1,655	30-10	34-70	101,000	C
November	6,400	205	1,645	29-90	33-40	97,700	C
December	725	55	205	37-30	43-00	12,600	C
The year	8,900	55	1,020	21-85	290-68	737,300	C

CHEHALIS RIVER (1003).

Location.—One and a half miles from the mouth, in section 14, township 4, range 30, west of the 6th meridian.

Records Available.—Continuous records since March, 1912.

Drainage Area.—Two hundred square miles.

Gauge.—Chain gauge suspended over river by pole spiked to two trees and held in position by a stay wire from the top of one of the trees.

Channel.—Rocky bed, water swift at higher stages.

Discharge measurements.—Ten discharge measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—Below 3,000 cubic feet per second, "B". Above 3,000 cubic feet per second, "C".

DISCHARGE MEASUREMENTS of Chehalis River at 1½ miles from mouth, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
1911.							
Dec. 14	N. M. Smith	1057	105	573	3.74	3.80	1,021
1912.							
Mar. 8	C. G. Cline	1046	110	162	1.82	2.70	295
July 15	do	1046	123	221	2.42	3.07	535
Sept. 11	do	1046	105	248	2.40	2.90	594
Nov. 23	do	1048	140	600	4.85	4.95	2,910
Dec. 4	do	1048	130	343	3.56	3.92	1,220
1913.							
May 21	do	1044	145	460	3.90	4.40	1,810
Sept. 8	do	1055	145	395	3.95	4.40	1,560
1914.							
May 22	do	1521	143	423	4.20	4.50	1,730
Aug. 25	do	1933	100	180	1.10	2.60	188

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DAILY GAUGE HEIGHT AND DISCHARGE of Chehalis River one mile from mouth
for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-9	1,140	4-3	1,550	6-4	9,600	4-8	2,450	4-6	2,000	4-1	1,320
2	3-8	1,060	4-2	1,430	5-7	6,250	4-7	2,200	4-55	1,910	4-05	1,280
3	3-7	980	4-05	1,270	5-2	3,850	4-8	2,450	4-5	1,820	4-0	1,230
4	6-6	10,600	3-9	1,140	5-0	3,100	4-9	2,750	4-6	2,000	4-1	1,320
5	8-0	17,000	3-8	1,060	4-7	2,200	5-2	3,850	4-6	2,000	4-0	1,230
6	9-0	22,000	3-7	980	4-5	1,820	5-1	3,450	4-55	1,910	4-0	1,230
7	8-0	17,000	3-8	1,060	4-4	1,670	4-95	2,920	4-5	1,820	4-1	1,320
8	6-4	9,600	3-7	980	4-5	1,820	4-8	2,450	4-45	1,750	4-0	1,230
9	6-0	7,700	3-6	900	4-6	2,000	4-7	2,200	4-4	1,670	3-9	1,140
10	5-5	5,300	3-6	900	4-6	2,000	4-6	2,000	4-6	2,000	3-95	1,180
11	5-2	3,850	3-7	980	4-5	1,820	4-5	1,820	5-0	3,100	4-0	1,230
12	5-1	3,450	3-7	980	4-4	1,670	4-5	1,820	4-8	2,450	4-0	1,230
13	5-0	3,100	3-8	1,060	4-5	1,820	4-6	2,000	4-8	2,450	3-95	1,180
14	5-0	3,100	3-8	1,060	6-5	10,100	4-8	2,450	4-75	2,320	3-95	1,180
15	4-8	2,450	3-8	1,060	5-7	6,250	6-7	11,000	4-70	2,200	3-9	1,140
16	4-7	2,200	3-8	1,060	6-0	7,700	5-7	6,250	4-65	2,100	3-9	1,140
17	4-6	2,000	3-7	980	6-5	10,100	5-4	4,850	4-60	2,000	3-85	1,100
18	4-5	1,820	3-6	900	5-8	6,700	5-6	5,800	4-50	1,820	3-8	1,060
19	4-3	1,550	3-6	900	5-6	5,800	6-9	12,000	4-40	1,670	3-8	1,060
20	4-1	1,320	3-6	900	5-4	4,850	5-8	6,700	4-50	1,820	3-85	1,100
21	3-9	1,140	3-75	1,020	5-2	3,850	5-5	5,300	4-5	1,820	3-9	1,140
22	4-0	1,230	5-2	3,850	5-1	3,450	5-3	4,350	4-55	1,910	3-75	1,020
23	4-1	1,320	5-0	3,100	4-85	2,600	5-0	3,100	4-5	1,820	3-6	900
24	4-0	1,230	5-0	3,100	4-8	2,450	4-8	2,450	4-5	1,820	3-55	860
25	3-8	1,060	4-8	2,450	5-0	3,100	4-7	2,200	4-6	2,000	3-7	980
26	3-9	1,140	4-7	2,200	4-9	2,750	4-6	2,000	4-8	2,450	3-8	1,060
27	4-0	1,230	5-3	4,350	4-7	2,200	4-5	1,820	4-9	2,750	3-8	1,060
28	3-9	1,140	4-9	2,750	4-5	1,820	4-45	1,750	4-5	1,820	3-8	1,060
29	4-0	1,230			4-35	1,610	4-5	1,820	4-2	1,430	3-7	980
30	4-3	1,550			4-2	1,430	4-6	2,000	4-15	1,370	3-65	940
31	4-4	1,670			4-2	1,430			4-1	1,320		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Chehalis River one mile from mouth for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-75	1,020	2-8	350	2-50	200	3-8	1,060	6-0	7,700	4-7	2,200
2.....	3-8	1,060	2-8	350	2-45	170	3-7	980	6-2	5,700	4-5	1,820
3.....	3-8	1,060	2-8	350	2-4	150	3-5	820	6-0	7,700	4-3	1,550
4.....	3-8	1,060	2-8	350	2-4	150	3-4	750	6-5	10,100	4-2	1,430
5.....	3-8	1,060	2-8	350	2-4	150	3-3	670	5-9	7,200	4-05	1,270
6.....	3-7	980	2-75	320	2-35	120	3-25	630	5-4	4,850	3-85	1,100
7.....	3-65	940	2-75	320	2-35	120	3-2	600	5-2	3,850	3-7	980
8.....	3-6	900	2-8	350	2-4	150	3-2	600	5-3	4,350	3-6	900
9.....	3-5	820	2-75	320	2-6	250	3-2	600	5-4	4,850	3-5	820
10.....	3-4	750	2-65	270	3-0	470	3-25	630	5-5	5,300	3-4	750
11.....	3-3	670	2-55	220	2-9	410	3-3	670	5-9	7,200	3-35	710
12.....	3-3	670	2-55	220	2-8	350	4-2	1,430	5-4	4,850	3-20	600
13.....	3-35	710	2-6	250	2-8	350	3-8	1,060	5-2	3,850	3-2	600
14.....	3-4	750	2-6	250	3-0	470	4-0	1,230	4-9	2,750	3-15	570
15.....	3-35	710	2-65	270	3-4	750	3-9	1,140	4-7	2,200	3-15	570
16.....	3-3	670	2-65	270	3-7	980	4-9	2,750	4-3	1,550	3-1	540
17.....	3-3	670	2-7	300	4-0	1,230	5-2	3,850	4-0	1,230	3-1	540
18.....	3-25	630	2-7	300	5-6	5,800	5-6	5,800	4-2	1,430	3-05	500
19.....	3-2	600	2-65	270	4-8	2,450	6-4	9,600	4-6	2,000	3-0	470
20.....	3-2	600	2-6	250	4-7	2,200	6-0	7,700	4-8	2,450	2-95	440
21.....	3-15	570	2-6	250	4-5	1,820	5-3	4,350	4-7	2,200	2-85	380
22.....	3-1	540	2-6	250	4-1	1,320	4-8	2,450	4-8	2,450	2-8	350
23.....	3-1	540	2-6	250	3-8	1,060	4-5	1,820	5-2	3,850	2-75	320
24.....	3-05	500	2-6	250	3-7	980	4-3	1,550	5-0	3,100	2-75	320
25.....	3-0	470	2-6	250	3-6	900	4-0	1,230	6-0	7,700	2-8	350
26.....	3-0	470	2-6	250	3-65	940	3-8	1,060	5-6	5,800	2-9	410
27.....	2-95	440	2-55	225	4-5	1,820	3-7	980	5-4	4,850	2-9	410
28.....	2-9	410	2-55	225	4-3	1,550	3-6	900	5-3	4,350	2-95	440
29.....	2-85	380	2-5	200	4-0	1,230	3-6	900	5-1	3,450	3-0	470
30.....	2-8	350	2-45	170	3-9	1,140	3-8	1,060	4-8	2,450	2-9	410
31.....	2-8	350	2-4	150	.....	.....	5-3	4,350	.....	.....	2-95	440

MONTHLY DISCHARGE of Chehalis River one mile from mouth for 1914.

(Drainage area, 200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	22,000	980	4,230	21-15	24-37	260,000	C
February.....	4,350	900	1,570	7-85	8-17	87,200	B
March.....	10,100	1,430	3,800	19-00	21-90	234,000	C
April.....	12,060	1,750	3,610	18-05	20-13	215,000	C
May.....	3,100	1,320	1,980	9-90	11-41	122,000	B
June.....	1,520	890	1,130	5-65	6-30	67,000	B
July.....	1,060	350	690	3-45	3-98	42,400	B
August.....	350	150	270	1-35	1-56	16,600	B
September.....	5,800	120	990	4-95	5-52	58,900	B
October.....	9,600	600	2,040	10-20	11-76	125,400	C
November.....	10,100	1,230	4,480	22-40	25-00	267,000	C
December.....	2,200	320	730	3-65	4-21	44,900	B
The year.....	22,000	120	2,130	10-65	144-30	1,540,600	C

SESSIONAL PAPER No. 25e

CHILLIWACK RIVER (1004).

Location.—Five miles above Sumas lake in section 1, township 23, east of Coast meridian.

Records Available.—Daily discharges continuous since November, 1911.

Drainage Area.—Four hundred and fifty square miles, of which about 100 is in the State of Washington.

Gauge.—Vertical staff on rock filled crib. Readings daily.

Channel.—Rocky bottom, good control, water deep; swift at high stages.

Discharge Measurements.—Fifteen meter measurements made during 1911, 1912, 1913, and 1914.

Winter Flow.—Open water all year.

Accuracy.—A.

DISCHARGE MEASUREMENTS of Chilliwack River near Vedder River Hotel, 1911-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1911.							
Dec. 18.....	Smith.....	1037	76	451.2	2.61	1.70	1,180
1912.							
Mar. 21.....	C. G. Cline.....	1046	65	424.0	1.76	1.00	750
" 22.....	do.....	1046	65	508.5	1.52	1.00	770
July 8.....	do.....	1046	85	658.0	4.69	2.90	3,090
Aug. 30.....	do.....	1046	65	552.0	2.03	1.60	1,120
Nov. 21.....	do.....	1048	85	684.0	5.32	3.15	3,540
1913.							
June 5.....	K. G. Chisholm.....	1055	165	969.0	8.90	5.00	8,640
July 13.....	H. J. E. Keys.....	1055	155	710.0	7.41	4.05	5,270
1914.							
Jan. 10.....	do.....	1046	110	816.0	5.47	3.65	4,450
" 12.....	do.....	1046	100	718.0	4.31	2.80	3,090
" 13.....	do.....	1046	105	740.0	4.49	2.98	3,320
" 15.....	do.....	1046	95	790.0	3.70	2.70	2,920
" 17.....	do.....	1046	95	780.0	3.27	2.54	2,550
" 22.....	do.....	1046	94	665.0	3.04	2.27	2,020
" 23.....	do.....	1046	90	718.0	2.63	2.05	1,893

DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-4	1,000	1-9	1,550	2-6	2,650	2-0	1,700	2-6	2,650	3-6	4,400
2.....	1-3	900	1-85	1,470	2-4	2,300	2-1	1,850	3-25	3,770	4-25	5,900
3.....	1-3	900	1-8	1,400	2-3	2,150	2-2	2,000	4-0	5,300	3-9	5,000
4.....	2-1	1,850	1-75	1,350	2-2	2,000	2-6	2,650	3-45	4,100	3-6	4,400
5.....	4-65	7,300	1-5	1,100	2-0	1,700	2-95	3,220	3-3	3,850	3-25	3,770
6.....	7-3	20,000	1-45	1,050	1-9	1,550	2-8	3,000	3-2	3,700	3-0	3,300
7.....	6-6	16,000	1-5	1,100	1-8	1,400	2-7	2,800	3-1	3,500	2-9	3,150
8.....	6-0	13,000	1-55	1,150	1-85	1,470	2-75	2,900	3-05	3,400	2-85	3,070
9.....	5-5	10,900	1-5	1,100	1-85	1,470	2-8	3,000	3-1	3,500	2-7	2,800
10.....	4-9	8,300	1-5	1,100	1-9	1,550	2-85	3,070	3-15	3,600	2-8	3,000
11.....	3-7	4,600	1-5	1,100	1-85	1,470	2-9	3,150	3-1	3,500	2-95	3,220
12.....	3-3	3,850	1-45	1,050	1-8	1,400	2-85	3,070	3-2	3,700	3-05	3,400
13.....	3-2	3,700	1-4	1,000	1-9	1,550	2-95	3,220	3-3	3,850	3-2	3,700
14.....	3-1	3,500	1-45	1,050	2-5	2,500	3-1	3,500	3-7	4,600	3-3	3,850
15.....	3-0	3,300	1-4	1,000	2-5	2,500	3-6	4,400	4-2	5,800	3-7	4,600
16.....	3-0	3,300	1-45	1,050	2-7	2,800	3-3	3,850	4-0	5,300	4-0	5,300
17.....	2-8	3,000	1-45	1,050	2-75	2,900	3-05	3,400	3-85	4,900	4-1	5,500
18.....	2-7	2,800	1-4	1,000	2-85	3,070	3-10	3,500	3-6	4,400	4-0	5,300
19.....	2-6	2,650	1-4	1,000	2-75	2,900	3-7	4,600	3-5	4,200	3-6	4,400
20.....	2-5	2,500	1-45	1,050	2-8	3,000	3-6	4,400	3-55	4,300	3-4	4,000
21.....	2-3	2,150	1-5	1,100	2-8	3,000	3-4	4,000	3-7	4,600	3-3	3,850
22.....	2-2	2,000	1-6	1,200	2-85	3,070	3-1	3,500	3-9	5,000	3-4	4,000
23.....	2-15	1,920	1-65	1,250	2-8	3,000	2-95	3,220	3-95	5,100	3-3	3,850
24.....	2-05	1,770	1-6	1,200	2-75	2,900	2-85	3,070	4-0	5,300	3-25	3,775
25.....	2-05	1,770	1-65	1,250	2-6	2,650	2-7	2,800	3-8	4,800	3-2	3,700
26.....	2-1	1,850	1-6	1,200	2-5	2,500	2-65	2,720	3-6	4,400	3-15	3,600
27.....	2-0	1,700	1-7	1,300	2-35	2,220	2-65	2,720	3-4	4,000	3-2	3,700
28.....	1-9	1,550	1-9	1,550	2-3	2,150	2-6	2,650	3-3	3,850	3-25	3,775
29.....	1-85	1,470	2-3	2,150	2-6	2,650	3-05	3,400	3-3	3,850
30.....	1-95	1,620	2-15	1,920	2-55	2,570	3-0	3,300	3-4	4,000
31.....	1-9	1,550	2-1	1,850	3-25	3,770

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DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-6	4,400	2-0	1,700	1-4	1,000	1-6	1,200	3-3	3,850	2-5	2,500
2.....	3-65	4,500	2-0	1,700	1-35	950	1-65	1,250	3-8	4,800	2-8	3,000
3.....	3-7	4,600	2-0	1,700	1-35	950	1-7	1,300	3-5	4,200	2-4	2,300
4.....	3-6	4,400	2-0	1,700	1-3	900	1-6	1,200	3-4	4,000	2-3	2,150
5.....	3-4	4,000	1-95	1,620	1-25	870	1-55	1,150	3-3	3,850	2-2	2,000
6.....	3-25	3,770	1-9	1,550	1-2	850	1-5	1,100	3-2	3,700	2-2	2,000
7.....	3-2	3,700	1-85	1,470	1-2	850	1-4	1,000	2-9	3,150	2-1	1,850
8.....	3-2	3,700	1-8	1,400	1-45	1,050	1-35	950	2-8	3,000	2-0	1,700
9.....	3-1	3,500	1-8	1,400	1-55	1,150	1-4	1,000	2-7	2,800	1-9	1,550
10.....	3-2	3,700	1-75	1,350	1-55	1,150	1-45	1,050	2-8	3,000	1-8	1,400
11.....	3-2	3,700	1-7	1,300	1-5	1,100	1-4	1,000	3-9	5,000	1-7	1,300
12.....	3-25	3,770	1-7	1,300	1-4	1,000	1-35	950	3-4	4,000	1-65	1,250
13.....	3-1	3,500	1-75	1,350	1-35	950	1-4	1,000	2-8	3,000	1-5	1,100
14.....	3-05	3,400	1-75	1,350	1-4	1,000	1-45	1,050	2-6	2,650	1-55	1,150
15.....	3-0	3,300	1-7	1,300	1-5	1,100	1-45	1,050	2-5	2,500	1-6	1,200
16.....	3-1	3,500	1-75	1,350	1-55	1,150	1-5	1,100	2-4	2,300	1-55	1,150
17.....	2-95	3,220	1-7	1,300	1-7	1,300	2-45	2,400	2-35	2,220	1-5	1,100
18.....	2-9	3,150	1-7	1,300	2-5	2,500	2-6	2,650	2-4	2,300	1-45	1,050
19.....	2-85	3,070	1-65	1,250	2-4	2,300	2-4	2,300	2-5	2,500	1-4	1,000
20.....	2-8	3,000	1-65	1,250	2-3	2,150	2-25	2,070	2-6	2,650	1-4	1,000
21.....	2-6	2,650	1-65	1,250	2-2	2,000	2-45	2,400	2-7	2,800	1-35	950
22.....	2-45	2,400	1-6	1,200	2-1	1,850	2-3	2,150	2-6	2,650	1-35	950
23.....	2-45	2,400	1-55	1,150	1-9	1,550	2-25	2,070	2-5	2,500	1-3	900
24.....	2-4	2,300	1-55	1,150	1-8	1,400	2-2	2,000	2-45	2,400	1-3	900
25.....	2-3	2,150	1-55	1,150	1-75	1,350	2-15	1,920	2-4	2,300	1-25	870
26.....	2-25	2,070	1-55	1,150	1-8	1,400	2-1	1,850	2-8	3,000	1-25	870
27.....	2-2	2,000	1-5	1,100	1-9	1,550	1-75	1,350	2-75	2,900	1-2	850
28.....	2-2	2,000	1-5	1,100	1-8	1,400	1-75	1,350	2-7	2,800	1-25	870
29.....	2-15	1,920	1-45	1,050	1-7	1,300	1-8	1,400	2-7	2,800	1-3	900
30.....	2-1	1,850	1-45	1,050	1-75	1,350	2-0	1,700	2-6	2,650	1-3	900
31.....	2-05	1,770	1-4	1,000	.....	.....	2-1	1,850	.....	.....	1-35	950

MONTHLY DISCHARGE of Chilliwack River near Sumas Lake for 1914.

(Drainage area, 450 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	2,000	900	4,280	9-52	10-98	263,000	B
February.....	1,550	1,000	1,170	2-60	2-71	65,000	A
March.....	3,070	1,400	2,250	5-00	5-76	138,000	A
April.....	4,600	1,700	3,110	6-92	7-72	185,000	A
May.....	5,800	2,650	4,170	9-28	10-70	250,000	A
June.....	5,900	2,800	4,000	8-00	9-93	238,000	A
July.....	4,600	1,770	3,140	6-08	8-05	193,000	A
August.....	1,700	1,000	1,320	2-93	3-38	81,000	A
September.....	850	850	1,310	2-91	3-25	78,000	A
October.....	950	950	1,510	3-36	3-87	93,000	A
November.....	2,220	2,220	3,080	6-85	7-64	183,000	A
December.....	850	850	1,340	2-08	3-44	82,000	A
The year.....	20,000	850	2,580	5-09	77-43	1,855,000	A

COQUIHALLA RIVER (1005.)

Location.—Near mouth of river, not far from Hope, in section 10, township 5, range 26, west of the 6th meridian.

Records Available.—Continuous records since November, 1911.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—Cable gauge on highway bridge. Readings two or three times a week.

Channel.—Bottom rocky and stream rather shallow; water swift at the higher stages.

Discharge Measurements.—Sixteen meter measurements made during 1912, 1913, and 1914.

Winter Flow.—In very cold weather, ice forms along the edges of the stream, with some anchor ice at the riffle which forms the control.

Accuracy.—C. Gauge readings only about three times a week.

DISCHARGE MEASUREMENTS of Coquihalla River near mouth, 1912-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1912.							
June 8	Cline & Corbould.....	1046	149	597	4.8	3.30	2,880
June 29	C. G. Cline.....	1046	122	275	3.2	1.90	890
Sept. 13	do	1046	110	171	2.0	1.05	334
Nov. 15	do	1048	120	276	2.8	1.65	762
Nov. 18	do	1048	120	350	3.5	2.25	1,210
Nov. 20	do	1048	120	386	3.9	2.45	1,510
1913.							
May 12	C. G. Cline & K. G. Chisholm	1044	150	576	5.7	3.50	3,140
June 21	C. G. Cline & K. G. Chisholm	1044	154	540	5.8	3.65	3,040
July 21	K. G. Chisholm	1055	122	378	3.7	2.60	1,410
Sept. 9	K. G. Chisholm & F. Mac-						
	Lachlan	1055	119	383	3.7	2.70	1,440
Oct. 13	H. J. E. Keys.....	1057	129	524	6.0	3.47	3,160
1914.							
July 9	Cline & Hughes	1933	125	299	3.0	1.90	858
July 18	C. G. Cline.....	1933	120	224	2.5	1.60	553
Aug. 28	do	1933	110	130	1.4	0.75	178
Oct. 27	H. C. Hughes.....	1933	100	188	1.56	0.91	283
Dec. 18	do	1521	80	206	1.47	1.68	300 ¹

¹Ice conditions.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE OF Coquihalla River near mouth.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		470	1-5	590	2-6	1,580		1,100		4,200	4-1	4,160
2		470	1-5	590	2-3	1,240		1,200	4-3	4,550	3-8	3,580
3	1-3	470		550		1,000	2-4	1,340		4,000		3,200
4		1,000		500		900	2-3	1,240		3,600		2,900
5	3-4	2,840	1-3	470	1-7	730		1,900	3-6	3,200	3-20	2,480
6	5-6	7,040	1-5	590	1-65	700	3-25	2,570		3,200		2,350
7	3-9	3,770		560	1-6	660		2,600		3,200		2,200
8	3-4	2,840		540	1-9	890		2,800	3-6	3,200	2-95	2,080
9		2,500		520		810		2,900		3,600		2,200
10		2,000		500	1-7	730	3-45	2,930		4,000		2,300
11		1,500	1-3	470	1-8	810	3-5	3,020		4,500	3-2	2,480
12	2-2	1,150		470		1,200		3,300		5,000		2,800
13		1,100	1-3	470		2,000		3,600		5,400		3,100
14		1,100	1-3	470	3-2	2,480		3,900	5-0	5,880		3,400
15	2-1	1,060	1-45	560		2,200	4-15	4,260	4-85	5,600	3-85	3,670
16		1,030		550	2-9	2,000		4,300	4-5	4,930		3,600
17	2-05	1,000		530	3-8	3,580		4,400		4,400		3,400
18	1-92	900		520	3-4	2,840		4,500	4-0	3,960	3-65	3,300
19	1-8	810		500	3-3	2,660	4-3	4,550	3-8	3,580		3,100
20		810		480	3-05	2,230		3,400		3,800	3-45	2,930
21	1-8	810	1-3	470	3-05	2,230	3-1	2,310	4-1	4,160	3-15	2,400
22		800		560	3-15	2,400		2,200		4,200		2,300
23		780	1-6	660		2,200		2,100		4,250		2,200
24		760		700		2,000		2,000		4,300		2,100
25		740	1-7	730		1,500	2-9	2,000	4-2	4,360		2,000
26		720		730	2-4	1,340	2-95	2,080	3-8	3,580		1,900
27		700		730		1,250		2,500	3-8	3,580		1,800
28		680	1-7	730	2-2	1,150		3,000	3-4	2,840		1,700
29		670				1,050		3,500	3-25	2,570		1,600
30	1-6	660			2-0	970		4,000		2,700		1,500
31	1-6	660			2-0	970			3-45	2,930		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Coquihalla River near mouth for 1914

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		1,400	1-1	370		220	1-05	350		1,000		1,200
2		1,300		350		70	220	380		1,500		1,150
3		1,200		350		220	1-15	400	3-0	2,150	2-2	1,150
4		1,100	1-0	320		220		370		1,800		1,100
5		1,000		320		220	1-05	350		1,500		1,050
6		900		320		220		340	2-25	1,200		1,000
7		900		320		70	220	320	2-1	1,060		950
8		900	1-0	320		300	95	300		1,200		900
9	1-9	890		310	1-05	350		300		1,300		850
10	1-95	930	95	300		400		300	2-5	1,460	1-8	810
11		900		300	1-3	470		300		1,400		800
12		800	95	300		470		300		1,300		750
13		800		300		470		300		1,200		700
14		800		290	1-3	470	95	300	2-2	1,150	1-6	660
15		700		280	1-55	630	90	270		1,000		600
16	1-6	660		270		700	90	270		900		500
17	1-6	660		260		800		300	1-8	810		420
18	1-6	660		250	1-95	930		350		900	1-7	300
19		600	85	250		800		400	2-1	1,060		300
20		600		250		700	1-25	450	2-55	1,520		300
21	1-4	530	85	250		600		450		1,600		300
22	1-3	470	85	250		500		400		1,800		300
23	1-3	470		250	1-15	400	1-15	400		2,000		300
24	1-25	450		250	1-1	570		400		2,200	1-0	320
25		450		240		350		350		2,400		320
26	1-25	450	80	240	1-00	320		300	3-2	2,480		310
27	1-05	350	75	230		400	95	300		2,000		300
28		350	75	230	1-35	500		300	2-5	1,460	95	300
29		370	80	240		450		320		1,300		300
30	1-10	370	75	230		400	1-0	320	2-25	1,200		300
31		370		220				500				290

MONTHLY DISCHARGE of Coquihalla River near mouth for 1914.

(Drainage area, 360 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	7,040	470	1,350	3.75	4.32	83,000	C
February	730	470	560	1.56	1.62	31,100	C
March	3,580	660	1,560	4.34	5.00	95,900	C
April	4,550	1,100	2,850	7.92	8.84	170,000	C
May	5,880	2,570	3,980	11.07	12.75	245,000	C
June	4,160	1,500	2,630	7.31	8.16	156,500	C
July	1,400	350	720	2.00	2.31	44,300	C
August	370	220	279	0.78	0.90	17,200	C
September	930	220	444	1.23	1.37	26,400	C
October	500	270	345	0.96	1.11	21,200	C
November	2,480	810	1,460	4.06	4.53	86,900	C
December	1,200	290	674	1.87	2.16	41,400	C
The year	5,880	220	1,405	3.9	53.07	1,018,900	C

SESSIONAL PAPER No. 25e

FRASER RIVER (1007).

Location.—At Hope, in section 16, township 5, range 26, west of the 6th meridian.

Records Available.—Daily discharges, continuous since March, 1912.

Drainage Area.—Above gauging station, 85,600 square miles; above mouth, 90,000 square miles.

Gauge.—Painted on rock bluff at Kettle Valley Railway bridge; readings daily.

Channel.—Permanent channel, deep water; swift at higher stages.

Discharge Measurements.—Nine measurements during 1912, 1913, and 1914; some made with meter, some by floats.

Winter Flow.—Not usually ice enough to affect the gauge height-discharge relations.

Accuracy.—C.

Co-operation.—Gauge read by the engineers of the Kettle Valley Railroad.

DISCHARGE MEASUREMENTS of Fraser River at Hope, 1912-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1912.							
March 5.....	C. G. Cline.....	1046	690	14,405	1.3	10.0	18,300 ¹
June 6.....	B. Corbould.....	1046	1,000	19,835	6.8	21.0	147,000
" 28.....	C. G. Cline.....	1046	710	26,300	8.5	24.5	225,000 ²
Sept. 24.....	do.....	1046	575	12,500	5.9	14.0	73,400 ²
" 26.....	do.....	1046	885	17,200	4.0	14.7	70,000 ²
1913.							
June 21.....	K. G. Chisholm.....	Floats....	1,016	27,100	10.2	26.0	278,000 ⁴
1914.							
July 10.....	Cline & Hughes.....	Floats....	1,110	25,300	10.3	24.0	234,000 ⁴
Aug. 28.....	C. G. Cline.....	".....	951	18,200	6.2	16.8	101,000 ⁴
Oct. 28.....	H. C. Hughes.....	".....	870	16,200	4.4	14.5	72,800 ⁴

¹ Section at gauge. ² Measured at Yale. ³ Section above gauge. ⁴ Float measurement.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		50,000	11-0	28,000	11-8	36,000	11-5	33,000	17-6	108,000	23-3	206,000
2		50,000	11-2	30,000	11-7	35,000	11-4	32,000	18-3	117,000	23-0	200,000
3		50,000	11-2	30,000	11-5	33,000	11-5	33,000	19-1	129,000	23-1	202,000
4		50,000	11-2	30,000	11-4	32,000	11-6	34,000	19-4	133,000	22-8	195,000
5	13-3	53,000	11-2	30,000	11-4	32,000	12-0	38,000	19-4	133,000	22-8	195,000
6	14-9	73,000	11-1	29,000	11-4	32,000	12-2	40,000	20-3	146,000	23-6	214,000
7	13-6	57,000	10-9	27,000	11-3	31,000	12-3	42,000	20-1	144,000	24-2	229,000
8	13-1	51,000	10-7	25,000	11-3	31,000	12-6	45,000	19-8	138,000	24-3	232,000
9	12-8	47,000	10-8	26,000	11-3	31,000	12-8	47,000	19-9	140,000	24-0	224,000
10	12-6	45,000	10-8	26,000	11-3	31,000	13-1	51,000	20-2	145,000	23-9	222,000
11	12-3	42,000	11-1	29,000	11-3	31,000	13-4	54,000	20-4	148,000	23-9	222,000
12	12-1	39,000	11-1	29,000	11-3	31,000	13-7	58,000	21-3	164,000	24-3	232,000
13	12-2	40,000	11-2	30,000	11-3	31,000	14-0	62,000	21-9	176,000	24-4	234,000
14	12-3	42,000	11-3	31,000	11-8	36,000	14-8	72,000	22-8	195,000	24-6	240,000
15	12-1	39,000	11-4	32,000	11-8	36,000	15-4	79,000	23-3	206,000	25-1	253,000
16	11-9	37,000	11-4	32,000	11-7	35,000	15-4	79,000	23-6	214,000	25-6	267,000
17	11-9	37,000	11-4	32,000	11-9	37,000	15-8	84,000	24-0	224,000	26-2	283,000
18	11-9	37,000	11-4	32,000	12-0	38,000	16-2	90,000	24-4	234,000	26-5	292,000
19	11-9	37,000	11-3	31,000	12-0	38,000	16-9	99,000	24-5	237,000	26-9	303,000
20	11-9	37,000	11-2	30,000	12-0	38,000	17-2	108,000	24-1	226,000	27-2	311,000
21	11-5	33,000	11-2	30,000	12-1	39,000	17-1	101,000	23-6	214,000	27-0	306,000
22	11-4	32,000	11-3	31,000	12-2	40,000	17-3	104,000	23-5	212,000	26-2	283,000
23	11-4	32,000	11-3	31,000	12-2	40,000	17-3	104,000	23-7	216,000	25-5	264,000
24	11-4	32,000	11-3	31,000	12-2	40,000	17-3	104,000	24-0	224,000	25-0	250,000
25	11-2	30,000	11-3	31,000	12-1	39,000	16-8	98,000	23-9	222,000	25-0	250,000
26	10-8	26,000	11-3	31,000	11-8	36,000	16-7	96,000	24-0	224,000	24-9	248,000
27	10-9	27,000	11-4	32,000	11-5	33,000	16-8	98,000	24-2	229,000	24-5	237,000
28	10-8	26,000	11-4	32,000	11-4	32,000	17-0	100,000	24-6	240,000	24-5	237,000
29	10-6	24,500			11-5	33,000	17-0	100,000	24-0	224,000	24-2	229,000
30	10-5	24,000			11-5	33,000	17-2	103,000	23-6	214,000	24-9	248,000
31	10-6	24,500			11-5	33,000			23-6	214,000		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	24.9	248,000	20.8	154,000	16.4	92,000	15.0	74,000	15.3	78,000	14.0	62,000
2.....	25.0	250,000	20.5	150,000	16.0	87,000	15.1	75,000	15.5	80,000	13.9	60,000
3.....	24.8	245,000	20.3	146,000	15.8	84,000	15.0	74,000	15.6	82,000	13.6	57,000
4.....	25.1	253,000	20.1	144,000	15.5	80,000	15.2	76,000	15.2	76,000	13.3	53,000
5.....	25.2	256,000	19.9	140,000	15.4	79,000	15.1	75,000	15.1	75,000	13.1	51,000
6.....	25.0	250,000	19.7	137,000	15.4	79,000	15.2	76,000	14.9	73,000	13.1	51,000
7.....	25.0	250,000	19.9	140,000	15.6	82,000	14.7	70,000	14.8	72,000	13.0	50,000
8.....	24.8	245,000	19.6	136,000	15.5	80,000	14.5	68,000	14.8	72,000	12.8	47,000
9.....	24.6	240,000	19.4	133,000	15.4	79,000	14.4	66,000	14.6	69,000	12.5	44,000
10.....	24.5	237,000	19.1	129,000	15.3	78,000	14.2	64,000	14.5	68,000	12.3	42,000
11.....	24.3	232,000	19.0	127,000	15.3	78,000	14.2	64,000	14.5	68,000	12.0	38,000
12.....	24.3	232,000	18.8	124,000	15.2	76,000	14.0	62,000	14.3	65,000	11.8	36,000
13.....	24.2	229,000	18.4	119,000	15.1	75,000	13.9	60,000	14.2	64,000	11.7	35,000
14.....	24.4	234,000	18.2	116,000	15.0	74,000	14.0	62,000	14.0	62,000	11.6	34,000
15.....	24.2	229,000	18.1	115,000	15.2	76,000	14.2	64,000	13.8	59,000	11.4	32,000
16.....	24.0	224,000	18.0	114,000	14.9	73,000	14.5	68,000	13.8	59,000	11.5	33,000
17.....	23.9	222,000	18.0	114,000	14.4	66,000	14.7	70,000	13.7	58,000	11.5	33,000
18.....	23.6	214,000	17.9	112,000	14.7	70,000	14.7	70,000	13.6	57,000	11.3	31,000
19.....	23.6	214,000	17.9	112,000	14.7	70,000	14.9	73,000	13.4	54,000	11.2	30,000
20.....	23.3	206,000	17.8	110,000	14.9	73,000	14.8	72,000	13.3	53,000	11.2	30,000
21.....	23.1	202,000	17.6	108,000	14.8	72,000	14.9	73,000	13.2	52,000	11.4	32,000
22.....	22.9	198,000	17.5	107,000	14.7	70,000	15.0	74,000	13.3	53,000	11.6	34,000
23.....	23.0	200,000	17.5	107,000	14.9	73,000	14.9	73,000	13.5	55,000	11.7	35,000
24.....	22.5	188,000	17.4	106,000	15.0	74,000	14.7	70,000	14.0	62,000	11.8	36,000
25.....	22.3	184,000	17.3	104,000	14.8	72,000	14.8	72,000	13.9	60,000	12.0	38,000
26.....	22.2	182,000	17.2	103,000	14.8	72,000	14.9	73,000	13.9	60,000	11.9	37,000
27.....	22.0	178,000	17.0	100,000	14.9	73,000	15.1	75,000	14.0	62,000	12.0	38,000
28.....	21.8	174,000	17.0	100,000	15.0	74,000	15.0	74,000	13.9	60,000	12.4	43,000
29.....	21.5	168,000	16.8	98,000	14.9	73,000	15.1	75,000	13.9	60,000	12.6	45,000
30.....	21.1	160,000	16.8	98,000	15.2	76,000	15.2	76,000	14.0	62,000	12.5	44,000
31.....	21.0	158,000	16.7	96,000	.....	.....	15.2	76,000	.....	.....	12.3	42,000

MONTHLY DISCHARGE of Fraser River at Hope, for 1914.

(Drainage area, 85,600 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	73,000	24,000	30,500	0.46	0.53	2,430,000
February.....	32,000	25,000	29,600	0.45	0.36	1,640,000
March.....	40,000	31,000	34,600	0.40	0.46	2,127,000
April.....	104,000	32,000	72,800	0.85	0.95	4,330,000
May.....	240,000	108,000	187,000	2.18	2.51	11,500,000
June.....	311,000	195,000	243,600	2.85	3.18	14,500,000
July.....	250,000	158,000	216,000	2.33	2.92	13,280,000
August.....	154,000	96,000	119,000	1.39	1.60	7,320,000
September.....	92,000	66,000	76,000	0.80	0.99	4,520,000
October.....	76,000	60,000	70,800	0.83	0.96	4,350,000
November.....	82,000	64,000	74,300	0.75	0.84	3,830,000
December.....	62,000	30,000	41,100	0.48	0.55	2,530,000
The year.....	311,000	24,000	90,500	1.16	15.85	72,337,000

Accuracy "C."

SESSIONAL PAPER No. 25e

HIXON CREEK NEAR MOUTH (1009).

Location.—About half a mile from the mouth, in section 34, township 6, range 7, west of 7th meridian.

Records Available.—November and December, 1912; January to December, 1913; January to July, 1914, station discontinued.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, readings about three times a week.

Channel.—Rock and gravel.

Discharge Measurements.—Five measurements during 1913 and 1914.

Winter Flow.—Open water conditions, no ice.

Accuracy.—C. and D.

Co-operation.—Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS OF HIXON Creek near mouth, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Sept. 24.....	F. MacLachlan.....	1673	48	27	1.2	3.79	33
Oct. 18.....	do.....	1673	54	44	1.6	4.34	72
Oct. 31.....	do.....	1673	51	32	1.2	3.89	36
Nov. 5.....	do.....	1521	56	53	2.3	4.59	121
1914.							
May 19.....	do.....	1521	59	71	3.1	4.87	217

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4-2	60		50		150	4-15	55	4-75	170	5-2	360
2	4-6	125		40	4-75	170	4-15	55	4-9	230		250
3		500	3-9	39		150	4-85	210		170	4-55	110
4	6-0	750		37		100		250	4-55	110		90
5		700	3-8	35	4-35	75	5-05	300		130	4-2	60
6	5-7	600	3-75	33	4-3	70		250		150		60
7	5-15	340		33		80	4-8	185		170		70
8		300	3-75	33		90	4-78	170	4-8	185		80
9		200	3-75	33		100	4-8	185	4-75	165		80
10		150		33		100		185		190		90
11		140	3-75	33		120	4-8	185		220		100
12		130	3-75	33		130		400		250	4-5	100
13		120		40		140	5-8	650	5-0	270		110
14		110	4-1	50		150	5-15	340	4-95	250		120
15		100		50		160	5-6	560		220	4-6	125
16		90	4-1	50	4-75	170	4-95	250		180		150
17	4-35	80		50	4-70	150	4-85	210	4-7	150		200
18		85		55	4-65	135		200		200	4-95	250
19	4-45	90		60		150		180	4-9	230		200
20		70	4-2	60		170	4-75	170		270		150
21	4-2	60		120	4-80	185		150	5-1	320		100
22		50	4-8	185		180		140		300	4-40	85
23	4-0	44		150	4-55	110	4-6	125		250		100
24	4-0	44		120	4-45	95		100	4-7	150		200
25		70	4-4	85		80	4-35	80		150	4-95	250
26	4-4	85		90	4-15	55		80		150		250
27	4-1	50	4-45	90	4-05	47		80		160		240
28	4-0	44		100	4-07	48	4-37	80	4-75	165		230
29		50				60		100	4-4	85		220
30	4-2	60			4-3	70		150		200		210
31		60				60			5-1	320		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1914.

DAY.	July.		August.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....				
2.....			4-3	70
3.....				
4.....				
5.....				
6.....				
7.....				
8.....				
9.....				
10.....				
11.....				
12.....				
13.....				
14.....				
15.....				
16.....				
17.....	4-65	140		
18.....				
19.....				
20.....	4-75	165		
21.....				
22.....	4-50	100		
23.....				
24.....				
25.....				
26.....				
27.....				
28.....				
29.....				
30.....				
31.....				

MONTHLY DISCHARGE of Hixon Creek at mouth for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
January.....	750	44	173	D
February.....	185	33	64	C
March.....	185	47	114	C
April.....	650	55	202	C
May.....	320	85	199	C
June.....	360	60	155	D

HIXON CREEK ABOVE BELKNAP CREEK (1064.)

Location.—About a mile above the mouth of Belknap creek, in section 36, township 6, range 7, west of 7th meridian.

Records Available.—April to September, 1914. Not maintained regularly at present.

Drainage Area.—Not known.

Gauge.—Vertical staff, nailed to tree.

Channel.—Rocks and gravel, with natural log weir as control.

6 GEORGE V, A. 1916

MONTHLY DISCHARGE of Hixon Creek above Belknap Creek, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.		
	Maximum.	Minimum.	Mean.
June.....	55	10	28
July.....	50	8	23
August.....	10	4	7

Accuracy "D."

JONES CREEK (1010).

Location.—At outlet of Jones lake in section 28, township 3, range 27, west of the 6th meridian.

Records Available.—Continuous records have been kept by Messrs. Anderson and Warden for the Vancouver Power Company since April, 1911.

Drainage Area.—Twenty-five square miles, determined by triangulation survey by Anderson and Warden.

Gauge.—Vertical staff fastened to rock filled crib. Readings daily.

Channel.—Uniform section with deep water and good control.

Discharge Measurements.—Five meter measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water practically all year.

Accuracy.—A.

Co-operation.—The records of this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the Vancouver Power Company.

DISCHARGE MEASUREMENTS of Jones Creek at Jones Lake, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1911.							
Nov. 3.....	K. H. Smith.....	1057	51	96	0.5	0.50	518
1912.							
Sept. 18.....	C. G. Cline.....	1046	51	104	0.8	0.85	87
1913.							
July 24.....	K. G. Chisholm.....	1055	51	180	2.3	2.06	411
Sept. 11.....	K. G. Chisholm & F. Mac- Lachlan.....	1055	51	131	1.3	1.24	175
1914.							
July 23.....	C. G. Cline.....	1933	51	128	1.3	1.22	164

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DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge ² Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-60	60	0-70	70	0-80	85	0-85	90	1-10	140	1-40	215
2	0-60	60	0-70	70	0-90	100	0-80	85	1-20	165	1-50	240
3	0-60	60	0-65	65	0-90	100	0-85	90	1-60	270	1-60	270
4	0-90	100	0-65	65	0-80	85	0-90	100	1-65	280	1-60	270
5	1-75	310	0-60	60	0-75	75	1-10	140	1-45	230	1-50	240
6	2-80	680	0-60	60	0-70	70	1-10	140	1-35	200	1-40	215
7	2-60	600	0-55	55	0-70	70	1-10	140	1-30	190	1-30	190
8	2-15	440	0-55	55	0-75	75	1-10	140	1-30	190	1-20	165
9	1-85	340	0-55	55	0-70	70	1-10	140	1-35	200	1-20	165
10	1-60	270	0-55	55	0-70	70	1-10	140	1-35	200	1-15	150
11	1-45	230	0-55	55	0-70	70	1-10	140	1-40	215	1-15	150
12	1-35	200	0-55	55	0-65	65	1-05	130	1-40	215	1-20	165
13	1-25	180	0-50	50	0-70	70	1-10	140	1-40	215	1-30	190
14	1-20	165	0-50	50	1-00	120	1-20	165	1-55	250	1-40	215
15	1-15	150	0-50	50	1-10	140	1-30	190	1-65	280	1-55	260
16	1-10	140	0-50	50	1-15	150	1-40	215	1-55	250	1-70	295
17	1-05	130	0-50	50	1-25	180	1-30	190	1-50	240	1-75	310
18	1-00	120	0-50	50	1-15	150	1-25	180	1-45	230	1-75	310
19	0-95	110	0-45	45	1-10	140	1-45	230	1-40	215	1-65	280
20	0-90	100	0-45	45	1-15	150	1-65	280	1-40	215	1-60	270
21	0-90	100	0-45	45	1-15	150	1-50	240	1-40	215	1-55	250
22	0-85	90	0-55	55	1-10	140	1-40	215	1-45	230	1-50	240
23	0-85	90	0-60	60	1-10	140	1-30	190	1-50	240	1-40	215
24	0-80	85	0-65	65	1-10	140	1-25	180	1-55	250	1-30	190
25	0-80	85	0-65	65	1-10	140	1-20	165	1-55	250	1-30	190
26	0-80	85	0-65	65	1-05	130	1-15	150	1-65	280	1-30	190
27	0-80	85	0-70	70	1-00	120	1-10	140	1-60	270	1-30	190
28	0-80	85	0-65	65	0-95	110	1-10	140	1-45	230	1-30	190
29	0-80	85	.....	.....	0-90	100	1-10	140	1-35	200	1-30	190
30	0-75	75	.....	.....	0-90	100	1-05	130	1-25	180	1-45	230
31	0-70	70	.....	.....	0-85	90	.....	.....	1-25	180	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-55	250	1-00	120	0-85	90	-90	100	1-30	190	1-15	150
2	1-60	270	1-00	120	0-80	85	-90	100	1-70	295	1-10	140
3	1-65	280	1-05	130	0-80	85	-85	90	1-90	325	1-05	130
4	1-70	295	1-10	140	0-80	85	-80	85	1-75	310	1-00	120
5	1-60	270	1-10	140	0-75	80	-75	80	1-65	280	-95	110
6	1-55	250	1-10	140	0-70	70	-70	70	1-55	250	-90	100
7	1-45	230	1-10	140	0-70	70	-70	70	1-45	230	-85	90
8	1-45	230	1-10	140	0-85	90	-70	70	1-30	190	-80	85
9	1-45	230	1-05	130	0-90	100	-70	70	1-40	215	-80	85
10	1-45	230	1-00	120	0-90	100	-70	70	1-35	200	-75	75
11	1-50	240	1-00	120	1-00	120	-70	70	1-80	325	-75	75
12	1-50	240	1-00	120	1-00	120	-70	70	1-70	295	-70	70
13	1-55	250	1-05	130	0-90	100	-75	80	1-60	270	-70	70
14	1-55	250	1-10	140	0-90	100	-75	80	1-40	215	-65	65
15	1-55	250	1-10	140	1-00	120	-80	85	1-30	190	-65	65
16	1-50	240	1-05	130	0-95	110	-75	80	1-20	165	-60	60
17	1-45	230	1-00	120	0-90	100	1-05	130	1-10	140	-55	55
18	1-45	230	0-95	110	1-10	140	1-15	150	1-10	140	-55	55
19	1-50	240	0-95	110	1-30	190	1-20	165	1-10	140	-55	55
20	1-50	240	0-95	110	1-30	190	1-20	165	1-20	165	-55	55
21	1-40	215	1-00	120	1-20	165	1-10	140	1-20	165	-55	55
22	1-30	190	1-00	120	1-10	140	1-00	120	1-20	165	-55	55
23	1-25	180	0-95	110	1-05	130	-95	110	1-20	165	-50	50
24	1-20	165	0-95	110	1-00	120	-90	100	1-10	140	-50	50
25	1-15	150	0-90	100	0-95	110	-85	90	1-20	165	-50	50
26	1-10	140	0-90	100	0-95	110	-80	85	1-60	270	-50	50
27	1-10	140	0-90	100	1-05	130	-80	85	1-45	230	-50	50
28	1-05	130	0-90	100	1-05	130	-75	80	1-45	230	-50	50
29	1-00	120	0-90	100	1-00	120	-70	70	1-40	215	-50	50
30	1-00	120	0-90	100	0-95	110	-85	90	1-30	190	-50	50
31	1-00	120	0-85	90			1-15	130			-55	55

MONTHLY DISCHARGE of Jones Creek at Jones lake for 1914.

(Drainage area, 25 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	680	60	173	6-92	7-98	10,600	A
February	70	45	57	2-28	2-37	3,160	B
March	180	65	109	4-36	5-03	6,700	A
April	280	85	158	6-32	7-05	9,400	A
May	280	140	223	8-92	10-28	13,700	A
June	310	150	221	8-84	9-86	13,200	A
July	295	120	213	8-52	9-82	13,100	A
August	140	90	119	4-76	5-49	7,320	A
September	190	70	114	4-56	5-09	6,780	A
October	165	70	96	3-84	4-43	5,900	A
November	325	140	215	8-60	9-60	12,800	A
December	150	50	73	2-92	3-37	4,490	B
The year	680	45	148	5-90	80-37	107,150	A

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LYNN CREEK (1046.)

Location.—Below the overflow from the North Vancouver town intake, and about 4 miles from the mouth of the creek.

Records Available.—Daily discharges since June, 1914.

Drainage Area.—Seventeen square miles. Estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Cable gauge on flume bridge.

Channel.—Boulders and solid rock.

Discharge Measurements.—Four meter measurements made during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings are made by Mr. Kirkland, who is employed at the intake by the Waterworks Department of North Vancouver.

DISCHARGE MEASUREMENTS of Lynn Creek below intake 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 10.....	C. G. Cline	1933	30	54.0	2.40	5.00	124
" 17.....	"	1933	30	60.0	2.30	5.12	135
Aug. 18.....	"	1933	11	9.4	0.20	3.45	2.2
Oct. 21.....	H. C. Hughes.....	1933	44	91.0	2.82	5.80	250

DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			5-05	130	3-30	2	3-25	1	4-90	110	7-15	510
2			4-95	120	3-25	1	3-05	1	4-90	110	7-90	660
3			4-85	105	3-15	1	3-00	1	4-50	65	7-30	540
4			4-85	105	3-10	1	2-90	1	4-35	52	6-15	320
5			4-70	86	3-10	1	2-90	1	4-25	44	5-65	230
6			4-65	80	3-30	2	2-80	1	4-10	34	5-80	260
7			4-70	86	3-55	7	2-90	1	4-15	37	5-95	285
8			4-50	65	3-85	20	3-10	1	4-75	92	5-45	380
9			4-45	60	3-75	15	3-40	2	4-80	98	6-10	315
10	4-95	115	4-35	52	3-50	5	3-50	5	4-90	110	6-10	315
11	5-05	130	4-45	60	3-35	2	3-95	25	4-80	98	5-90	275
12	5-05	130	4-40	56	3-30	2	4-30	48	7-40	560	5-75	250
13	5-15	150	4-35	52	3-25	1	4-45	60	6-05	305	5-50	200
14	5-35	180	4-40	56	3-15	1	4-70	86	5-30	170	5-35	180
15	5-30	170	4-35	52	3-25	1	4-85	105	4-95	120	5-20	155
16	5-50	200	4-30	48	3-30	2	5-10	140	6-40	370	5-75	250
17	5-00	125	4-10	34	3-25	2	5-50	200	6-70	425	5-50	200
18	5-20	155	4-05	31	3-35	2	5-85	265	6-50	390	5-50	200
19	5-10	140	4-00	28	3-30	2	6-25	340	6-00	295	5-65	230
20	4-95	120	4-10	34	3-45	3	6-75	480	5-95	280	5-75	250
21	5-30	170	3-95	25	3-40	2	5-50	200	5-90	275	5-70	240
22	5-45	190	3-75	15	3-35	2	5-40	185	5-30	170	5-50	200
23	5-10	140	3-75	15	3-25	2	5-70	240	5-10	140	5-85	270
24	4-85	105	3-80	17	3-35	2	6-05	305	4-90	110	6-35	360
25	4-80	98	3-80	17	3-35	2	6-65	415	4-70	86	6-65	415
26	4-80	98	3-65	10	3-35	2	6-70	425	4-40	56	6-85	450
27	5-00	125	3-60	8	3-15	1	6-30	350	4-30	48	6-75	430
28	5-15	150	3-55	6	3-25	1	5-50	200	4-20	41	6-80	445
29	5-20	155	3-55	6	3-25	1	5-30	170	4-25	44	6-25	340
30	5-35	175	3-40	2	3-15	1	5-15	150	4-95	120	6-00	295
31			3-35	2	3-25	1			5-65	230		

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DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914
—Con.

DAY.	December.	
	Gauge Height	Discharge.
	Feet.	Sec.-ft.
1	5-80	260
2	5-80	260
3	5-95	285
4	5-45	180
5	5-50	200
6	5-35	180
7	5-25	160
8	4-95	120
9	4-65	80
10	4-55	70
11	4-40	56
12	4-40	56
13	4-35	52
14	4-15	37
15	4-05	31
16	3-95	25
17	3-90	22
18	3-90	22
19	3-90	22
20	3-80	17
21	3-75	15
22	3-75	15
23	3-75	15
24	3-65	10
25	3-75	15
26	4-10	34
27	4-70	86
28	4-85	104
29	4-75	92
30	4-40	56
31	4-30	48

MONTHLY DISCHARGE of Lynn Creek below Intake for 1914.

(Drainage area, 17 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
July	130	2	47	2-8	3-7	2,900	C
August	30	1	3	0-2	0-2	180	D
September	430	1	145	8-5	9-5	8,600	D
October	560	34	164	9-7	11-2	10,100	C
November	660	155	315	18-5	20-6	18,700	C
December	285	10	85	5-0	5-8	5,200	C

MESLILOET RIVER (1011).

Location.—A short distance below canyon, 8 miles from mouth of river and in section 8, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 31, 1912.

Drainage Area.—Estimated at 65 square miles.

Gauge.—Vertical staff; readings two or three times a week.

Channel.—Boulders and gravel; permanent control.

Discharge Measurements.—Twelve meter measurements taken during 1912, 1913, and 1914 define the rating curve for almost the entire range.

Winter Flow.—Open water conditions all winter.

Accuracy.—The value B is assigned where the gauge readings have been taken frequently enough to warrant it.

Co-operation.—Gauge readers are maintained by the Westminster Power Company.

DISCHARGE MEASUREMENTS of Mesliobet River eight miles from mouth 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1912.							
Oct. 31.....	C. G. Cline.....	1046	70	120	1.6	2.26	188 ¹
1913.							
June 6.....	H. C. Hughes.....	1673	80	232	2.9	3.25	662
" 13.....	do	1673	80	240	3.1	3.40	713
" 17.....	do	1673	80	195	2.4	2.90	446
July 3.....	do	1673	80	203	2.4	2.98	471
" 29.....	do	1673	75	146	1.6	2.28	230
Sept. 17.....	C. G. Cline.....	1673	70	109	1.2	1.87	122
Oct. 9.....	F. MacLachlan.....	1673	77	81	0.9	1.61	76
Nov. 10.....	do	1521	83	186	2.2	2.86	417
" 16.....	do	1521	85	277	3.5	3.58	942
1914.							
Aug. 2.....	C. G. Cline.....	1933	75	131	1.2	2.00	154
Nov. 11.....	H. C. Hughes.....	1933	80	220	2.6	3.05	555

¹ Station established.

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DAILY GAUGE HEIGHT AND DISCHARGE of Meslioiet River eight miles from mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		400		110	3-80	1,010	2-1	170	2-95	461	3-4	720
2.	2-90	436		100		700	2-1	170	3-2	595	3-1	540
3.	2-75	368		95	2-75	368		380		490	2-85	410
4.	6-80	3,320	1-70	89		290	3-2	595	2-8	389		360
5.		2,400		80	2-30	222		520		380	2-45	265
6.	4-60	1,580	1-60	72	2-30	222		470		375		265
7.		1,440	1-60	72		240		450	2-75	368		270
8.		1,270	1-60	72		260	2-9	436		388		270
9.		1,110		76		280	2-95	461	2-85	413		275
10.		950	1-65	80		300	3-0	485	2-8	389	2-5	280
11.		790	1-65	80		320		400		460		295
12.		620		108		340	2-6	311		530	2-6	311
13.		440	1-95	136		360		640		600		533
14.	2-40	251		136		380	3-75	975	3-3	660	3-45	755
15.		260	1-95	136		400	3-95	1,115	3-2	595	3-6	860
16.		270		141		420		760	2-9	436		730
17.	2-50	280	2-00	147	2-90	436	2-85	413		420	3-05	510
18.	2-45	265		160	2-80	389	3-15	570		400	2-9	436
19.		235		190		464	3-7	940	2-8	389		380
20.	2-25	210		220	3-10	540	3-15	570	3-0	485	2-65	329
21.	2-20	195	2-40	251	3-05	510		440	3-7	940		285
22.		160	2-55	295	3-00	485	2-6	311		720	2-40	251
23.	1-95	136		350		390	2-55	295	3-05	510	2-40	251
24.	1-90	125	2-85	413	2-55	295		285		650	2-40	251
25.		155		300	2-40	251		275	3-5	790	3-05	510
26.	2-20	195	2-20	195	2-25	210		265	4-0	1,150	2-55	295
27.		155		210		190		255	3-3	660		295
28.	1-85	116	2-30	222	2-10	170		245	2-8	389		295
29.		121			2-50	280	2-35	236	2-5	280		290
30.		128			2-30	222		350		360		285
31.	1-95	136				200			2-9	436		

DAILY GAUGE HEIGHT AND DISCHARGE of Mesliloet River eight miles from mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-50	280		145		50		260		1,600	2-75	370
2.....		280	2-00	147	1-46	50		257		1,400		300
3.....		280		145		60	2-40	250		1,300		250
4.....		280		145		75		210	4-00	1,150	2-35	235
5.....		280		140		85		190		900		200
6.....	2-50	280		140		100		170		600		170
7.....		280		135		115		150	2-70	347	2-00	145
8.....		280		130		125		135		380		140
9.....		285		125		135	1-85	115		430		130
10.....		285		125	2-00	145		150	3-00	485		120
11.....		290	1-90	125	1-75	95		200		430		110
12.....		290		125		100		400		350	1-80	105
13.....		295		120		200		600		290		100
14.....	2-55	295		115		300		800	2-35	235	1-70	90
15.....	2-50	280	1-85	115		1,000		1,000		210		90
16.....		260		100		1,200		1,300		190		80
17.....		240	1-65	80	4-50	1,510	4-30	1,370	2-10	170		70
18.....		220		80	5-00	1,880		1,300		220	1-60	70
19.....		195		80		1,300		1,200	2-50	280		70
20.....		170		75	3-40	720	4-00	1,150		450		65
21.....	1-95	136		75		700		1,000		600	1-55	65
22.....	1-95	136		70		600		850		750		60
23.....		145		70		500	3-40	720	3-65	900	1-50	60
24.....		155		65		400		600		1,100		60
25.....		165		65		350		460	4-40	1,440		65
26.....		175		65		350		330		1,200		65
27.....		185		60		350	2-20	195		1,000	1-55	65
28.....	2-20	195		60	2-65	330		300	3-55	820		80
29.....	1-95	136		55		300		1,000		800		90
30.....		140		55		280		1,500		700		100
31.....		145		50			4-90	1,800			1-90	125

MONTHLY DISCHARGE of Mesliloet River eight miles from mouth, for 1914.

(Drainage area, 65 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	3,320	116	597	9-2	10-6	36,700	B
February.....	413	72	162	2-5	2-6	9,000	B
March.....	1,010	170	360	5-5	6-3	22,100	B
April.....	1,115	170	460	7-1	7-9	27,400	B
May.....	1,150	280	520	8-0	9-2	32,000	B
June.....	755	251	393	6-0	6-7	23,400	B
July.....	295	136	228	3-5	4-0	14,000	C
August.....	147	50	99	1-5	1-7	6,100	C
September.....	1,880	50	447	6-9	7-7	26,600	C
October.....	1,800	115	644	9-9	11-4	39,600	C
November.....	1,690	170	691	10-6	11-8	41,100	C
December.....	370	60	121	1-9	2-2	7,400	C
The year.....	1,880	50	394	6-05	82-1	285,400	C

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NICOLUM RIVER (1058).

Location.—At the pack trail bridge, 4 miles from the mouth of the river and 9 miles from Hope; in section 27, township 4, range 5, west of 6th meridian

Records Available.—August to December, 1914—irregular.

Drainage Area.—Thirty square miles (above gauging station.)

Gauge.—Vertical staff. Readings irregular.

Channel.—Rocky; water swift at high stages.

Discharge Measurements.—Four during 1914; one of them was under ice conditions.

Winter Flow.—Stream remains open all winter but during cold spells anchor ice disturbs somewhat the ordinary relation between gauge height and discharge.

NICOLUM RIVER.

The Nicolum river has its source in the Nicolum lakes at an elevation of something like twenty-one hundred feet. It discharges into the Coquihalla river near Hope, about 4 miles from the Fraser river at an elevation of some three hundred feet. The stream has a drainage area of 30 square miles above the gauging section.

For the greater part of the year there is no direct surface flow from the lakes into the river, but the flow is kept up by seepage, which comes out as springs in the bed of the stream, some little distance below the lakes. It is only for a short period during the spring freshet that the lakes overflow directly into the stream. This condition of affairs gives a very uniform flow, which, however, is affected to some extent by two tributaries which enter from either side of the stream a few miles below the lake.

The precipitation in the Nicolum river watershed probably averages something over seventy inches. In the winter there is very little snow near the mouth of the creek, but at the headwaters there is a considerable depth. The stream does not generally freeze at the gauging station but the water is sometimes backed up a little by ice.

The pack trail from Hope to Princeton follows the Nicolum river from its mouth to the lakes. Part of this road was widened at one time for the use of wagons, and it would be a simple matter to convert it into a wagon road at least as far as the Nicolum lakes. Lately, however, it has been used merely as a pack trail.

There is practically no settlement or development in the Nicolum valley. The country is mostly mountainous, and there is very little good farming land, with the exception of a fringe around the lakes.

The Nicolum lakes are located at one end of a valley which lies among the hills at an altitude of some twenty-one hundred feet. The Nicolum river drains one end of this valley. The Sumallo river flows down from the hills near the other end of the valley on its way to join the Skagit below. The natural conditions are such that it would be quite possible to divert the Sumallo river into the Nicolum lakes. This would give a fairly good flow of water at quite a high head. By utilizing the total fall to the Fraser river, a head of something like two thousand feet could be obtained, though this would require a pipe line about 10 miles long. The lakes would give good storage, particularly since their area could be greatly increased by means of storage dams. The natural seepage which takes place from the lakes at present would be a considerable disadvantage. However, test pits which have been sunk, seem to indicate that there is only one of the lakes that supplies this seepage and that the glacial silt in the rest of the valley bottom would prevent any such losses, provided that the one troublesome lake was omitted from the storage system.

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The flow available for such a development is given by the flow of the Sumallo river as measured at the station eight miles from the mouth. To this must be added a portion of the flow as measured at the station on the Nicolum, which cannot all be utilized because it includes the water brought down by the two tributaries which enter below the lake, and it would only be possible to divert one of these streams into the proposed pipeline. The measurements at the upper station on the Sumallo, however, are not as complete as those which have been taken at the station near the mouth, since it was not possible to get regular gauge readings. In using the flow of the Sumallo river at the lower station, a considerable reduction should be made. This amount can be determined by comparing the discharges at the two stations, at various times of the year. It is expected that next year more complete data on these streams will be available.

DISCHARGE MEASUREMENTS of Nicolum River at Nine-mile Bridge, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 17.....	C. G. Cline.....	1933	26	27.0	2.80	1.55	74.3
Aug. 27.....	do	1933	26	16.4	1.50	1.10	24.0
Oct. 29.....	H. C. Hughes.....	1933	28	15.7	1.60	1.10	24.0
Dec. 17.....	do	1521	28	16.5	1.87	1.35	30.8 ¹

¹ Ice conditions.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nicolom River four miles from mouth
for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				45				35				
2			1-30	45			1-20	35				
3				45				35				
4			1-30	45			1-20	35			1-60	85
5								35				
6											1-50	70
7												
8							1-20	35				
9												
10												
11												
12			1-25	40							1-40	57
13				35								
14			1-20	35								
15					1-30	45					1-25	40
16					1-20	35						
17	1-55	77	1-20	35							Ice.	33
18			1-20	35					1-45	64		
19			1-10	25					1-50	70		
20				25			1-20	35	1-60	85		
21							1-20	35	1-60	85		
22												
23												
24									1-70	100		
25												
26												
27			1-10	25								
28												
29			1-10	25	1-20	35	1-10	25				
30												
31												

NORTON CREEK (1013.)

Location.—An outlet of Norton lake in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 20, 1912, except for part of January, 1914.

Drainage Area.—Not known—very small.

Gauge.—Vertical staff. Very few readings during the winter of 1914.

Channel.—Boulders.

Discharge Measurements.—Twelve meter measurements made during 1912, 1913, and 1914, define the rating curve accurately except for highest freshets.

Winter Flow.—The lake freezes over, but the stream remains free of ice at the gauge.

Accuracy.—C. and D. Gauge readings irregular for part of the year.

Co-operation.—The gauge readers are maintained by the Westminster Power Company.

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DISCHARGE MEASUREMENTS of Norton Creek at Norton Lake, 1912-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Height.	Gauge Velocity.	Discharge.		
							Feet.	Sec.-ft.	
1912.									
Oct. 20	C. G. Cline	1046	9-0	11-8	0-6	2-53	7-6 ¹		
1913.									
June 3	H. C. Hughes	1673	16-0	16-0	1-0	2-85	16-3 ²		
June 10	do	1673	8-5	9-3	1-0	2-60	9-3		
June 24	do	1673	8-0	7-5	0-8	2-52	5-7		
July 7	do	1673	10-0	13-3	0-6	2-53	7-7		
July 23	do	1673	6-0	6-4	0-3	2-11	1-8		
Aug. 2	do	1673	6-0	5-1	0-1	1-85	0-5		
Sept. 23	F. MacLachlan	1673	3-5	1-9	0-9	2-06	1-8		
1914.									
May 17	F. MacLachlan	1521	10-0	4-0	1-6	2-43	6-2		
May 17	do	1521	9-5	11-8	0-6	2-43	6-6		
July 31	C. G. Cline	1933	3-0	1-0	0-5	1-80	0-8		
Nov. 14	H. C. Hughes	1933	10-0	12-8	0-8	2-65	10-3		

¹Station established.²Several different sections used.³Different section for a check.

DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton Lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Discharge.	Gauge Height.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				3	3-1	27		6		11-0		5-2
2			2-2	2-7		22		9		10-0		5-2
3				2-8		17		11		9-5		5-2
4				2-9	2-8	14		13		9-0	2-4	5-2
5	3-50	46		3	2-7	11		15	2-6	8-6		4-5
6				3		11	2-9	18	2-55	7-7	2-3	3-7
7				3		11		18		7-5		3-7
8				3		12		18		7-2		3-7
9				3		12		18		6-8		3-7
10				3		13		18		6-4		3-7
11				3		13		18		6-0	2-3	3-7
12				3		14		18		5-9		3-5
13				3		14		18		5-8		3-3
14				3		15		18		5-7		3-1
15				3		15		18		5-6		2-9
16				3		16		18		5-5	2-2	2-7
17				3		17		18		5-3	2-2	2-7
18			2-25	3-2		17		18	2-4	5-2		2-5
19			2-25	3-2	2-9	18		18		5-0	2-15	2-3
20				3-5		17		18		4-8		2-8
21				4		16	2-9	18		4-6		3-3
22				5		15	2-8	14	2-35	4-5		3-8
23				6		13		14		4-5		4-1
24				7		11		14		4-6		4-5
25				8		10		14		4-7		4-9
26				9		9		14		4-8	2-40	5-2
27				10		8		14		4-9	2-30	3-7
28			2-7	11		7		14		5-0	2-30	3-7
29						6	2-8	14		5-1	2-30	3-7
30						5		12	2-4	5-2	2-30	3-7
31					2-3	3-7				5-2		

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DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		3.2	1.8	0.4	1.6	0.1		6		40	2.55	16
2	2.2	2.7		0.4	1.6	0.1		6	3.60	50	2.75	13
3		2.4		0.4		0.1	2.45	6		40	2.70	11
4		2.1		0.4		0.2		6		30	2.60	8.6
5		1.8		0.4		0.2		5		20	2.55	7.6
6		1.5		0.4		0.3		4		10		6
7	2.0	1.2		0.5		0.4		4	2.60	8.6		5
8	2.0	1.2	1.84	0.5	1.80	0.4		3		10	2.35	4.5
9	2.0	1.2		0.5		0.4		3		15	2.30	3.7
10	2.0	1.2	1.81	0.4		0.5	2.20	2.7		20	2.30	3.7
11	1.95	0.9		0.4	1.85	0.5		2.7	3.60	22	2.25	3.2
12		0.9	1.80	0.4		1.0		2.7	2.90	18		3.0
13	1.9	0.7		0.4		2		2.7	2.80	14		2.5
14		0.7		0.4		3		2.7	2.70	11	2.15	2.3
15		0.7	1.80	0.4		4	2.20	2.7		10	2.15	2.3
16	1.9	0.7		0.4		5		40	2.60	8.6	2.15	2.3
17		0.7		0.3		10	4.20	80		8.6	2.15	2.3
18	1.91	0.7	1.75	0.3	2.9	18	4.30	85	2.60	8.6	2.10	1.9
19	1.91	0.7		0.3	3.3	36		60		8.6		1.8
20	1.89	0.7		0.2	3.25	34		40		8.6		1.6
21		0.7		0.2		30		20	2.6	8.6	2.05	1.5
22		0.7	1.70	0.2		20	2.80	14		15	2.05	1.5
23	1.89	0.7		0.2		16		10	2.90	18	2.05	1.5
24		0.7	1.70	0.2		14	2.30	6.7		20		1.5
25	1.90	0.7	1.70	0.2		12		6		20		1.6
26	1.94	0.9		0.2		10		5	3.00	22		1.7
27		0.8		0.1		8		4	3.0	22		1.8
28		0.6	1.62	0.1	2.55	7.5	2.30	3.7	3.25	34	2.10	1.9
29		0.5		0.1		7		5		30	2.10	1.9
30	1.8	0.4	1.62	0.1		7		10		20	2.15	2.3
31	1.8	0.4	1.60	0.1				20			2.30	3.7

MONTHLY DISCHARGE of Norton Creek at Norton Lake, for 1914

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy
	Maximum.	Minimum.	Mean.	
February			4.3	D
March			13.2	D
April			15.5	D
May			61.6	D
June			3.7	C
July	5.2	2.3	1.1	C
August	3.2	0.4	0.3	C
September	0.5	0.1	0.3	C
October	36	0.1	8.2	D
November	85	2.7	15.1	D
December	50	8.6	19.4	C
	16	1.5	4.0	C

SEYMOUR CREEK (1022).

Location.—Above the Vancouver waterworks intake and about seven miles from the mouth of the creek.

Records available.—Daily discharges since November, 1913.

Drainage Area.—Above intake, 76 square miles, estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Vertical staff gauge spiked to cribbing at intake.

Channel.—Rocks and boulders; water swift at high stages.

Discharge Measurements.—Seven meter measurements during 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

Co-operation.—Gauge readings are made by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Seymour Creek above city intake, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 6.....	H. J. E. Keys.....		67	133		1.60	282 ¹
1914.							
Jan. 6.....	Keys & McLachlan.....	1046	155	662	6.7	4.20	4,450
April 30.....	Keys & Webb.....	1057	155	368	2.1	2.35	775
May 29.....	C. G. Cline.....	1521	100	281	1.6	1.91	430
Aug. 14.....	do.....	1933	115	157	0.47	0.60	73 ²
Oct. 15.....	C. E. Webb.....	1057	139	355	1.9	2.00	600
Oct. 20.....	H. C. Hughes.....	1933	160	588	3.9	3.20	2,290

¹Station established.

²Backwater from small dam.

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DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek at Upper Intake, 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1.95	490	1.55	265	3.20	2,140	1.70	330	2.47	970	2.50	1,000
2.....	2.35	850	1.45	225	2.45	950	1.60	285	2.75	1,325	2.55	1,060
3.....	2.65	1,185	1.30	175	2.40	900	2.10	620	2.55	1,060	2.45	950
4.....	6.10	9,210	1.23	158	2.17	682	2.50	1,000	2.25	755	2.12	640
5.....	3.55	2,810	1.17	144	1.90	450	3.10	1,920	2.15	665	1.90	450
6.....	5.00	6,460	1.09	128	1.70	330	2.52	1,025	2.20	710	1.75	415
7.....	3.05	1,825	1.03	116	1.65	307	2.42	925	2.40	900	1.80	380
8.....	2.70	1,250	1.00	110	1.77	365	2.35	850	2.30	800	2.05	575
9.....	2.30	800	1.00	110	1.87	430	2.30	800	2.20	710	2.00	530
10.....	2.12	638	1.02	114	1.70	330	2.45	950	2.10	620	1.95	490
11.....	2.20	710	1.10	130	1.60	285	2.40	900	2.25	755	2.00	530
12.....	2.00	530	1.30	175	1.55	265	2.20	710	2.30	800	2.20	710
13.....	2.10	620	1.50	245	2.57	1,090	2.92	1,595	2.50	1,000	2.20	710
14.....	2.00	530	1.50	245	3.72	3,300	3.40	2,580	2.70	1,250	2.35	850
15.....	1.85	415	1.52	253	2.55	1,060	3.45	2,690	2.60	1,120	2.60	1,120
16.....	2.55	1,060	1.50	245	2.42	925	2.70	1,250	2.40	900	2.32	1,145
17.....	2.17	683	1.50	245	2.45	950	2.40	900	2.30	800	2.47	970
18.....	2.05	575	1.45	225	2.45	950	2.25	755	2.20	710	2.30	800
19.....	1.95	490	1.45	225	2.45	950	2.80	1,400	2.35	850	2.15	665
20.....	1.77	365	1.45	225	2.60	1,120	2.60	1,120	2.50	1,000	2.00	530
21.....	1.65	307	1.85	415	2.50	1,000	2.30	800	2.60	1,120	2.00	530
22.....	1.52	253	2.27	773	2.45	950	2.20	710	2.65	1,185	2.05	575
23.....	1.45	225	2.25	755	2.25	755	2.10	620	2.50	1,000	1.95	490
24.....	1.32	181	2.50	1,000	2.10	620	2.00	530	2.55	1,060	2.00	530
25.....	1.27	168	2.07	593	1.90	450	1.90	450	2.60	1,120	2.50	1,000
26.....	1.95	490	1.92	466	1.70	330	1.85	415	2.75	1,325	2.25	755
27.....	1.65	307	2.07	593	1.60	285	1.95	490	2.77	1,355	2.10	630
28.....	1.45	225	2.10	620	1.50	245	1.90	450	2.20	710	2.05	575
29.....	1.45	225	.....	.....	1.80	380	1.80	380	1.95	490	2.10	620
30.....	1.75	355	.....	.....	1.80	380	2.00	530	2.10	620	2.20	710
31.....	1.45	225	.....	.....	1.70	330	.....	.....	2.30	800	.....	.....

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek above Upper Intake, for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-20	710	0-90	95	0-35	50	1-85	410	4-70	5,700	2-25	750
2.....	2-20	710	0-90	95	0-30	50	2-25	750	4-10	4,200	2-10	620
3.....	2-20	710	0-85	85	0-30	50	1-92	465	2-87	1,500	1-90	450
4.....	2-10	620	0-85	85	0-30	50	1-70	330	4-20	4,450	1-80	380
5.....	2-00	530	0-80	80	0-30	50	1-55	265	2-55	1,060	1-70	330
6.....	1-95	490	0-80	80	0-35	50	1-40	205	2-25	750	1-55	265
7.....	1-85	415	1-00	110	0-35	50	1-30	175	2-20	710	1-45	225
8.....	1-85	415	1-10	130	0-85	85	1-25	160	3-95	3,840	1-40	205
9.....	1-80	380	0-90	95	1-10	130	1-20	150	3-05	1,820	1-30	175
10.....	1-80	380	0-85	85	1-10	130	1-20	150	2-92	1,600	1-25	160
11.....	1-80	380	0-80	80	1-15	145	1-30	175	2-65	1,180	1-15	140
12.....	1-75	355	0-80	80	1-05	120	3-15	2,030	2-30	800	1-10	130
13.....	1-70	330	0-70	70	0-95	100	3-60	3,020	2-15	660	1-05	120
14.....	1-75	355	0-62	65	1-02	115	2-45	950	1-95	490	1-00	110
15.....	1-65	305	0-37	65	1-45	225	2-00	530	1-60	285	1-00	110
16.....	1-60	285	0-55	60	1-47	235	4-20	4,460	1-50	245	1-00	110
17.....	1-50	245	0-50	60	2-02	550	4-05	4,080	1-40	205	1-00	110
18.....	1-60	285	0-50	60	3-50	2,800	4-70	5,710	1-77	365	1-00	110
19.....	1-55	265	0-40	55	4-30	4,770	4-35	4,840	2-10	620	0-95	100
20.....	1-50	245	0-40	55	2-87	1,515	3-05	1,820	2-35	850	0-90	95
21.....	1-20	150	0-40	55	2-20	710	2-70	1,250	2-15	660	0-80	80
22.....	1-10	130	0-40	55	1-85	415	2-27	775	2-50	1,000	0-80	80
23.....	1-20	150	0-40	55	1-57	275	1-95	490	3-45	2,700	0-80	80
24.....	1-20	150	0-45	60	1-40	205	1-80	380	3-10	1,920	0-80	80
25.....	1-10	130	0-45	60	1-30	175	1-70	330	3-30	2,360	0-85	85
26.....	1-15	140	0-42	55	1-52	255	1-60	285	2-80	1,400	0-85	85
27.....	1-05	120	0-42	55	2-50	1,000	1-50	245	3-10	1,920	0-85	85
28.....	1-00	110	0-40	55	2-30	800	1-40	205	2-72	1,300	1-00	110
29.....	0-95	100	0-40	55	2-00	530	1-30	175	2-40	900	1-00	110
30.....	0-95	100	0-42	55	1-90	450	2-35	850	2-20	710	1-05	120
31.....	0-90	95	0-40	55	.....	.....	3-20	2,140	.....	.....	1-05	120

MONTHLY DISCHARGE of Seymour Creek, Upper Station, for 1914.

(Drainage area, 76 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	9,210	168	1,115	14-68	16-92	68,500	B
February.....	1,000	110	320	4-22	4-39	17,800	B
March.....	3,300	245	758	10-00	11-53	46,600	B
April.....	2,690	285	933	12-30	13-72	55,500	B
May.....	1,355	490	919	12-10	13-95	56,500	B
June.....	1,145	380	697	9-17	10-23	41,300	B
July.....	710	95	315	4-14	4-77	19,400	B
August.....	130	55	71	0-94	1-09	4,400	C
September.....	4,710	50	534	7-03	7-84	31,800	B
October.....	5,710	150	1,220	16-10	18-56	75,000	B
November.....	5,700	205	1,540	20-30	22-65	91,600	B
December.....	750	80	185	2-44	2-81	11,400	B
The year.....	9,210	50	717	9-45	128-46	520,000	B

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SILVER-PITT CREEK (1017).

Location.—At lower end of canyon about 2 miles from mouth of creek in section 8, township 4, range 5, west of the 7th meridian.

Records Available.—Continuous since August, 1912.

Drainage Area.—Seventy square miles above gauging station.

Gauge.—Vertical staff gauge readings three times a week.

Channel.—Rocky; uneven bottom but permanent control. Deep still pool just above gauging section.

Discharge Measurements.—Eight meter measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—C. Gauge readings only three times a week.

DISCHARGE MEASUREMENTS of Silver-Pitt Creek at mouth of Canyon, 1912-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
1912.							
Aug. 9.....	C. G. Cline.....	1046	65	104	2.39	1.50	242
1913.							
May 25.....	C. G. Cline.....	1044	60	121	3.05	2.15	369
July 16.....	K. G. Chisholm.....	1055	62	100	1.83	1.41	190
Sept. 16.....	do.....	1055	57	68	1.35	0.87	92
Sept. 17.....	do.....	1055	55	66	1.27	0.90	84
Oct. 25.....	H. J. E. Keys.....	1057	61	73	1.60	0.99	116
1914.							
July 20.....	C. G. Cline.....	1933	52	60	1.50	0.90	90
Nov. 5.....	H. C. Hughes.....	1933	72	142	3.00	2.19	405

DAILY GAUGE HEIGHT AND DISCHARGE of Silver Pitt Creek two miles from mouth, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		200		140		400	1-6	240	1-9	310	1-95	325
2	1-2	155	1-1	135	1-8	285		260		300		300
3		200		120		240	1-8	285		290	1-8	285
4		800	1-0	115	1-4	195		280	1-8	285		270
5	4-8	1,220		140		170		270		270	1-7	260
6		1,200	1-25	165	1-15	145	1-7	260	1-7	260		300
7	4-5	1,130		160		150		270		270		300
8		1,100		160		170	1-8	285	1-8	285	2-05	350
9	4-2	1,040	1-2	155	1-3	175		260		290		320
10		800		170		180	1-6	240		300	1-8	285
11		500	1-4	195	1-4	195		250	1-9	310		270
12	2-2	395		210		240		250		300	1-7	260
13		350	1-55	230	1-8	285	1-7	260	1-8	285		270
14	1-8	285		200		300		400		270		280
15		300		200		400	2-6	530	1-7	260	1-8	285
16	2-0	335	1-3	175	2-3	430		480		250		270
17		350		160		380	2-3	430	1-65	250	1-7	260
18		370	1-15	145	2-0	335		400		260		280
19	2-2	395		130		380		350		270	1-85	300
20		360	1-0	115	2-3	430	2-0	335	1-8	285		360
21	2-0	335		200		450		320		270	2-3	430
22		300		300		500	1-9	310	1-7	260		500
23	1-75	275	2-3	430	2-6	530		390		300	2-75	580
24		250		460		500	1-75	275		330		540
25		200	2-5	495	2-4	460		280	2-1	360		500
26	1-4	195		530		520		280		500	2-4	460
27		180	2-7	565	2-75	580	1-8	285	2-9	630		400
28	1-3	175		500		450		290		500		300
29		170				300	1-85	300	2-3	430	1-55	230
30	1-2	155			1-8	285		300		400		220
31		150				260				370		

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DAILY GAUGE HEIGHT AND DISCHARGE of Silver Pitt Creek two miles from mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-45	210		60	0-4	35		220	3-0	660		550
2		190	0-6	57	0-4	35	1-4	195		560	2-4	460
3	1-25	165		60		30		200	2-4	460		330
4		160		65	0-35	30		220	3-0	660	1-4	195
5		150	0-7	70		30	1-6	240	2-2	395		150
6	1-15	145		68		35		220	1-8	285	1-0	115
7		140	0-65	63	0-4	35	1-4	195		350		100
8	1-1	135		70		60		170		500		90
9		140	0-75	77	0-8	84	1-2	155	3-0	660	0-7	70
10	1-15	145		70		140		150		800		60
11		140		70	1-4	195		130	3-8	910	0-45	40
12	1-1	135	0-65	63		200	1-05	125		600		40
13		150		60		220		150	2-0	335	0-4	35
14	1-2	155	0-6	57	1-6	240	1-3	175		300		35
15		160		50		350		190		200		30
16	1-3	175	0-5	45	2-4	460	1-45	210	1-2	155	0-35	30
17		150		45		560		220		140		30
18	1-1	135		40	3-0	560		240	1-05	125	0-3	25
19		130	0-45	40		600	1-7	260		200		25
20	0-95	110		40	2-6	530		370	1-8	285		25
21		100	0-4	35		600	2-45	480		400	0-3	25
22	0-9	100		35		600		540		540		30
23		90	0-4	35	3-0	660	2-8	595	3-0	660	0-4	35
24	0-75	77		35		550		700		550		50
25		70		35	2-4	460		800	2-55	410	0-6	57
26	0-65	63	0-4	35		400	3-5	820		600		70
27		60		30	2-0	335		640	3-3	760		80
28		60	0-35	30		300	2-4	460		730	0-9	100
29	0-6	57		30		270		400		700		150
30		60	0-35	30	1-6	240	2-0	335	2-9	630	1-4	195
31	0-65	63		35				500				250

MONTHLY DISCHARGE of Silver Pitt Creek, two miles from mouth, for 1914.

(Drainage area, 70 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	1,220	150	450	6-43	7-41	27,700	C
February	565	115	240	3-43	3-57	13,300	C
March	580	145	335	4-79	5-52	20,600	C
April	530	240	310	4-43	4-94	18,400	C
May	630	250	320	4-56	5-26	19,700	C
June	580	220	335	4-79	5-34	19,900	C
July	210	57	125	1-78	2-05	7,700	C
August	77	30	50	0-71	0-82	3,100	D
September	660	30	300	4-29	4-79	17,900	C
October	820	125	330	4-71	5-43	20,300	C
November	910	125	485	6-93	7-73	38,900	C
December	550	25	110	1-57	1-81	6,800	C
The year	1,220	25	280	4-04	54-67	204,300	C

SLOLLICUM CREEK (1033).

Location.—Near the mouth, in section 19, township 5, range 28 west of the 6th meridian.

Records Available.—Two meter measurements; a few gauge readings have been taken since May, 1914, which will be available when the station has been more fully rated.

Gauge.—Vertical staff; readings irregular.

Channel.—Rocks and gravel.

Discharge Measurements.—Two meter measurements in 1914.

Winter Flow.—Open water all year.

DISCHARGE MEASUREMENTS of Slollicum Creek near mouth, 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 23.....	C. G. Cline.....	1521	22	20	1.9	1.60	36.4
Aug. 26.....	".....	1933	17	8.5	0.3	0.82	2.2

SOUTH LILLOOET RIVER (1018).

Location.—At upper highway bridge, 8 miles from mouth in section 28, township 12, east of Coast meridian.

Records Available.—Daily discharges continuous since October, 1911.

Drainage Area.—One hundred square miles.

Gauge.—Chain gauge on bridge; readings daily.

Channel.—Permanent rocky channel.

Discharge Measurements.—Ten measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

DISCHARGE MEASUREMENTS of South Lillooet River 8 miles from mouth, 1911-12-13-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1911.							
Oct. 26.....	Cline and Smith.....	1057	100	113	2.0	1.18	226
Dec. 13.....	K. H. Smith.....	1057	120	316	4.3	2.80	1360
1912.							
July 4.....	C. G. Cline.....	1046	105	151	2.4	1.50	361
Aug. 17.....	".....	1046	125	288	3.5	2.70	1010
Sept. 10.....	".....	1046	115	234	3.3	2.00	767
Nov. 13.....	".....	1046	125	608	8.1	4.60	4950
1913.							
May 22.....	".....	1044	125	266	4.4	2.45	1180
July 10.....	Smith and Cline.....	1055	125	296	3.8	2.40	1120
1914.							
Aug. 21.....	C. G. Cline.....	1933	80	80	1.5	0.50	113
Oct. 22.....	H. C. Hughes.....	1933	125	371	5.5	3.12	2000

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DAILY GAUGE HEIGHT AND DISCHARGE of South Lillooet River eight miles from mouth, 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.7	480	1.9	620	2.7	1,440	1.3	270	2.3	980	1.7	480
2	1.8	550	1.6	420	2.6	1,320	1.4	320	2.1	790	1.7	480
3	1.9	620	1.6	420	2.4	1,080	1.5	370	2.1	790	1.8	550
4	2.8	1,570	1.5	370	2.4	1,080	1.5	370	2.0	700	1.7	480
5	5.0	5,580	1.5	370	2.3	890	1.9	620	1.9	620	1.5	370
6	6.1	8,350	1.4	320	2.2	880	1.9	620	1.7	480	1.4	320
7	5.1	6,050	1.2	230	2.1	790	2.0	700	1.7	480	1.5	370
8	4.4	4,500	1.1	200	2.0	700	1.9	620	1.7	480	1.5	370
9	4.0	3,600	1.0	170	2.2	880	1.8	550	1.7	480	1.7	480
10	3.1	2,000	1.0	170	2.2	890	1.8	550	1.6	420	1.6	420
11	2.7	1,440	1.0	170	2.4	1,080	1.7	480	1.6	420	1.5	370
12	2.1	790	1.1	200	2.4	1,080	1.7	480	1.7	480	1.5	370
13	1.9	620	1.2	230	2.8	1,570	1.8	550	1.8	550	1.5	370
14	1.8	550	1.2	230	3.1	2,000	2.2	880	1.8	550	1.5	370
15	1.6	420	1.3	270	2.9	1,710	3.0	1,850	1.8	550	1.6	420
16	1.7	480	1.3	270	2.9	1,710	2.8	1,570	1.7	480	1.6	420
17	1.7	480	1.3	270	2.8	1,570	2.6	1,320	1.7	480	1.6	420
18	2.1	790	1.3	270	2.8	1,570	2.6	1,320	1.7	480	1.6	420
19	2.0	700	1.8	550	2.7	1,440	2.7	1,440	1.6	420	1.4	320
20	1.8	550	2.0	700	2.6	1,320	2.7	1,440	1.6	420	1.3	270
21	1.7	480	2.3	980	2.5	1,200	2.5	1,200	1.5	370	1.3	270
22	1.8	550	2.3	980	2.4	1,080	2.4	1,080	1.7	480	1.4	320
23	1.6	420	2.4	1,080	2.2	880	2.6	1,320	1.6	420	1.4	320
24	1.4	320	2.4	1,080	2.0	700	2.6	1,320	1.7	480	1.3	270
25	1.4	320	2.4	1,080	1.9	620	2.6	1,320	1.8	550	1.4	320
26	1.4	320	2.4	1,080	1.8	550	2.6	1,320	2.1	790	1.3	270
27	1.2	230	2.4	1,080	1.7	480	2.8	1,570	2.6	1,320	1.4	320
28	1.4	320	2.4	1,080	1.6	420	3.1	2,000	2.3	980	1.4	320
29	1.6	420			1.5	370	3.0	1,850	2.1	790	1.3	270
30	1.7	480			1.5	370	2.8	1,570	1.9	620	1.3	270
31	1.9	620			1.4	320			1.8	550		

DAILY GAUGE HEIGHT AND DISCHARGE of South Lilloet River eight miles from mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-3	270	0-5	110	0-45	105	2-1	790	3-9	3,400	2-9	1,710
2.....	1-2	230	0-5	110	0-45	105	2-0	700	4-5	4,700	2-7	1,440
3.....	1-2	230	0-5	110	0-45	105	1-9	620	4-3	4,250	2-5	1,200
4.....	1-2	230	0-5	110	0-45	105	1-8	550	4-3	4,250	2-35	1,030
5.....	1-2	230	0-5	110	0-45	105	1-7	480	4-0	3,600	2-1	790
6.....	1-1	200	0-5	110	0-45	105	1-5	370	3-2	2,150	1-9	620
7.....	1-1	200	0-6	120	0-5	110	1-4	320	3-1	2,000	1-8	550
8.....	1-0	170	0-6	120	0-6	120	1-4	320	3-1	2,000	1-7	480
9.....	1-0	170	0-6	120	0-8	140	1-3	270	3-5	2,640	1-5	370
10.....	1-0	170	0-5	110	0-9	150	1-2	230	3-2	2,150	1-4	320
11.....	0-9	150	0-5	110	0-95	160	1-3	270	3-8	3,200	1-3	270
12.....	0-9	150	0-5	110	1-0	170	1-5	370	3-2	2,150	1-25	250
13.....	0-9	150	0-5	110	1-0	170	2-2	880	3-2	2,150	1-2	230
14.....	0-9	150	0-5	110	1-2	230	2-1	790	2-8	1,570	1-1	200
15.....	1-0	170	0-4	100	1-8	550	2-0	700	2-5	1,200	1-0	170
16.....	0-9	150	0-4	100	1-8	550	2-2	880	2-3	980	0-95	160
17.....	0-9	150	0-4	100	2-1	790	3-75	3,100	2-1	790	0-9	150
18.....	0-9	150	0-4	100	2-8	1,570	4-3	4,250	1-7	480	0-9	150
19.....	0-8	140	0-4	100	3-2	2,150	4-9	5,600	1-8	550	0-85	145
20.....	0-8	140	0-4	100	3-2	2,150	4-4	4,500	2-0	700	0-85	145
21.....	0-8	140	0-5	110	3-0	1,850	3-8	3,200	2-1	790	0-8	140
22.....	0-7	130	0-5	110	2-7	1,440	3-1	2,000	2-2	880	0-8	140
23.....	0-7	130	0-5	110	2-3	980	2-6	1,320	3-0	1,850	0-75	135
24.....	0-7	130	0-5	110	2-0	700	2-3	980	3-3	2,300	0-8	140
25.....	0-7	130	0-5	110	1-8	550	2-1	790	3-6	2,800	0-75	135
26.....	0-7	130	0-5	110	1-8	550	1-9	620	3-9	3,400	0-8	140
27.....	0-6	120	0-45	105	2-0	700	1-7	480	3-4	2,470	0-85	145
28.....	0-6	120	0-45	105	2-6	1,320	1-5	370	4-0	3,600	0-9	150
29.....	0-6	120	0-45	105	2-4	1,080	1-5	370	3-8	3,200	0-9	150
30.....	0-6	120	0-45	105	2-2	880	1-5	370	3-2	2,150	0-9	150
31.....	0-5	110	0-45	105	.....	.....	2-3	980	.....	.....	1-1	200

MONTHLY DISCHARGE of South Lilloet River eight miles from mouth, for 1914.

(Drainage area, 100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	8,350	230	1,450	14-50	16-70	89,200	C
February.....	1,080	170	532	5-32	5-54	29,500	B
March.....	2,000	320	1,040	10-40	12-00	63,900	B
April.....	2,000	270	1,030	10-30	11-50	61,300	B
May.....	1,320	370	594	5-94	6-85	36,500	B
June.....	550	270	367	3-67	4-10	21,800	B
July.....	270	110	161	1-61	1-86	9,900	B
August.....	120	100	108	1-08	1-24	6,600	B
September.....	2,150	105	656	6-56	7-32	39,000	B
October.....	5,600	230	1,210	12-10	13-95	74,400	B
November.....	4,700	480	2,280	22-80	25-44	135,700	B
December.....	1,710	135	387	3-87	4-46	23,800	B
The year.....	8,350	100	818	8-18	110-96	591,600	B

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SUMALLO RIVER (1056).

Location.—One mile from mouth and just south of the Railway Belt boundary.

Records Available.—Daily discharges beginning July, 1914.

Drainage Area.—Seventy square miles (above mouth).

Gauge.—Vertical Staff.

Channel.—Rocky.

Discharge Measurements.—Six meter measurements by the engineers of the British Columbia Hydrographic Survey and four by L. N. Jensen. One measurement under ice conditions.

Winter Flow.—Stream open all winter, but during very cold weather anchor ice may affect the ordinary relation between gauge height and discharge to some extent.

Co-operation.—Four meter measurements were made during 1913 and 1914 by L. N. Jensen for MacKenzie & Mann.

SUMALLO RIVER.

The Sumallo river rises in the mountains south west of Hope, and flows in a general southeasterly direction to its junction with the Skagit river, some 15 miles north of the international boundary line, and 2 miles from the boundary



Installing metal-faced gauge at metering section on Sumallo river one mile from mouth.

of the Railway Belt. Some of the mountains in its watershed rise to an altitude of 5,000 feet. It has a drainage area of 70 square miles. The precipitation is probably more than 90 inches per annum. In the winter the snow fall is quite heavy.

The pack trail from Hope to Princeton follows the Sumallo river for a distance of 7 or 8 miles. It was proposed at one time to improve it into a wagon road, but the plan was never completely carried through, and of late years the trail has been merely kept in repair for pack horses. When the Pacific highway is completed, it will improve the means of transportation in this part of the country.

There is very little settlement or development in the Sumallo river valley. What little farming land there is is not worked to any great extent. There are some mining prospects, and just recently one mine, near the mouth of the river, has shipped a small quantity of ore. This may lead to some further development.

There is a proposal to divert water from the upper part of the Sumallo river into the lakes which feed the Nicolium river. This would augment the flow of the Nicolium sufficiently to make a power development practicable, but would divert a certain amount of water from the plants which expect to use water from the Skagit river on the American side of the boundary.

This diversion, however, might lead to the most beneficial use of the water, since it could be utilized under a head of something like two thousand feet.

In connection with the above-mentioned plan of development, two gauging stations have been established on the streams. One of these is near the mouth and measures the total flow of the stream. Daily gauge readings are taken at this station. Measurements are made also at a point some 7 miles above the lower station, but gauge readings can be taken only occasionally. The flow at this upper station gives approximately the amount of water which can be diverted into the Nicolium lake and is considerably less than the flow measured at the lower station.

DISCHARGE MEASUREMENTS of Sumallo River at one mile from mouth, 1913-14-15.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Sept. 19.....	L. N. Jenssen.....			76	2.3	1.00	175
Nov. 11.....	do.....			76	2.3	1.00	175
1914.							
June 11.....	do.....			130	3.8	2.40	502
July 12.....	C. G. Cline.....	1933	44	108	3.4	2.00	355
" 15.....	do.....	1933	44	100	3.1	1.72	299
" 18.....	L. N. Jenssen.....			93	3.1	1.50	279
Dec. 16.....	H. C. Hughes.....		39	57	1.3	0.74	70 ¹
1915.							
Mar. 11.....	Hughes & Cline.....	1521	30	41	1.3	0.22	54
" 15.....	do.....	1521	40	62	1.9	6.77	118
" 29.....	H. C. Hughes.....	1521	42	67	2.1	1.00	143

¹ Probably affected by ice.

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DAILY GAUGE HEIGHT AND DISCHARGE of Sumallo River near mouth, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0.9	135	0.5	80	0.5	80	0.9	135	1.5	245
2			0.9	135	0.5	80	0.5	80	1.6	265	1.5	245
3			0.9	135	0.5	80	0.5	80	1.8	310	1.3	205
4			0.9	135	0.5	80	C-4	70	1.7	290	1.3	205
5			0.9	135	0.5	80	C-4	70	1.6	265	1.3	205
6			0.9	135	0.4	70	0.4	70	1.7	290	1.2	185
7			0.9	135	0.4	70	0.4	70	1.7	290	1.1	165
8			0.9	135	0.6	90	C-4	70	1.6	265	1.0	150
9			0.8	120	0.6	90	0.5	80	1.6	265	0.8	120
10			0.8	120	0.7	105	0.5	80	1.6	265	0.6	90
11			0.8	120	0.6	90	0.5	80	1.6	265	0.6	90
12	2.0	360	0.8	120	0.6	90	0.5	80	1.5	245	0.6	90
13			0.8	120	0.6	90	0.5	80	1.5	245	0.5	80
14			0.8	120	0.6	90	0.5	80	1.5	245	0.5	80
15	1.7	290	0.8	120	0.6	90	C-5	80	1.5	245	0.5	80
16	1.6	265	0.8	120	0.5	80	0.5	80	1.5	245	0.5	80
17	1.5	245	0.8	120	0.5	80	C-5	80	1.4	225	0.5	80
18	1.5	245	0.7	105	C-6	90	0.6	90	1.3	205	0.5	80
19	1.6	265	0.7	105	0.7	105	0.6	90	1.3	205	0.5	80
20	1.6	265	0.7	105	0.7	105	0.6	90	1.3	205	C-5	80
21	1.7	290	0.6	90	0.7	105	0.7	105	1.3	205	0.5	80
22	1.4	225	C-6	90	0.7	105	0.7	105	1.4	225	0.5	80
23	1.3	205	0.6	90	0.6	90	0.6	90	1.4	225	0.5	80
24	1.2	185	0.6	90	0.6	90	0.6	90	1.7	290	0.4	70
25	1.1	165	0.6	90	0.6	90	0.6	90	1.7	290	0.4	70
26	1.1	165	0.6	90	0.6	90	0.6	90	1.7	290	0.4	70
27	1.1	165	0.6	90	0.6	90	0.6	90	1.7	290	0.4	70
28	1.0	150	0.6	90	0.6	90	0.6	90	1.6	265	0.4	70
29	1.0	150	0.6	90	0.6	90	0.7	105	1.5	245	0.4	70
30	0.9	135	0.6	90	0.5	80	0.7	105	1.5	245	0.4	70
31	0.9	135	0.6	90			0.7	105			0.4	70

MONTHLY DISCHARGE of Sumallo River near mouth, for 1914.

(Drainage area, 70 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre-feet
August	135	90	112	1.7	2.0	6,890
September	105	70	88	1.3	1.4	5,240
October	105	70	85	1.2	1.4	5,230
November	310	135	251	3.6	4.0	14,900
December	245	70	111	1.6	1.8	6,820

Accuracy, "B".

SUMALLO RIVER (1057).

Location.—Eight miles from mouth in section 28, township 3, range 24, west of 6th meridian.

Records Available.—Irregular records beginning in July, 1914.

Gauge.—Vertical staff.

Channel.—Gravel.

Discharge Measurements.—Five meter measurements, one of them under ice conditions.

Winter Flow.—Station is somewhat affected by ice during very cold weather.

DISCHARGE MEASUREMENTS of Sumallo River eight miles from mouth, 1914-15

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
July 16.....	C. G. Cline.....	1933	40	73	2.4	1.80	167 ¹
Dec. 16.....	H. C. Hughes.....	1521	27	15	2.9	1.00	44 ²
1915.							
Mar. 15.....	Hughes & Cline.....	1521	36	43	1.3	1.05	59
" 30.....	H. C. Hughes.....	1521	37	50	1.6	1.25	80

¹ Station established.

² Probably affected by ice.

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DAILY GAUGE HEIGHT AND DISCHARGE of Sumallo River eight miles from mouth, for 1914.

DAY	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1												
2												
3							1-2	80				
4							1-0	50			1-5	120
5												
6											1-4	105
7												
8							1-2	80				
9												
10												
11												
12			1-3	90								
13											1-3	90
14					1-1	65						
15												
16	1-8	165										
17			1-2	80								
18									1-4	105		
19							1-3	90				
20									1-55	130		
21							1-2	80	1-6	135		
22												
23												
24									1-9	135		
25												
26												
27												
28												
29					1-0	50						
30												
31			1-1	65								

YOUNG CREEK (1020).

Location.—At mouth, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 20, 1912, but gauge readings were not always taken very frequently.

Drainage Area.—Not known.

Gauge.—Vertical staff.

Channel.—Solid rock.

Discharge Measurements.—Eight meter measurements taken during 1913 and 1914.

Winter Flow.—Heavy snowfall but not much ice, so that open water conditions obtain practically all winter.

Accuracy.—C and D.

Co-operation.—Gauge readings taken by Westminster Power Company.

DISCHARGE MEASUREMENTS of Young Creek at mouth, 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
June 3.....	H. C. Hughes...	1,673	18	21.8	2.5	1.80	53.6 ¹
" 10.....	"	1,673	14	15.4	2.0	1.50	30.0
" 18.....	"	1,673	13	16.4	2.3	1.65	37.0
July 31.....	"	1,673	11	7.7	0.8	1.03	6.2
Sept. 18.....	F. MacLachlan...	1,673	10	10.8	0.8	1.01	8.6
1914.							
May 18.....	F. MacLachlan.....	1,521	15	15.4	2.0	1.48	29.0
July 31.....	C. G. Cline.....	1,933	8			0.92	4.3
Nov. 14.....	H. C. Hughes.....	1,933	12	10.9	1.0	1.18	10.9

¹Several different sections used.

DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			0.85	4							28	24
2.....											28	22
3.....											28	20
4.....											28	19
5.....	1.8	53			1.2	13					28	14
6.....							1.6	35	1.5	28	1.1	10
7.....										28		12
8.....										28		14
9.....										28		16
10.....										28		18
11.....										28	1.35	19
12.....										28		20
13.....										28	1.4	22
14.....										28		22
15.....										28		22
16.....										28		22
17.....										28	1.4	22
18.....									1.5	28		20
19.....			1.2	13	1.6	35			30	1.35	19	
20.....									35	1.3	17	
21.....										40		17
22.....										44		17
23.....										42		17
24.....										40		17
25.....										38		17
25.....										38		17
26.....										36		17
27.....										34		17
28.....										32		17
29.....										30		17
30.....							1.5	28	1.5	28		17
31.....					1.2	13				26		

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DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		17		6	0-68	2		15		100	1-25	15
2	1-3	17		5		2		15	2-60	130		15
3		16	0-9	5		3	1-2	13		120		15
4		15		5		4		13		110		10
5		14		5		5		12		100	1-10	10
6		13		5		6		12		90		9
7		11		4		7		11	2-10	82		8
8	1-1	10		4	1-00	7		11		79	1-00	7
9		10		4	1-00	7		10		60		7
10	1-1	10	0-8	3-5		10	1-10	10		40	1-00	7
11		10		3-5		10		10	1-50	28		7
12		9		3-5		15		10		25		6
13	1-05	8		3-5		15		20		20		6
14		8	0-8	3-5		20		30	1-20	13	0-95	6
15		9	0-8	3-5		20		40		11		6
16	1-1	10		3-5		60		60	1-10	10		6
17		10		3-5		80		100		20		6
18	1-1	10	0-8	3-5	2-4	110	3-0	170		40	0-95	6
19		9		3-5		80		150		50		6
20	1-05	8	0-8	3-5	1-7	44		100		60		5
21		8		3-5		40		70	2-00	73	0-90	5
22		8	0-8	3-5		40		50		80		5
23		7		3-5		35		15	2-10	82	0-85	4
24	1-0	7		3		35		13		60		4
25		8	0-75	3		30		10		50		4
26		9		3		30		10	1-55	30		5
27	1-08	10	0-73	3		25		10		40		5
28		9		3	1-45	25	1-05	8	1-80	53	0-90	5
29		8	0-72	3		20		20		40		10
30	0-95	7		3		20		40		30	1-30	17
31	0-93	6		3				60				20

MONTHLY DISCHARGE of Young Creek at mouth, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.			Accuracy.
	Maximum.	Minimum.	Mean.	
May			31	D
June		10	18	D
July	17	6	10	C
August	6	3	3-7	C
September	110	2	27	D
October	170	10	36	D
November	130	10	57	D
December	20	4	8	D

BIG QUALICUM RIVER (1032).

Location.—One thousand feet upstream from Esquimalt and Nanaimo Railway bridge; 40 miles from Nanaimo.

Records Available.—Gauge readings daily, May 21, 1914, to December 31, 1914.

Drainage Area.—Sixty-two square miles.

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DAILY GAUGE HEIGHT AND DISCHARGE of Big Qualicum River near mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			2-1	120	2-0	100	1-6	40	1-5	30	2-1	120
2.....			2-1	120	2-0	100	1-6	40	1-5	30	2-1	120
3.....			2-1	120	2-0	100	1-6	40	1-5	30	2-1	120
4.....			2-2	140	1-9	80	1-6	40	1-5	30	2-1	120
5.....			2-1	120	1-9	80	1-5	30	1-5	30	2-1	120
6.....			2-1	120	1-9	80	1-5	30	1-5	30	2-1	120
7.....			2-2	140	1-8	65	1-5	30	1-5	30	2-0	100
8.....			2-2	140	1-8	65	1-5	30	1-5	30	2-0	100
9.....			2-2	140	1-8	65	1-5	30	1-5	30	1-9	80
10.....			2-1	120	1-8	65	1-5	30	1-5	30	1-9	80
11.....			2-1	120	1-8	65	1-5	30	1-5	30	1-9	80
12.....			2-1	120	1-8	65	1-5	30	1-5	30	2-3	170
13.....			2-1	120	1-8	65	1-5	30	1-5	30	5-2	1,660
14.....			2-1	120	1-8	65	1-5	30	1-5	30	4-6	1,240
15.....			2-1	120	1-8	65	1-5	30	1-5	30	4-0	890
16.....			2-1	120	1-7	50	1-5	30	1-6	40	4-3	1,060
17.....			2-1	120	1-7	50	1-5	30	1-6	40	4-8	1,380
18.....			2-0	100	1-7	50	1-5	30	1-6	40	4-8	1,380
19.....			2-0	100	1-7	50	1-5	30	1-9	80	4-8	1,380
20.....			2-0	100	1-7	50	1-5	30	1-9	80	4-8	1,380
21.....	2-4	200	2-0	100	1-7	50	1-5	30	1-9	80	4-4	1,120
22.....	2-3	170	2-0	100	1-6	40	1-5	30	1-9	80	3-9	840
23.....	2-2	140	2-0	100	1-6	40	1-5	30	1-9	80	3-6	690
24.....	2-2	140	2-0	100	1-6	40	1-5	30	1-9	80	3-5	640
25.....	2-2	140	2-0	100	1-6	40	1-5	30	1-9	80	3-2	500
26.....	2-2	140	2-0	100	1-6	40	1-5	30	1-9	80	3-1	460
27.....	2-3	170	2-0	100	1-6	40	1-5	30	2-0	100	3-0	420
28.....	2-2	140	2-0	100	1-6	40	1-5	30	2-0	100	2-8	340
29.....	2-2	140	2-0	100	1-6	40	1-5	30	2-1	120	2-7	300
30.....	2-2	140	2-0	100	1-6	40	1-5	30	2-1	120	2-7	300
31.....	2-1	120	1-6	40	1-5	30	3-0	420

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DAILY GAUGE HEIGHT AND DISCHARGE of Big Qualicum River near mouth,
for 1914—*Con.*

DAY.	November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-3	540	3-6	690
2.....	3-7	740	3-4	590
3.....	3-9	840	3-1	460
4.....	4-2	1,000	3-0	420
5.....	4-0	890	2-8	340
6.....	3-7	740	2-7	300
7.....	3-7	740	2-7	300
8.....	3-7	740	2-6	260
9.....	3-8	790	2-6	260
10.....	3-8	790	2-6	260
11.....	3-8	790	2-5	230
12.....	3-7	740	2-5	230
13.....	3-7	740	2-4	200
14.....	3-3	540	2-4	200
15.....	3-1	460	2-4	200
16.....	3-0	420	2-3	170
17.....	3-0	420	2-3	170
18.....	3-0	420	2-3	170
19.....	3-0	420	2-3	170
20.....	3-1	460	2-3	170
21.....	3-1	460	2-2	140
22.....	3-7	740	2-2	140
23.....	3-9	840	2-1	120
24.....	3-9	840	2-1	120
25.....	4-7	1,310	2-0	100
26.....	4-5	1,180	2-0	100
27.....	4-1	940	2-0	100
28.....	4-0	890	2-1	120
29.....	3-8	790	2-1	120
30.....	3-6	690	2-1	120
31.....			2-1	120

CAMPBELL RIVER, VANCOUVER ISLAND (1042).

Location.—At outlet from Campbell lake.

Records Available.—Gauge readings twice daily; June 2—December 31, 1914; Campbell River Power Company have also done work during 1913 and 1914.

Drainage Area.—Seven hundred and eighty square miles.

Gauge.—Twelve-foot enamel staff—in sections located 1,000 feet above measuring section.

Channel.—Gravel and boulder bed; channel straight for 300 feet above section; rapids 100 feet below.

Discharge Measurements.—Four in 1914 covering all stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 1,000 and 12,000 cubic feet per second accuracy B. above discharge 12,000 cubic feet per second, accuracy D.

CAMPBELL RIVER (1042).

Campbell river flows from Campbell lake to the sea in Discovery passage, a distance of about 9 miles. It is the outlet of a chain of lakes which extend from the interior of the island amongst a large group of mountains. Buttes

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lake at the upper end drains into Upper Campbell lake, which in turn drains into Campbell lake. The stream is metered at the outlet from Campbell lake, and the drainage area above the metering section is some 780 square miles. The precipitation is high, varying from 80 inches at mouth of river to 130 inches at headwaters. Due to the presence of snow and ice on the mountains, the flow in summer is kept up much better than the streams in the southern parts of the island. The altitude of Campbell lake is about 500 feet.

The river is fast, and the fall fairly even for about 2 miles from Campbell lake. The river then narrows in and falls about 20 feet. With rapids for a quarter of a mile below, it drops another 30 feet, and finally has a sheer fall of 90 feet over a solid rock cliff into a deep, narrow canyon. This makes a good location for a power development. A head of 140 feet may be obtained in less than half a mile.

Another development, which would greatly increase the head, would be a tunnel from McIvor lake to a point below the falls, a distance of approximately 2 miles. McIvor lake is about one-quarter of a mile below Campbell lake, and is practically a bay on the river. It is well situated for the storage of water but the grade of the government road, which runs along one side of this lake, would have to be raised.

The Government at present are constructing a road from the mouth of Campbell river to Strathcona park, which, when completed, will be one of the finest in the country.

The timber which lies in the drainage is excellent and practically none has been cut. There are few settlers at present except at the mouth where some very fine land is under cultivation.

The Campbell River Power Company hold water records on Campbell river, and it is believed they will develop power at the falls in the near future.

DISCHARGE MEASUREMENTS of Campbell River at Campbell Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 2 ..	Cotton & Webb.	1,057	180	1,170	4.1	2.95	4,750 ¹
July 26 ..	C. P. Cotton ..	1,057	210	1,250	3.8	3.13	4,710
Sept. 6 ..	C. E. Webb ..	1,057	95	362	2.7	0.32	977
Nov. 13 ..	"	1,057	240	2,000	6.1	6.58	12,200 ²

¹Station established. ²Partly estimated.

MONTHLY DISCHARGE of Campbell River at Campbell Lake, for 1914.

Drainage area 780 square miles.

MONTH.	DISCHARGE IN SECOND-FEET				Run-Off		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre-feet	
June	960	3,990	5,410	6.94	7.74	322,000	B
July	6,660	2,440	4,700	6.03	6.95	280,000	B
August	2,370	1,300	1,980	2.54	2.93	129,000	B
September	2,820	800	1,550	1.99	2.22	92,200	B
October	21,700	1,160	7,820	10.00	11.50	480,000	D
November	17,600	4,410	10,330	13.25	14.70	618,000	D
December	9,540	800	2,690	3.45	4.00	165,000	B

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DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lake, for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		4,500	3-4	5,330	1-42	2,300	0-58	1,250	1-35	2,200	4-6	7,710
2	2-95	4,570	3-65	5,800	1-4	2,270	0-5	1,160	1-37	2,230	5-07	8,710
3	3-2	4,990	3-85	6,200	1-4	2,270	0-45	1,100	1-27	2,100	5-33	9,280
4	3-45	5,420	4-05	6,600	1-4	2,270	0-43	1,080	1-1	1,880	5-67	10,000
5	3-35	5,250	4-08	6,660	1-4	2,270	0-4	1,050	0-98	1,730	5-65	9-980
6	3-15	4,900	4-02	6,540	1-4	2,270	0-35	990	0-87	1,600	5-33	9-280
7	2-9	4,490	3-82	6,140	1-42	2,300	0-30	940	0-8	1,510	4-8	8,130
8	2-75	4,250	3-58	5,660	1-48	2,370	0-30	940	0-75	1,450	4-75	8,020
9	2-63	4,060	3-35	5,250	1-4	2,270	0-30	940	0-62	1,290	7-15	13,800
10	2-58	3,990	3-2	4,990	1-4	2,270	0-25	890	0-52	1,180	8-57	17,600
11	2-58	3,990	3-13	4,870	1-48	2,370	0-25	890	0-5	1,160	8-55	17,600
12	2-68	4,150	3-08	4,790	1-45	2,340	0-25	890	0-6	1,270	7-62	15,000
13	2-92	4,520	3-08	4,790	1-4	2,270	0-25	890	2-25	3,480	6-83	13,000
14	3-2	4,990	3-22	5,030	1-4	2,270	0-25	890	5-5	9,650	4-82	8,170
15	3-68	5,860	3-25	5,070	1-4	2,270	0-25	890	6-98	13,300	4-37	7,240
16	4-1	6,700	3-23	5,050	1-4	2,270	0-3	940	9-17	19,000	4-07	6,640
17	4-52	7,540	3-2	4,990	1-33	2,180	0-4	1,050	9-77	21,000	3-45	5,420
18	4-72	7,960	3-13	4,870	1-23	2,050	0-7	1,390	10-02	21,700	3-0	4,650
19	4-72	7,960	3-13	4,870	1-13	1,910	1-08	1,850	9-62	20,600	2-87	4,440
20	4-57	7,650	3-12	4,850	1-08	1,850	1-4	2,270	8-93	18,700	3-1	4,820
21	4-3	7,100	3-05	4,740	1-0	1,750	1-62	2,570	8-35	17,000	3-47	5,450
22	3-92	6,340	2-85	4,410	0-95	1,690	1-8	2,820	7-4	14,400	4-22	6,940
23	3-58	5,660	2-62	4,040	0-93	1,660	1-8	2,820	6-5	12,100	5-07	8,700
24	3-15	4,900	2-35	3,620	0-9	1,630	1-73	2,720	5-6	9,870	5-9	10,600
25	3-17	4,930	2-23	3,450	0-85	1,570	1-53	2,440	5-05	8,660	7-05	13,500
26	3-22	5,030	2-12	3,280	0-83	1,540	1-37	2,230	4-45	7,400	8-32	17,000
27	3-30	5,160	2-02	3,130	0-8	1,510	1-3	2,140	3-65	5,800	8-37	17,100
28	3-30	5,160	1-93	3,000	0-75	1,450	1-25	2,080	3-38	5,300	7-92	15,900
29	3-25	5,080	1-78	2,790	0-72	1,420	1-3	2,140	2-9	4,490	7-12	13,700
30	3-28	5,130	1-65	2,610	0-7	1,390	1-35	2,200	2-82	4,360	6-22	11,400
31			1-53	2,440	0-63	1,300			3-6	5,700		

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DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lake,
for 1914—*Con.*

DAY.	December.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1.....	5.45	9,540
2.....	4.82	8,170
3.....	4.35	7,200
4.....	3.87	6,240
5.....	3.15	4,910
6.....	2.75	4,250
7.....	2.55	3,930
8.....	2.35	3,620
9.....	2.17	3,350
10.....	1.95	3,030
11.....	1.7	2,680
12.....	1.5	2,400
13.....	1.22	2,040
14.....	1.3	2,140
15.....	1.0	1,750
16.....	0.9	1,630
17.....	0.82	1,530
18.....	0.73	1,430
19.....	0.62	1,290
20.....	0.55	1,210
21.....	0.5	1,160
22.....	0.45	1,110
23.....	0.4	1,050
24.....	0.4	1,050
25.....	0.35	1,000
26.....	0.35	1,000
27.....	0.35	1,000
28.....	0.3	940
29.....	0.22	863
30.....	0.27	910
31.....	0.37	1,010

CHEMAINUS RIVER (1027).

Location.—Upstream side of Esquimalt and Nanaimo Railway bridge, except for low water stage.

Records Available.—Gauge readings daily, May 13 to December 31, 1914.

Drainage Area.—One hundred and twenty square miles.

Gauge.—Eighteen-foot wooden staff located on left bank 100 feet below railway bridge.

Channel.—Straight for 50 feet above and 300 feet below section; gravel and sand bed.

Discharge Measurements.—Six in 1914 covering all but high stage; one in 1911 and one in 1913 by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 10 and 600 cubic feet per second, accuracy A. Between discharge of 600 and 2,000 cubic feet per second, accuracy B. Above discharge of 2,000 cubic feet per second accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911.

CHEMAINUS RIVER (1027).

Chemainus river rises in the mountains to the north of Cowichan lake, at an altitude of between four and five thousand feet. It is approximately 30 miles in length, and flows in an easterly direction to its mouth at the sea in Stuart channel.

The drainage area is 120 square miles. The precipitation varies from about 30 inches at mouth to 20 inches in the mountains at source. There are no lakes to control the flow of Chemainus river. The upper reaches of the drainage area are mostly solid rock, hence the stream is very flashy. This is specially noticeable in the fall when warm rains often cause the river to rise several feet in a few hours. The flow data on this stream is of particular importance in the construction of bridges to span it. The stream, being flashy, has a very low flow during most of the summer months.

In the vicinity of the lower part of Chemainus river, the soil is very rich and is practically all under cultivation. This district is especially noted for its dairy products.

DISCHARGE MEASUREMENTS of Chemainus River at E. & N. Ry. Bridge, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 13.	C. E. Webb	1,057	107	530	1.1	3.79	555 ¹
July 6.	Cotton and Webb	1,057	94	402	0.2	2.58	93.6 ²
July 6.	"	1,057	41	37	2.4	2.58	88.3 ³
Aug. 11.	C. P. Cotton	1,057	30	19	1.4	2.16	26.2
Aug. 28.	C. E. Webb	1,057	31	16	1.0	2.03	16.3
Nov. 26.	"	1,933	122	711	2.7	5.20	1,890

¹Station established.²Several sections used.³Good measurement.

MONTHLY DISCHARGE of Chemainus River near mouth, for 1914.

(Drainage area, 120 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.	340	140	200	1.67	1.86	11,900	A
July.	140	35	75	0.62	0.72	4,600	A
August.	35	15	25	0.21	0.24	1,500	A
September.	460	14	110	0.92	1.03	6,500	A
October.	5,850	120	1,320	11.00	12.68	81,200	C
November.	4,560	520	2,200	18.33	20.45	131,000	C
December.	1,760	190	435	3.62	4.17	26,700	B

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DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.			3-2	260	2-78	140	2-25	35	2-05	15	3-00	190
2.			3-26	280	2-75	130	2-24	34	2-05	15	3-38	330
3.			3-1	220	2-72	120	2-22	32	2-04	14	3-2	290
4.			3-1	220	2-69	120	2-20	30	2-04	14	3-1	220
5.			2-93	170	2-66	110	2-2	30	2-04	14	2-9	160
6.			2-99	190	2-6	100	2-2	30	2-04	14	2-88	160
7.			3-2	260	2-6	100	2-2	30	2-08	18	2-83	150
8.			3-36	320	2-58	100	2-2	20	2-16	26	2-7	120
9.			3-3	300	2-55	90	2-2	30	2-28	38		140
10.			3-4	340	2-55	90	2-19	29	2-23	33	2-9	160
11.			3-25	280	2-53	90	2-19	29	2-24	34	2-86	150
12.			3-25	280	2-5	80	2-18	28	2-23	33	4-35	940
13.	3-77	520	3-2	260	2-5	80	2-18	28	2-24	34	7-65	5,050
14.	3-82	550	3-13	230	2-51	80	2-17	27	2-25	35	5-55	2,320
15.	3-8	540	2-9	160	2-5	80	2-17	27	2-28	38	4-75	1,340
16.	3-62	440	2-8	140	2-5	90	2-16	26	2-27	37	5-47	2,200
17.	3-48	370	2-9	160	2-44	70	2-16	26	2-29	39	7-17	4,330
18.	3-46	360	2-85	150	2-43	70	2-15	25	3-66	460	7-99	5,510
19.	3-41	340	2-82	140		70	2-13	23	3-33	310	8-25	5,850
20.	3-45	360	2-84	150	2-41	60	2-13	23	3-3	300	6-25	3,220
21.	3-52	390	2-9	160	2-4	60	2-12	22	3-05	205	5-23	1,920
22.	3-57	410	2-85	150	2-38	60	2-1	20	2-93	170	4-62	1,200
23.	3-57	400	2-87	150	2-35	50	2-1	20	2-8	140	4-3	900
24.	3-5	380	2-85	150	2-34	50	2-1	20	2-72	124	4-1	740
25.	3-4	340	3-0	190	2-34	50	2-09	19	2-63	110	3-83	560
26.	3-45	360		180	2-33	50	2-08	18	2-65	100	3-6	430
27.	3-45	360	2-9	160	2-32	40	2-08	18	2-9	160	3-49	380
28.	3-35	320	2-87	150	2-3	40	2-07	17	3-25	280	3-38	330
29.	3-15	240	2-8	140	2-3	40	2-06	16	3-12	230	3-3	300
30.	3-1	220	2-79	140	2-28	40	2-05	15	3-03	200	3-6	430
31.	3-15	240			2-26	35	2-05	15			4-49	1,070

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914
—Con.

Day.	November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	7-28	4,560	5-10	1,760
2.....	6-95	4,130	4-76	1,360
3.....	.....	4,060	4-54	1,120
4.....	6-80	3,940	4-33	920
5.....	5-4	2,120	4-1	740
6.....	5-1	1,760	3-94	620
7.....	5-9	2,760	3-8	540
8.....	5-65	2,450	3-76	520
9.....	5-45	2,190	3-72	490
10.....	5-0	1,640	.....	440
11.....	5-82	2,660	3-5	380
12.....	5-0	1,640	3-44	360
13.....	4-8	1,400	3-4	340
14.....	4-55	1,130	3-33	310
15.....	4-3	900	3-28	290
16.....	4-03	680	3-18	250
17.....	3-8	540	3-1	220
18.....	3-76	320	3-0	190
19.....	4-08	720	3-0	190
20.....	6-1	3,020	3-0	190
21.....	5-6	2,380	3-0	190
22.....	5-2	1,880	3-0	190
23.....	6-8	3,940	3-0	190
24.....	7-06	4,270	3-0	190
25.....	5-98	2,880	3-0	190
26.....	5-3	2,000	3-0	190
27.....	5-07	1,720	3-0	190
28.....	4-85	1,460	3-0	190
29.....	4-64	1,220	3-0	190
30.....	4-7	1,280	3-05	200
31.....	.....	.....	3-42	350

COWICHAN RIVER (1054).

Location.—Near outlet from Cowichan lake, 1,000 feet below Canadian Northern Pacific Railway bridge.

Records Available.—Gauge readings twice daily, January 31, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to December 31, 1914.

Drainage Area.—Two hundred and thirty-five square miles.

Gauge.—Twelve-foot wooden staff, nailed to sixth bent on left down stream side of highway bridge.

Channel.—Gravel and small boulder bed, channel straight 300 feet above and 100 feet below section, one channel at all stages.

Discharge Measurements.—Four in 1914, covering all but highest stage; five in 1913, by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 40 and 1,200 cubic feet per second, accuracy A. Above discharge of 1,200 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch established station in 1913.

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COWICHAN RIVER (1054).

Cowichan river rises in Cowichan lake at an altitude of 550 feet. It flows in an easterly direction for 20 miles to the sea in Cowichan bay. The drainage area of Cowichan river is 235 square miles above the metering section, which is located near the outlet from lake. Cowichan lake covers an area of 24 square miles, and is fed by many mountain streams. The precipitation is between 60 and 80 inches.

There are falls on this stream about 10 miles from its mouth from which a fair sized development might be obtained, but in 1914 the river was reserved by the Provincial Government for the preservation of the fish. Near Cowichan lake the Government has a fish hatchery which has been most successful in stocking the river with trout.

The timber in this drainage is exceptionally fine.

The Esquimalt and Nanaimo Railway have a branch line to Cowichan lake from Duncan and the Canadian Northern railway is under construction around the lake. Timber at present is towed by tugs to the railway from different parts of the lake.

DISCHARGE MEASUREMENTS of Cowichan River near Cowichan Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.				
June 24.....	Cotton & Webb.....	1057	183	824	0.8	2.08	667 ¹
Aug. 26.....	C. E. Webb.....	1057	176	533	0.2	0.70	117
Aug. 27.....	do.....	1057	84	104	1.1	0.72	113 ²
Nov. 25.....	do.....	1933	198	1,670	2.6	6.20	4,300

¹Station established.

²Low-water section.

MONTHLY DISCHARGE of Cowichan River at Cowichan lake, for 1914.

(Drainage area, 235 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	10,000	2,150	5,700	24.20	27.90	350,000	B
February	3,680	1,540	2,130	9.06	9.43	118,000	B
March	4,160	2,330	3,400	14.50	16.70	210,000	B
April	3,270	2,150	2,630	11.20	12.50	157,000	B
May	2,060	900	1,390	5.92	6.83	85,500	B
June	900	600	755	3.21	3.58	44,900	A
July	600	240	415	1.77	2.04	25,500	A
August	240	70	150	0.64	0.74	9,220	A
September	400	50	175	0.74	0.83	10,400	A
October	7,170	400	2,900	12.30	14.20	178,000	B
November	6,300	3,800	4,960	20.85	23.30	292,000	B
December	4,160	1,080	2,230	9.50	10.95	137,000	B
The year	10,000	50	2,230	9.50	129.00	1,617,520	B

DAILY GAUGE HEIGHT AND DISCHARGE of Cowichan River at Cowichan lake for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	4.2	2,150	5.7	3,680	5.45	3,380	4.3	2,240	4.1	2,060	2.5	900
2.	4.7	2,600	5.4	3,330	5.85	3,860	4.2	2,150	4.05	2,020	2.5	900
3.	5.1	3,000	5.15	3,050	6.05	4,100	4.2	2,150	4.0	1,980	2.45	870
4.	6.2	4,200	4.85	2,750	6.1	4,160	4.4	2,330	3.9	1,900	2.45	870
5.	7.5	6,080	4.7	2,600	6.0	4,040	4.6	2,510	3.8	1,820	2.4	840
6.	9.8	9,600	4.55	2,460	5.85	3,860	4.65	2,960	3.7	1,740	2.35	810
7.	10.0	10,000	4.4	2,330	5.7	3,680	4.6	2,510	3.6	1,660	2.45	870
8.	9.7	9,500	4.3	2,240	5.6	3,560	4.55	2,460	.....	-1,660	2.45	870
9.	9.5	9,100	4.15	2,100	5.4	3,330	4.5	2,420	.....	1,550	2.45	870
10.	9.2	8,700	3.95	1,940	5.2	3,110	4.45	2,370	3.45	1,530	2.4	840
11.	9.0	8,400	3.8	1,820	5.1	3,000	4.4	2,330	3.4	1,500	2.35	810
12.	8.7	7,950	3.75	1,780	5.0	2,900	4.35	2,280	3.3	1,430	2.35	810
13.	8.4	7,480	3.7	1,740	5.2	3,110	4.45	2,370	3.25	1,400	2.3	780
14.	8.1	7,000	3.75	1,780	5.75	3,740	4.75	2,650	3.2	1,360	2.3	780
15.	8.0	6,860	3.7	1,740	5.85	3,860	5.0	2,900	3.6	1,660	2.3	780
16.	7.7	6,380	3.65	1,700	5.95	3,980	5.2	3,110	3.5	1,580	2.25	750
17.	7.45	6,000	3.6	1,660	5.9	3,920	5.2	3,110	3.05	1,250	2.25	750
18.	7.2	5,640	3.55	1,620	5.85	3,860	5.25	3,160	3.0	1,220	2.2	720
19.	7.05	5,430	3.5	1,580	5.75	3,740	5.35	3,270	2.9	1,150	2.15	700
20.	6.9	5,220	3.45	1,540	5.7	3,680	5.4	3,330	2.85	1,120	2.1	670
21.	6.6	4,810	3.6	1,660	5.65	3,620	5.3	3,220	2.8	1,080	2.15	700
22.	6.3	4,420	3.6	1,660	5.55	3,500	5.2	3,110	3.15	1,320	2.1	670
23.	6.15	4,230	3.75	1,780	5.45	3,350	5.0	2,900	3.1	1,290	2.1	670
24.	5.8	3,800	3.9	1,900	5.35	3,270	4.9	2,800	2.65	990	2.1	670
25.	5.7	3,680	4.05	2,020	5.15	3,050	4.8	2,700	2.7	1,020	2.05	650
26.	5.9	3,920	4.1	2,060	5.0	2,900	4.6	2,510	2.7	1,020	2.05	650
27.	6.0	4,040	4.6	2,510	4.85	2,750	4.55	2,460	2.7	1,020	2.05	650
28.	5.8	3,800	4.8	2,700	4.7	2,600	4.4	2,330	2.65	990	2.0	620
29.	5.85	3,860	4.6	2,510	4.3	2,240	2.6	960	2.0	620
30.	6.35	4,485	4.5	2,420	4.2	2,150	2.55	930	1.95	600
31.	6.1	4,160	4.4	2,330	2.5	900

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DAILY GAUGE HEIGHT AND DISCHARGE of Cowichan River at Cowichan lake,
for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.95	600	1.1	240	0.60	60	1.5	400	6.2	4,290	6.1	4,160
2	1.95	600	1.05	220	0.60	60	1.6	440	6.8	5,080	5.9	3,920
3	1.9	570	1.05	220	0.60	60	1.6	440	7.2	5,640	5.7	3,680
4	1.9	570	1.0	200	0.60	60	1.6	440	7.65	6,300	5.5	3,440
5	1.83	530	1.0	200	0.60	60	1.6	440	7.65	6,300	5.3	3,220
6	1.8	520	1.0	200	0.55	50	1.6	440	7.5	6,080	5.3	3,220
7	1.8	520	1.0	200	0.55	50	1.6	440	7.4	5,930	5.2	3,110
8	1.75	500	1.0	200	0.6	60	1.6	440	7.35	5,850	5.0	2,900
9	1.75	500	1.0	200	0.6	60	1.6	440	7.45	6,000	4.9	2,800
10	1.7	480	0.98	190	0.6	60	1.6	440	7.4	5,930	4.8	2,700
11	1.67	470	0.95	180	0.6	60	1.6	440	7.4	5,930	4.7	2,600
12	1.65	460	0.95	180	0.6	60	1.75	500	7.4	5,930	4.7	2,600
13	1.6	440	0.9	160	0.6	60	3.60	1,660	7.05	5,430	4.6	2,500
14	1.6	440	0.9	160	0.6	60	4.3	2,240	6.8	5,080	4.5	2,420
15	1.55	420	0.9	160	0.62	65	4.65	2,560	6.5	4,680	4.3	2,240
16	1.5	400	0.9	160	0.8	120	4.9	2,800	6.25	4,350	4.1	2,060
17	1.5	400	0.85	140	1.0	200	5.7	3,680	6.2	4,290	4.0	1,980
18	1.45	380	0.85	140	1.10	240	6.6	4,800	6.0	4,040	3.9	1,900
19	1.45	380	0.85	140	1.2	280	7.65	6,300	5.8	3,800	3.8	1,820
20	1.4	360	0.85	140	1.3	320	8.2	7,170	6.0	4,040	3.6	1,660
21	1.4	360	0.8	120	1.25	300	8.05	6,940	6.0	4,040	3.5	1,580
22	1.35	340	0.8	120	1.2	280	7.85	6,620	6.1	4,160	3.4	1,500
23	1.35	340	0.8	120	1.2	280	7.4	5,930	6.1	4,160	3.3	1,430
24	1.3	320	0.75	100	1.2	280	7.3	5,780	6.0	4,040	3.3	1,430
25	1.3	320	0.75	100	1.2	280	6.8	5,080	6.2	4,290	3.2	1,360
26	1.25	300	0.7	80	1.2	280	6.15	4,220	6.2	4,290	3.1	1,290
27	1.25	300	0.7	80	1.3	320	5.85	3,860	6.2	4,290	3.0	1,220
28	1.2	280	0.7	80	1.4	360	5.7	3,680	6.2	4,290	2.9	1,150
29	1.15	260	0.65	70	1.5	400	5.6	3,560	6.2	4,290	2.8	1,080
30	1.15	260	0.65	70	1.5	400	5.7	3,680	6.2	4,290	2.9	1,150
31	1.1	240	0.65	70			5.95	3,980			2.8	1,080

ENGLISHMAN RIVER (1030).

Location.—One-half mile from mouth ; 1,000 feet upstream from Island Highway bridge; 2 miles from Parksville.

Records available.—Gauge readings daily; February 15, 1913, to December 31, 1913, Provincial Water Rights Branch; May 19, 1914, to September 21, 1914; December 9, 1914, to December 31, 1914.

Drainage area.—One hundred and eleven square miles.

Gauge.—Twelve feet of enamel staff, in two 6 foot lengths, located on right bank, 100 feet upstream from measuring section.

Channel.—Even gravel bed, channel straight for 500 feet above and below section, one channel at all stages.

Discharge measurements.—Five in 1914, covering low and medium stages; four in 1913, Provincial Water Rights Branch.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 100 cubic feet per second, accuracy B. Above discharge of 400 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in 1913.

ENGLISHMAN RIVER (1030).

Englishman river is approximately 20 miles in length. It rises in the mountains at an elevation of some 5,000 feet, and flows in an easterly direction to its mouth in the straits of Georgia near the town of Parksville. The precipitation varies from about 30 inches at mouth to 60 inches in mountains. Having no natural storage, this stream is very flashy. During the summer months the flow is generally small. If artificial storage could be obtained at a reasonable expense, a small development might be made at falls.

The Giant Powder Co., which is located at Powder point, a short distance from the mouth of Englishman river, made surveys in 1912 and 1913 in view of developing power for their works, but gave up the project.

The Esquimalt and Nanaimo railway and the Government highway both cross this stream near its mouth. The district has many settlers, several of whom obtain their domestic supply from the river. The town of Parksville is on the Government highway about 2 miles distant.

The gauging station on Englishman river is located about one-half mile from mouth.

DISCHARGE MEASUREMENT of Englishman River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 19	Cotton & Webb.....	1057	129	160	1.9	2.50	304 ¹
July 19	do	1057	110	156	0.8	2.00	127 ²
Aug. 29	C. E. Webb.....	1057	26	16	1.5	1.47	21.0 ³
Aug. 29	do	1057	106	110	0.2	1.47	19.6
Dec. 10	do	1933	114	227	1.2	2.50	266

¹ Station established.

² Cable carrier established.

³ Low water section.

MONTHLY DISCHARGE of Englishman River at mouth, for 1914.

(Drainage area, 111 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	320	220	254	2.29	2.56	5,100	B
July.....	220	48	103	0.93	1.07	6,330	B
August.....	48	13	37	0.33	0.38	2,280	B

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DAILY GAUGE HEIGHT AND DISCHARGE of Englishman River near mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		December	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			2-3	220	2-3	220	1-6	48	1-4	13		
2			2-4	250	2-3	220	1-6	48	1-4	13		
3			2-4	250	2-2	190	1-6	48	1-4	13		
4			2-5	280	2-2	190	1-6	48	1-3	5		
5			2-5	280	2-1	160	1-6	48	1-3	5		
6			2-4	250	2-0	130	1-6	48	1-3	5		
7			2-4	250	2-0	130	1-6	48	1-3	5		
8			2-5	280	2-0	130	1-6	48	1-3	5		
9			2-5	280	2-0	130	1-6	48	1-3	5	2-6	320
10			2-4	250	1-9	108	1-6	48	1-5	28	2-5	280
11			2-3	220	1-9	108	1-6	48	1-5	28	2-4	250
12			2-3	220	1-9	108	1-6	48	1-5	28	2-35	235
13			2-3	220	1-9	108	1-6	48	1-6	48	2-3	220
14			2-5	280	1-9	108	1-6	48	1-7	68	2-25	205
15			2-6	320	1-8	88	11-5	28	1-7	68	2-2	190
16			2-5	280	1-8	88	1-5	28	1-7	68	2-15	175
17			2-5	280	1-8	88	1-5	28	1-7	68	2-15	175
18			2-5	280	1-8	88	1-5	28	1-9	108	2-2	190
19	2-5	280	2-5	280	1-75	78	1-5	28	3-1	530	2-15	175
20	2-6	320	2-5	280	1-75	78	1-5	28	2-11	165	2-1	160
21	2-7	360	2-5	280	1-7	68	1-5	28	2-1	160	2-1	160
22	2-8	400	2-4	250	1-7	68	1-5	28			2-1	160
23	2-8	400	2-4	250	1-7	68	1-5	28			2-05	145
24	2-9	440	2-4	250	1-7	68	1-5	28			2-05	145
25	2-6	320	2-4	250	1-7	68	1-5	28			2-05	145
26	2-6	320	2-3	220	1-7	68	1-5	28			2-1	160
27	2-6	320	2-3	220	1-6	48	1-5	28			2-1	160
28	2-5	280	2-3	220	1-6	48	1-6	48			2-15	175
29	2-2	190	2-3	220	1-6	48	1-4	13			2-15	175
30	2-2	190	2-3	220	1-6	48	1-4	13			2-5	280
31	2-3	220			1-6	48	1-6	48			2-6	320

HASLAM CREEK (1029).

Location.—Low-water section, 500 feet below Canadian Collieries railway bridge; 6 miles from Ladysmith.

High-water section, downstream side of bridge.

Records available.—Gauge readings twice a week. July 3, 1914, to December 31, 1914.

Drainage area.—Twenty-seven square miles.

Gauge.—Six-foot enamel staff, on piling of railway bridge, downstream side near left bank.

Channel.—Low-water section, gravel bed, channel straight 50 feet above and below section, banks overflow in extreme high water.

High-water section, stream flows at small angle to bridge, bed of stream is gravel.

Discharge measurements.—Four in 1914, covering all but high stage; one in 1913, Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—Between discharge of 0 and 160 cubic feet per second, accuracy B. Above discharge of 160 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1913.

HASLAM CREEK (1029).

Haslam creek is part of the Nanaimo river drainage. It rises in the mountains between the Chemainus and Nanaimo rivers at an elevation of about 4,000 feet. The metering section is located at the Canadian Collieries railway bridge, about 2 miles above mouth of creek. The drainage area, above metering section, is 27 square miles. A large part of the drainage area is covered with second-growth timber.

The precipitation varies from 30 to 50 inches, being most in the higher altitudes. The stream has no natural storage and is flashy.

This stream is of little importance at present, except in effect of the total flow of Nanaimo river which it enters about 4 miles from the sea.

DISCHARGE MEASUREMENTS of Haslam Creek near Canadian Collieries railway bridge, for 1914.

Date.	Hydrographer.	Meter. No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914							
May 14	C. E. Webb	1057	58	89	0.9	1.30	83.58
July 7	Cotton & Webb	1057	60	58	0.2	0.47	13.30
Aug. 10	C. P. Cotton	1057	62	43	0.1	0.20	4.70
Nov. 27	C. E. Webb	1933	170	238	2.1	2.20	473.00

MONTHLY DISCHARGE of Haslam Creek near mouth, for 1914.

(Drainage area, 27 square miles.).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June	68	24	47	1.74	1.94	2,800	B
July	22	4	10	0.37	0.43	610	B
August	4	3	4	0.15	0.17	250	B
September	50	3	16	0.59	0.66	950	B
October	1,360	18	357	13.20	15.20	22,000	C
November	1,420	88	530	19.60	28.90	31,500	C
December	480	32	110	4.08	4.70	6,760	C

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DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 1914.

DAY.	May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				68
2				66
3				63
4			1-1	60
5				60
6				60
7				60
8				60
9			1-1	60
10				60
11				60
12				60
13				60
14				60
15	1-3	88	1-1	60
16	1-3	88		54
17		88		48
18	1-3	88	0-9	40
19		84		38
20		78		37
21	1-2	72		35
22		72		33
23		72	0-8	32
24		72		31
25		72		28
26	1-2	72		26
27		72	0-7	24
28		72		24
29		72		24
30	1-2	72	0-7	24
31		72		

DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		22		4		3		48		800		480
2		20		4		3	1-1	60	3-8	1,420	2-2	480
3	0-6	18	0-2	4		3		50		1,000		400
4		17		4		3	0-9	40		800	1-9	300
5		16	0-2	4	0-1	3		36	2-4	600		220
6		15		4		3		30		560		160
7	0-5	14	0-2	4	0-1	3	0-7	24		520		120
8		12		4		3		22		480	1-3	88
9	0-4	10		4		4		20		440		82
10		10		4	0-2	4	0-6	18	2-1	420		76
11	0-4	10	0-2	4		4	0-6	18		420	1-2	72
12		10		4		4		500	2-1	420		68
13		10	0-2	4		4	3-3	1,130		420		64
14	0-4	10		4		4		700		300		60
15		10	0-2	4	0-2	4	1-9	300		200		55
16	0-4	10		4		14		700		100	1-0	50
17		8		3		23	3-2	1,070	1-3	88		47
18	0-3	6	0-1	3	0-8	32		1,150		280		43
19		6		3		41	3-7	1,360	2-2	480	0-9	40
20	0-3	6		3	1-0	50		1,300		500		40
21		6	0-1	3		40		800		600		40
22	0-3	6		3		32		400		700	0-9	40
23		6		3	0-7	24		200	2-7	770		36
24		6	0-1	3		19		150		650	0-8	32
25	0-3	6		3	0-5	14		100		550		32
26		6		3		20	1-2	72	2-2	480		32
27	0-3	6	0-1	3		24		64		480		32
28		5		3		28		56		480		32
29	0-2	4	0-1	3	0-8	32	1-0	50		480	0-8	32
30		4		3	0-8	32		100		480		45
31	0-2	4		3				500			1-1	60

KOKSILAH RIVER (1026).

Location.—Two miles from mouth, upstream side of Esquimalt and Nanaimo railway bridge, 2 miles south from Duncan.

Records available.—Gauge readings daily, May 12, 1914, to December 31, 1914.

Drainage area.—One hundred and twenty-four square miles.

Gauge.—Fourteen foot staff on left bank, 600 feet above bridge.

Channel.—Gravel bed, two channels in low water, channel straight for 100 feet above section and for 300 feet below, good control.

Discharge measurements.—Six in 1914, covering all but highest stage; one in 1911 and one in 1913, by Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—B.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911.

KOKSILAH RIVER (1026).

Koksilah river rises in the mountains at an altitude of about 3,000 feet, and flows in an easterly direction to the sea, in Cowichan bay. It is approximately 20 miles in length, and has a drainage area of 124 square miles above

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gauging station. The gauging station is located about 2 miles from mouth. The precipitation varies from 30 inches at mouth to about 70 inches at headwaters. There is no natural storage on this stream, and hence its flow is very irregular. In the summer months the flow is small.

There are some very fine farms in this district. The town of Duncan is located about 2 miles from Koksilah river on the Esquimalt and Nanaimo railway.

DISCHARGE MEASUREMENTS of Koksilah River near E. & N. Ry. bridge,
for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 12	C. E. Webb	1057	95	87	1.3	1.73	110.0 ¹
July 5	Webb & Cotton	1057	34	18	1.8	1.23	33.9 ²
Aug. 12	C. P. Cottor	1057	71	94	0.2	1.00	14.4
" 12	do	1057	37	14	1.1	1.15	16.2
" 27	C. E. Webb	1057	30	12	0.9	1.00	10.1
Nov. 25	do	1933	122	462	3.6	4.92	1,650.0

¹ Station established.² Different sections use d.

MONTHLY DISCHARGE of Koksilah River near mouth, for 1914.

(Drainage area, 124 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	140	40	59	0.48	0.54	3,500
July	38	25	28	0.23	0.27	1,720
August	25	10	14	0.11	0.13	860
September	115	10	40	0.32	0.36	2,380
October	2,220	40	375	3.03	3.49	23,100
November	2,310	290	780	6.28	7.01	46,400
December	790	115	280	2.26	2.61	17,200

Accuracy "B".

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DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1.4	50	1.28	38	1.15	25	1.0	10	1.4	50
2			1.4	50	1.25	35	1.15	25	1.0	10	1.4	50
3			1.4	50	1.23	33	1.12	22	1.0	10	1.4	50
4			1.38	48	1.23	33	1.1	20	1.0	10	1.4	50
5			1.35	45	1.2	30	1.1	20	1.0	10	1.37	47
6			1.32	42	1.2	30	1.08	18	1.0	10	1.35	45
7			1.4	50	1.2	30	1.08	18	1.05	15	1.35	45
8			1.7	115	1.2	30	1.08	18	1.1	20	1.35	45
9			1.8	140	1.2	30	1.08	18	1.15	25	1.32	42
10			1.7	115	1.2	30	1.05	15	1.2	30	1.3	40
11			1.6	90	1.2	30	1.05	15	1.15	25	1.4	50
12			1.5	70	1.2	30	1.05	15	1.1	20	1.6	90
13	1.7	115	1.5	70	1.2	30	1.05	15	1.2	30	1.7	115
14	1.65	105	1.5	70	1.2	30	1.05	15	1.4	50	1.9	165
15	1.63	100	1.48	65	1.18	28	1.05	15	1.6	90	2.0	190
16	1.6	90	1.45	60	1.15	25	1.0	10	1.7	115	2.4	290
17	1.6	90	1.4	50	1.15	25	1.0	10	1.7	115	3.0	500
18	1.57	85	1.4	50	1.15	25	1.0	10	1.5	70	4.0	1,000
19	1.55	80	1.4	50	1.15	25	1.0	10	1.5	70	5.5	2,230
20	1.52	75	1.4	50	1.15	25	1.0	10	1.45	60	4.5	1,320
21	1.5	70	1.37	47	1.15	25	1.0	10	1.4	50	3.6	790
22	1.45	60	1.35	45	1.15	25	1.0	10	1.3	40	3.0	500
23	1.4	50	1.35	45	1.15	25	1.0	10	1.3	40	2.8	420
24	1.4	50	1.35	45	1.15	25	1.0	10	1.3	40	2.6	350
25	1.45	60	1.35	45	1.15	25	1.0	10	1.3	40	2.4	290
26	1.5	70	1.35	45	1.15	25	1.0	10	1.3	40	2.4	290
27	1.55	80	1.35	45	1.15	25	1.0	10	1.3	40	2.4	290
28	1.55	80	1.32	42	1.15	25	1.0	10	1.3	40	2.4	290
29	1.5	70	1.32	42	1.15	25	1.0	10	1.3	40	2.6	350
30	1.45	60	1.3	40	1.15	25	1.0	10	1.35	45	2.7	380
31	1.43	55			1.15	25	1.0	10			4.4	1,250

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DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914.
—*Con.*

DAY.	November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4.8	1,560	3.4	690
2	5.5	2,220	3.6	790
3	5.6	2,310	3.4	690
4	5.3	2,020	3.2	590
5	3.0	500	3.0	500
6	3.0	500	2.9	460
7	2.9	460	2.7	380
8	3.3	640	2.6	350
9	4.0	1,000	2.5	320
10	4.6	1,400	2.4	290
11	4.0	1,000	2.4	290
12	3.3	640	2.3	265
13	3.0	500	2.2	240
14	2.8	420	2.1	215
15	2.6	350	2.0	190
16	2.6	350	2.0	190
17	2.4	290	1.9	165
18	2.4	290	1.9	165
19	2.4	290	1.8	140
20	2.4	290	1.7	115
21	2.4	290	1.7	115
22	3.0	500	1.7	115
23	3.2	590	1.7	115
24	3.6	790	1.7	115
25	4.2	1,120	1.7	115
26	3.8	890	1.7	115
27	3.2	590	1.8	140
28	3.0	500	1.9	165
29	3.0	500	2.0	190
30	3.2	590	2.0	190
31			2.0	190

LITTLE QUALICUM RIVER (1031).

Location.—At outlet from Cameron lake, downstream side of highway bridge.

Records available.—Gauge readings daily, February 27, 1913, to December 31, 1913. Provincial Water Rights Branch, January 1, 1914, to December 31, 1914.

Drainage area.—Fifty-four square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on shore of lake, 500 feet from head of river.

Channel.—Straight on both sides of section for 100 feet, gravel and small boulder bed, confined by bridge abutments in high water, one channel at all stages.

Discharge measurements.—Six in 1913 by Provincial Water Rights Branch, and five in 1914.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 30 and 400 cubic feet per second, accuracy

A. Below discharge of 30 and above 400 cubic feet per second, accuracy B.

Co-operation.—Station established by Provincial Water Rights Branch in 1913.

LITTLE QUALICUM RIVER (1031).

Little Qualicum river is approximately 6 miles in length. Rising in Cameron lake at an altitude of 600 feet, it flows in an easterly direction to its mouth in the strait of Georgia near Qualicum beach.

The drainage area above the metering section, which is located at the outlet from Cameron lake, is 54 square miles. The Cameron river, which flows into Cameron lake, is about 16 miles long and rises in Labour Day lake.

The precipitation varies from about 40 inches on the coast to 60 inches at the headwaters. Considerable snow falls in the mountains of this drainage.

There is a good location for a hydro-electric development on Little Qualicum river at the falls, about 3 miles below Cameron lake. At this point the river drops some 100 feet in a series of three falls into a solid rock box canyon.

Owing to the low flow during the summer months, it would be necessary to store water for that period. Cameron lake offers good storage possibilities but the grade of the government road around the south side of the lake would have to be raised, as at present it is not far above high water.

The district has been opened up considerably for settlement in the last few years. At Qualicum beach a considerable amount of capital has been invested clearing a large tract of land. A fine tourist hotel has been built near the sea. At Cameron lake the Canadian Pacific Railway Company have a delightful chalet for the accommodation of tourist traffic.

DISCHARGE MEASUREMENTS of Little Qualicum River near Cameron Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20.....	Webb & Cotton.....	1057	58	143	2.4	2.40	340 ¹
July 10.....	C. P. Cotton.....	1057	53	80	1.9	1.40	149
Sept. 1.....	C. E. Webb.....	1057	46	33	1.1	0.49	35.3
" 2.....	do.....	1057	46	32	1.0	0.47	33.5
Dec. 16.....	do.....	1933	58	116	2.3	2.05	269

¹ Station established.

MONTHLY DISCHARGE of Little Qualicum River at Cameron Lake, for 1914.

(Drainage area, 54 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January.....	1,910	215	632	11.70	13.49	38,860	B
February.....	535	165	242	4.48	4.67	13,400	A
March.....	855	290	498	9.23	10.64	30,600	B
April.....	840	255	495	9.17	10.30	29,540	B
May.....	445	315	382	7.08	8.16	23,500	A
June.....	375	235	278	5.15	5.75	16,500	A
July.....	230	68	134	2.48	2.86	8,240	A
August.....	68	45	54	1.00	1.15	3,320	A
September.....	192	38	91	1.69	1.89	5,400	A
October.....	2,030	150	655	12.13	13.99	40,300	B
November.....	1,300	375	824	15.25	17.02	49,000	B
December.....	650	130	259	4.80	5.53	16,000	B
The year.....	2,030	38	379	7.01	95.45	274,660	

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DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.
1.....	1-79	215	2-3	315	4-02	735	2-07	270	2-69	400	2-28	310
2.....	1-88	230	2-25	305	4-41	855	2-0	255	2-84	430	2-29	315
3.....	2-34	325	2-19	295	4-12	765	2-0	255	2-89	445	2-28	310
4.....	4-33	830	2-11	275	3-57	690	2-15	285	2-89	445	2-3	315
5.....	6-71	1,600	2-66	265	3-54	595	3-1	490	2-84	430	2-28	310
6.....	7-51	1,910	1-99	255	3-20	510	3-27	530	2-61	375	2-2	295
7.....	6-79	1,630	1-89	235	3-03	475	5-16	505	2-69	400	2-6	375
8.....	5-75	1,270	1-82	220	2-79	420	3-0	470	2-6	375	2-16	285
9.....	4-85	985	1-73	205	2-66	390	2-89	445	2-64	385	2-12	280
10.....	4-26	810	1-69	200	2-56	365	2-83	425	2-62	380	2-14	285
11.....	4-11	765	1-65	190	2-46	345	2-8	420	2-68	395	2-09	275
12.....	4-47	870	1-59	155	2-4	335	2-8	420	2-68	395	2-08	270
13.....	4-26	810	1-57	180	2-49	355	2-86	430	2-68	395	2-08	270
14.....	3-99	730	1-51	170	2-75	410	3-84	680	2-7	400	2-16	285
15.....	3-67	630	1-5	170	4-09	755	4-39	840	2-73	405	2-18	290
16.....	3-44	570	1-49	170	3-85	685	4-29	820	2-69	400	2-18	290
17.....	3-23	520	1-48	165	3-62	645	3-95	715	2-6	375	2-17	285
18.....	3-60	610	1-48	165	3-44	570	3-68	635	2-51	355	2-11	275
19.....	2-94	455	1-48	165	3-3	535	3-95	715	2-48	350	2-08	270
20.....	2-8	420	1-48	165	3-3	535	4-02	735	2-46	345	2-08	270
21.....	2-66	390	1-56	180	3-3	535	3-8	670	2-48	350	1-98	250
22.....	2-55	365	1-73	205	3-3	535	3-39	560	2-55	365	1-99	255
23.....	2-41	335	1-88	230	3-23	520	3-08	485	2-59	375	1-99	255
24.....	2-3	315	2-07	270	2-97	465	2-93	450	2-66	390	1-98	250
25.....	2-23	300	2-17	290	2-89	445	2-73	405	2-65	385	1-98	250
26.....	2-17	290	2-28	310	2-72	405	2-57	370	2-71	400	1-98	250
27.....	2-08	270	2-97	465	2-55	365	2-63	380	2-63	380	1-98	250
28.....	2-0	255	3-29	535	2-44	345	2-69	400	2-5	355	1-96	245
29.....	2-05	265	.....	.....	2-28	310	2-68	395	2-43	340	1-89	235
30.....	2-23	300	.....	.....	2-23	300	2-68	395	2-3	315	1-89	235
31.....	2-3	315	.....	.....	2-17	290	.....	.....	2-29	315	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-88	230	0-78	68	0-54	44	1-82	220	3-48	580	3-74	650
2.....	1-81	215	0-75	65	0-52	42	1-88	230	4-78	965	3-44	570
3.....	1-8	215	0-71	61	0-5	40	1-86	225	4-35	835	3-17	505
4.....	1-77	210	0-72	62	0-49	39	1-8	215	5-85	1,300	2-98	465
5.....	1-72	205	0-73	63	0-48	38	1-74	205	5-4	1,150	2-81	420
6.....	1-7	200	0-71	61	0-48	38	1-66	190	4-9	1,000	2-63	385
7.....	1-67	195	0-71	61	0-49	39	1-58	180	5-15	1,075	2-48	530
8.....	1-51	170	0-70	60	0-50	40	1-49	170	5-0	1,130	2-39	335
9.....	1-48	170	0-70	60	0-51	41	1-42	160	4-72	945	2-33	320
10.....	1-46	165	0-70	60	0-51	41	1-37	150	4-49	875	2-14	285
11.....	1-4	155	0-69	59	0-56	46	1-37	150	4-44	860	2-3	315
12.....	1-37	150	0-68	58	0-55	45	1-6	185	4-15	775	1-97	250
13.....	1-34	145	0-68	58	0-55	45	4-7	940	3-84	680	1-89	245
14.....	1-29	140	0-67	57	0-57	47	5-84	1,290	3-52	590	1-82	220
15.....	1-25	135	0-66	56	0-61	51	5-13	1,070	3-24	520	1-75	210
16.....	1-19	125	0-65	55	0-66	56	5-18	1,080	2-99	470	1-7	200
17.....	1-18	120	0-6	50	0-69	59	6-4	1,500	2-76	410	1-67	195
18.....	1-15	115	0-59	49	0-70	60	7-8	2,030	2-61	375	1-59	185
19.....	1-13	115	0-60	50	1-15	117	7-2	1,790	2-68	395	1-55	180
20.....	1-10	110	0-60	50	1-48	167	6-98	1,700	3-1	490	1-49	170
21.....	1-03	103	0-59	49	1-60	185	6-05	1,370	3-35	545	1-46	165
22.....	1-0	100	0-59	49	1-58	180	5-05	1,045	3-38	555	1-39	155
23.....	0-89	83	0-58	48	1-52	173	4-3	820	4-54	890	1-39	155
24.....	0-85	78	0-58	48	1-43	160	3-64	620	5-5	1,180	1-37	150
25.....	0-82	73	0-57	47	1-31	140	3-32	540	5-74	1,260	1-32	145
26.....	0-82	73	0-56	46	1-3	140	2-97	460	5-7	1,250	1-31	140
27.....	0-82	73	0-55	45	1-3	140	2-7	490	5-11	1,060	1-29	140
28.....	0-85	78	0-55	45	1-42	158	2-48	380	4-95	1,015	1-28	135
29.....	0-81	71	0-55	45	1-49	170	2-19	295	4-51	880	1-25	130
30.....	0-79	69	0-55	45	1-65	192	2-26	305	4-1	760	1-29	140
31.....	0-78	68	0-55	45			3-04	480			1-3	140

NANAIMO RIVER (1028).

Location.—Six miles from mouth; 800 feet upstream from Canadian Collieries railway bridge; 8 miles from Ladysmith.

Records available.—Gauge readings daily, February 11, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to March 31, 1914, Provincial Water Rights Branch; April 1, 1914, to December 31, 1914.

Drainage area.—Two hundred and forty-nine square miles.

Gauge.—Twelve-foot wooden staff nailed to tree, left bank, 50 feet upstream from section.

Channel.—Straight 200 feet on each side of section, even gravel bed, good control 400 feet downstream.

Discharge measurements.—One in 1911, four in 1913 by Provincial Water Rights Branch; two in 1914, covering all but high stages.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 3,000 cubic feet per second accuracy B. Above discharge of 3,000 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in 1913.

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NANAIMO RIVER (1025).

The Nanaimo river rises in the mountains at an altitude of some 5,000 feet, and flows in an easterly direction to its mouth, about 2 miles south of Nanaimo, in the strait of Georgia. Nanaimo river is some 35 miles in length. It is fed by many streams, the larger of which are Jump creek, which enters near the Nanaimo lakes, and Haslam creek which enters about 4 miles from the mouth.

The gauging station is located near the Canadian Collieries railway bridge, about 6 miles from mouth. The drainage area above gauging station is 249 square miles. There are two lakes, covering an area of 2 square miles, known as the Nanaimo lakes, at an altitude of 700 feet on the Nanaimo river about 12 miles above gauging station.

The precipitation varies from 30 inches at mouth of river to about 60 inches at headwaters.

The power possibilities of the Nanaimo river were investigated during 1914 by the engineers of the Provincial Water Rights Branch.

The following is taken from the Water Rights Branch report for 1914:—

“There do not appear to be any concentrated falls, but apparently with storage in the two lakes, four power sites might be developed namely,—

Power Site.	Head.	Available H P.
Cassiday Canyon to Wellington Collieries Bridge.....	110	5,000
Wellington Collieries Bridge to South Fork Road Bridge.....	230	11,300
South Fork Road Bridge to South Fork.....	150	6,806
South Fork to storage dam.....	80	3,000
	570	26,100

The Nanaimo river flows through a large coal mining district. The towns of Ladysmith and Nanaimo are also both within a reasonable distance. These should offer a good market for hydro-electric power.

DISCHARGE MEASUREMENTS of Nanaimo River near Canadian Collieries Ry. bridge, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Discharge.
1914.			Feet.	Sq ft	Ft per sec.	Feet	Sec-ft.
July 8	Webb and Cotton	1057	128	240	0.3	1.60	317*
Aug. 10.	C P Cotton	1057	120	139	0.7	0.80	93

* Station established

MONTHLY DISCHARGE of Nanaimo River six miles from mouth, for 1914.

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth, in inches on Drainage area.	Total in acre-feet.	
January.....	25,300	770	3,840	15-40	17-80	236,000	C
February.....	4,980	570	1,240	4-98	5-19	68,900	B
March.....	8,320	980	2,520	10-10	11-60	155,000	C
April.....	6,510	980	2,430	9-75	10-90	145,000	C
May.....	1,850	690	1,070	4-30	4-96	65,600	B
June.....	840	500	650	2-61	2-91	38,700	B
July.....	485	130	265	1-06	1-22	16,300	B
August.....	130	70	93	0-37	0-43	5,700	B
September.....	1,220	68	335	1-35	1-51	19,900	B
October.....	11,660	360	3,290	13-20	15-20	202,000	C
November.....	10,650	880	4,390	17-60	19-60	261,000	C
December.....	3,140	330	740	2-98	3-44	45,500	B
The year.....	25,300	68	1,739	6-98	94-76	1,259,600	C

DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-01	1,210	3-2	1,400	6-64	8,320	2-77	1,010	3-09	1,290	2-42	770
2.....	3-91	2,275	3-01	1,210	5-64	6,020	2-8	1,040	3-44	1,650	2-53	840
3.....	5-3	5,250	2-8	1,040	4-94	4,440	3-54	1,770	3-39	1,590	2-5	820
4.....	13-8	25,300	2-68	950	4-43	3,300	4-58	3,630	3-09	1,290	2-33	720
5.....	9-29	14,500	2-51	830	3-92	2,290	5-4	5,480	2-89	1,110	2-15	610
6.....	8-99	13,800	2-39	750	3-52	1,750	4-61	3,690	2-78	1,020	2-03	540
7.....	6-77	8,620	2-29	690	3-25	1,450	4-01	2,420	2-77	1,010	2-07	560
8.....	5-25	5,140	2-21	650	3-2	1,400	3-69	1,970	2-9	1,120	2-31	710
9.....	4-35	3,135	2-12	590	3-19	1,390	3-58	1,820	2-93	1,140	2-36	740
10.....	3-93	2,300	2-11	590	3-09	1,290	3-62	1,880	2-94	1,150	2-38	750
11.....	4-79	4,130	2-1	580	2-93	1,140	3-6	1,850	2-96	1,160	2-27	680
12.....	4-72	3,940	2-09	570	1-93	485	3-48	1,700	2-93	1,140	2-26	670
13.....	4-6	3,670	2-16	620	3-81	2,130	3-78	2,090	2-98	1,180	2-29	690
14.....	4-19	2,800	2-22	650	6-36	7,680	5-17	4,960	3-03	1,230	2-34	720
15.....	3-55	1,790	2-3	700	5-25	5,140	5-85	6,510	2-99	1,190	2-41	770
16.....	3-88	2,230	2-35	730	4-44	3,320	4-85	4,240	2-82	1,060	2-43	780
17.....	3-59	1,840	2-41	770	4-22	2,860	4-04	2,480	2-69	950	2-36	740
18.....	3-41	1,610	2-48	810	4-03	2,460	4-33	3,090	2-59	880	2-27	680
19.....	3-42	1,620	2-51	830	3-94	2,320	5-04	4,660	2-56	860	2-23	660
20.....	3-32	1,520	2-54	850	4-09	2,590	4-58	3,630	2-59	880	2-03	540
21.....	3-24	1,440	2-73	980	4-06	2,520	3-89	2,250	2-7	960	1-98	500
22.....	3-08	1,280	3-28	1,480	3-99	2,380	3-41	1,610	2-84	1,070	2-01	530
23.....	2-98	1,180	3-43	1,640	3-69	1,970	3-14	1,340	2-9	1,120	2-03	540
24.....	2-75	1,000	3-83	2,160	3-4	1,600	2-94	1,150	2-85	1,080	2-04	540
25.....	2-69	950	3-69	1,970	3-19	1,390	2-81	1,050	2-8	1,040	2-14	620
26.....	2-68	940	3-48	1,700	2-93	1,140	2-72	980	2-82	1,060	2-2	640
27.....	2-59	880	5-18	4,980	2-79	1,030	2-92	1,140	2-79	1,030	2-13	600
28.....	2-42	770	4-75	4,000	2-74	990	2-94	1,150	2-58	880	2-07	560
29.....	2-59	880	2-72	980	2-88	1,100	2-36	740	2-0	520
30.....	3-31	1,510	2-83	1,060	2-84	1,070	2-28	690	2-01	530
31.....	3-33	1,530	2-84	1,070	2-31	710

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DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth,
for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1.93	485	0.88	130	0.50	70	2.43	780	6.6	8,230	4.35	3,140
2.....	1.91	475	0.85	120	0.50	70	2.61	900	7.65	10,650	3.79	2,110
3.....	1.88	460	0.83	115	0.51	71	2.51	830	6.47	7,930	3.47	1,680
4.....	1.8	420	0.82	115	0.49	69	2.38	750	6.55	8,120	3.23	1,430
5.....	1.73	390	0.8	110	0.48	68	2.15	610	5.7	6,160	3.05	1,250
6.....	1.65	360	0.78	105	0.49	69	2.0	520	4.35	3,140	2.84	1,070
7.....	1.6	340	0.76	100	0.58	78	1.87	455	3.85	2,190	2.68	950
8.....	1.6	340	0.78	105	0.62	82	1.74	395	4.65	3,780	2.57	870
9.....	1.51	305	0.79	110	0.65	85	1.65	360	5.44	5,570	2.42	770
10.....	1.5	300	0.8	110	0.64	84	1.75	400	4.65	3,780	2.31	710
11.....	1.49	295	0.76	100	0.67	87	1.71	380	4.8	4,120	2.22	650
12.....	1.47	290	0.75	100	0.67	87	3.83	1,160	4.22	2,860	2.13	600
13.....	1.44	280	0.74	100	0.69	89	7.97	11,500	3.83	2,160	2.05	550
14.....	1.43	280	0.72	95	0.7	91	6.15	7,200	3.41	1,610	1.99	510
15.....	1.39	265	0.71	90	0.74	100	4.7	3,890	3.26	1,460	1.94	490
16.....	1.34	250	0.67	87	0.8	110	7.5	10,300	2.91	1,130	1.88	460
17.....	1.31	245	0.69	89	1.01	155	7.86	11,200	2.73	980	1.8	420
18.....	1.3	240	0.67	87	1.56	325	8.05	11,600	2.58	880	1.75	400
19.....	1.29	235	0.65	85	2.75	1,000	7.73	10,900	3.88	2,210	1.77	400
20.....	1.2	210	0.64	84	3.02	1,220	6.55	8,120	4.54	3,540	1.69	375
21.....	1.16	200	0.64	84	2.68	950	5.13	4,870	4.64	3,760	1.69	375
22.....	1.12	185	0.62	82	2.28	690	4.19	2,800	5.15	4,920	1.64	360
23.....	1.1	180	0.6	80	2.0	520	3.6	1,850	5.95	6,730	1.6	340
24.....	1.09	175	0.59	79	1.78	410	3.18	1,830	6.28	7,490	1.59	335
25.....	1.07	170	0.58	78	1.6	340	2.91	1,130	6.98	9,100	1.58	330
26.....	1.04	160	0.56	76	1.68	370	2.66	930	5.48	5,650	1.6	340
27.....	1.01	155	0.55	75	1.86	450	2.48	810	4.85	4,230	1.6	340
28.....	0.99	150	0.54	74	2.33	720	2.32	710	4.84	4,210	1.61	345
29.....	0.96	140	0.52	72	2.4	760	2.2	640	4.25	2,930	1.63	350
30.....	0.92	135	0.52	72	2.53	840	2.63	910	3.82	2,150	1.71	385
31.....	0.9	130	0.5	70	.....	.....	4.06	2,520	.....	.....	2.16	620

OYSTER RIVER VANCOUVER ISLAND (1040).

Location.—One mile from mouth, upstream side of Island highway bridge, 18 miles from Courtenay.

Records available.—Gauge readings twice daily, June 1, 1914, to December 31, 1914.

Drainage area.—Seventy square miles.

Gauge.—Twelve-foot enamel staff, nailed to cribbing on right bank, 20 feet downstream from bridge.

Channel.—Straight for 150 feet upstream and 400 feet downstream, gravel bed, good control.

Extreme low water measurements taken 1,000 feet upstream from bridge.

Discharge measurements.—Four in 1914, covering all but high stage.

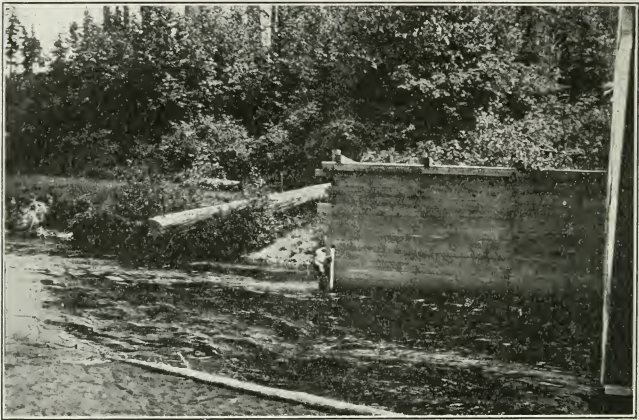
Winter flow.—Open all year.

Accuracy.—Between discharge of 80 and 1,400 cubic feet per second, accuracy B. Above discharge of 1,400 cubic feet per second, accuracy C.

OYSTER RIVER (1040).

Oyster river rises in the mountains at an elevation of over 4,000 feet, and flows in an easterly direction to its mouth in the strait of Georgia, about 12 miles south of Campbell river. Oyster river is some 18 miles in length. Many branches from the mountains make up the main stream.

The river is fast and flashy. In the summer months the flow is small, as there is no natural storage. The valleys are still thickly wooded, although considerable timber has been taken out. There are several fine farms near its mouth.



Installing metal faced gauge at metering section on Oyster river, Vancouver Island.

The metering station is at the Island highway bridge. This highway crosses the river about 1 mile from mouth.

The precipitation is heavy, varying from 80 inches at the mouth of river to over 100 inches at headwaters. The power possibilities on this stream as yet have not been investigated by this survey.

DISCHARGE MEASUREMENTS of Oyster River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 1.	Webb & Cotton	1,057	135	298	3.5	2.70	1,040 ¹
July 18	C. P. Cotton	1,057	137	262	2.6	2.10	889
Sept. 5	C. E. Webb	1,057	67	66	1.3	0.92	86.4 ²
Nov. 11	"	1,057	134	358	3.9	3.50	1,380

¹Station established.

²Low-water section.

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MONTHLY DISCHARGE of Oyster River one mile from mouth, for 1914.

(Drainage area, 70 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	1,330	710	950	13.60	15.20	56,500	B
July.....	1,080	340	700	10.00	11.50	43,000	B
August.....	410	140	275	3.93	4.53	16,900	B
September.....	1,470	90	350	5.00	5.58	20,800	B
October.....	3,000	270	1,040	14.80	17.06	64,000	C
November.....	2,170	540	1,280	18.30	20.40	76,200	C
December.....	1,030	140	460	6.57	7.56	28,300	B

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth, for 1914.

DAY.	June.		July.		August		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2.7	950	2.8	1,030	1.4	340	1.0	140	1.7	490	3.52	1,390
2.....	2.9	1,080	2.9	1,080	1.48	380	1.0	140	1.7	490	3.6	1,420
3.....	2.85	1,050	2.85	1,050	1.5	390	1.0	140	1.65	470	3.55	1,400
4.....	2.65	960	2.7	980	1.5	390	1.0	140	1.6	440	3.65	1,450
5.....	2.35	800	2.5	880	1.45	360	0.95	115	1.55	410	3.4	1,330
6.....	2.15	710	2.35	810	1.47	370	0.9	90	1.45	370	2.85	1,050
7.....	2.2	730	2.25	750	1.52	490	0.9	90	1.35	310	2.6	930
8.....	2.5	880	2.3	780	1.53	410	0.9	90	1.3	290	4.8	2,020
9.....	2.4	830	2.25	769	1.5	390	0.9	90	1.25	270	4.8	2,020
10.....	2.55	900	2.3	780	1.4	340	0.9	90	1.4	340	3.55	1,400
11.....	2.55	900	2.4	830	1.4	340	0.9	90	1.58	430	3.5	1,380
12.....	2.65	950	2.35	810	1.4	340	0.9	90	2.55	9.0	3.0	1,130
13.....	2.8	1,030	2.35	800	1.4	340	0.9	90	6.4	2,820	2.65	950
14.....	3.0	1,130	2.35	810	1.35	310	0.9	90	5.0	2,120	2.45	860
15.....	3.25	1,250	2.25	750	1.33	300	0.9	90	3.45	1,350	2.25	750
16.....	3.4	1,330	2.2	730	1.3	290	1.13	205	6.75	3,000	2.0	640
17.....	3.15	1,210	2.25	750	1.25	270	1.33	305	5.45	2,350	1.9	590
18.....	3.1	1,180	2.2	730	1.2	240	1.35	315	4.45	1,840	1.8	540
19.....	2.75	1,000	2.2	730	1.2	240	3.7	1,470	4.6	1,920		800
20.....	2.65	910	2.2	730	1.15	220	2.95	1,100	3.65	1,450		1,000
21.....	2.35	800	1.95	620	1.15	210	2.25	760	3.85	1,540	3.3	1,280
22.....	2.25	750	1.75	510	1.1	190	2.05	660	3.85	1,550	4.1	1,670
23.....	2.25	760	1.7	490	1.1	190	1.85	570	3.0	1,130	4.1	1,670
24.....	2.25	750	1.75	520	1.1	190	1.73	500	2.35	800	4.8	2,020
25.....	2.85	1,050	1.7	490	1.0	190	1.6	410	2.05	660	5.1	2,170
26.....	2.7	980	1.7	490	1.05	160	1.6	440	1.85	560	3.75	1,500
27.....	2.55	910	1.65	470	1.05	170	1.75	510	1.9	590	3.6	1,420
28.....	2.45	850	1.55	410	1.05	160	1.8	540	1.8	540	3.6	1,420
29.....	2.5	890	1.5	390	1.05	170	1.8	540	1.7	490	3.05	1,150
30.....	2.65	960	1.48	380	1.0	140	1.7	490	2.75	1,000	2.8	1,030
31.....	.....	.....	1.4	340	1.0	140	.....	.....	3.5	1,380	.....	.....

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth,
for 1914—*Con.*

DAY.	December.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1	2-55	900
2	2-45	860
3	2-8	1,030
4	2-6	930
5	2-4	830
6	2-25	750
7	2-2	730
8	2-1	680
9	2-0	640
10	1-85	570
11	1-65	460
12	1-6	440
13	1-6	440
14	1-5	390
15	1-4	340
16	1-4	340
17	1-25	260
18	1-25	270
19	1-3	290
20	1-2	240
21	1-2	240
22	1-2	240
23	1-1	190
24	1-1	190
25	1-0	140
26	1-1	190
27	1-15	210
28	1-15	220
29	1-15	210
30	1-45	370
31		640

PUNTLIDGE RIVER, VANCOUVER ISLAND (1036).

Location.—One mile from mouth, downstream side of highway bridge, 1 mile from Courtenay.

Records available.—Gauge readings twice a day, May 30 1914, to December 31, 1914.

Drainage area.—Two hundred square miles.

Gauge.—Fourteen-foot wooden staff nailed to piling of right abutment of trussed span of railway bridge, downstream side.

Channel.—Straight for 800 feet upstream, and 200 feet downstream, even gravel bed; good control; one channel, except in extreme high water when there is one small side channel.

Discharge Measurements.—Four in 1914, covering all but highest stage.

Winter flow.—Open all year.

Accuracy.—Between discharge of 400 and 4,000 cubic feet per second, accuracy B. Below discharge of 400 and above 4,000 cubic feet per second, accuracy C.

PUNTLIDGE RIVER (1036).

The Puntledge river flows from Comox lake to the sea in Comox harbour, a distance of about 8 miles. Comox lake covers an area of about 9 square miles, and lies at an altitude of some 430 feet. The lake is fed from the mountains by several large creeks, the most important of which are the Cruikshank river and Trout creek. The drainage area of Puntledge river is 200 square miles.

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The precipitation is heavy, varying from 70 inches at mouth to over 100 inches at headwaters.

The Canadian Collieries (Dunsmuir), Limited, have installed a hydroelectric development for 25,000 horse-power on this river about 5 miles below Comox lake. A brief description of this development may be found under the heading of "Hydro-Electric Developments in Operation."

Brown river, a tributary entering the Puntledge river from the north, is being investigated with a view of obtaining a water supply for the town of Courtenay.

Another small development may be made on the Puntledge river, about half a mile below the power-house of the Canadian Collieries plant, by the erection of a dam.

DISCHARGE MEASUREMENTS of Puntledge River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May...30.....	Webb & Cotton.....	1057	186	463	5.3	3.58	2,450*
July 17.....	C. P. Cotton.....	1057	146	378	4.8	3.50	1,820
Sept. 4.....	C. E. Webb.....	1057	127	159	2.9	1.80	457
Nov. 10.....	do.....	1057	324	631	5.5	4.68	3,490

*Station established.

MONTHLY DISCHARGE of Puntledge River one mile from mouth, for 1914.

(Drainage area, 200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	2,250	1,570	1,840	9.20	10.30	109,000	B
July.....	2,310	800	1,400	7.00	8.07	86,100	B
August.....	840	480	610	3.05	3.52	37,500	B
September.....	2,550	450	750	3.75	4.18	44,600	B
October.....	13,000	680	3,950	19.75	22.75	243,000	C
November.....	3,810	2,550	3,220	16.10	18.00	192,000	B
December.....	3,180	510	1,380	6.90	8.00	84,900	B

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth, for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3.7	2,190	3.42	1,870	2.25	800	1.8	480	2.6	1,090
2			3.75	2,250	3.55	2,010	2.3	840	1.8	480	2.57	1,060
3			3.75	2,250	3.6	2,070	2.27	820	1.8	480	2.55	1,040
4			3.65	2,130	3.65	2,130	2.2	760	1.8	480	2.5	1,000
5			3.5	1,950	3.8	2,310	2.15	720	1.8	480	2.5	1,000
6			3.4	1,850	3.8	2,310	2.15	720	1.8	480	2.45	960
7			3.5	1,950	3.5	1,950	2.2	760	1.8	480	2.4	920
8			3.55	2,010	3.1	1,550	2.2	760	1.8	480	2.3	840
9			3.5	1,950	2.95	1,410	2.2	760	1.8	480	2.15	720
10			3.5	1,950	2.8	1,270	2.15	720	1.8	480	2.1	680
11			3.53	1,990	2.8	1,270	2.05	640	1.8	480	3.3	1,750
12			3.58	2,050	2.84	1,310	1.95	570	1.8	480	5.45	4,810
13			3.58	2,050	2.87	1,330	1.9	540	1.8	480	5.6	5,100
14			3.55	2,010	2.95	1,410	1.9	540	1.8	480	5.4	4,720
15			3.3	1,750	3.13	1,580	1.9	540	1.75	450	7.65	9,880
16			3.25	1,700	3.4	1,850	1.95	570	1.8	480	8.9	13,000
17			3.2	1,650	3.0	1,450	1.9	540	1.95	570	7.7	10,000
18			3.2	1,650	2.6	1,090	1.9	540	2.17	740	7.4	9,250
19			3.2	1,650	2.48	980	1.9	540	4.0	2,550	6.75	7,650
20			3.25	1,700	2.85	1,310	1.9	540	2.55	1,050	6.5	7,050
21			3.2	1,650	3.1	1,550	1.9	540	2.45	960	6.05	6,020
22			3.15	1,600	3.05	1,500	1.9	540	2.4	920	5.45	4,810
23			3.12	1,570	2.75	1,230	1.9	540	2.35	880	4.9	3,860
24			3.15	1,600	2.38	900	1.9	540	2.3	840	4.65	3,480
25			3.17	1,620	2.32	860	1.9	540	2.35	880	4.53	3,290
26			3.17	1,620	2.3	840	1.9	540	2.37	890	4.43	3,150
27			3.2	1,650	2.3	840	1.85	510	2.47	970	4.33	3,010
28			3.22	1,670	2.3	840	1.85	510	2.65	1,140	4.3	2,970
29			3.32	1,770	2.27	820	1.85	510	2.85	1,310	4.3	2,970
30	3.6	2,070	3.37	1,820	2.25	800	1.8	480	2.68	1,160	4.35	3,040
31	3.65	2,130			2.25	800	1.8	480			4.48	3,220

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DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth,
for 1914—*Con.*

DAY.	NOVEMBER.		DECEMBER.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	4.5	3,250	4.45	3,180
2.....	4.57	3,350	4.37	3,070
3.....	4.6	3,400	3.27	2,930
4.....	4.52	3,280	4.17	2,790
5.....	4.5	3,250	4.07	2,650
6.....	4.57	3,350	4.0	2,550
7.....	4.67	3,500	3.9	2,430
8.....	4.77	3,650	3.82	2,330
9.....	4.8	3,700	3.65	2,130
10.....	4.72	3,580	3.45	1,900
11.....	4.72	3,580	3.32	1,770
12.....	4.57	3,350	3.17	1,620
13.....	4.42	3,140	2.95	1,400
14.....	4.27	2,930	2.75	1,230
15.....	4.17	2,800	2.58	1,070
16.....	4.12	2,720	2.4	920
17.....	4.1	2,690	2.12	700
18.....	4.02	2,580	2.1	680
19.....	4.0	2,550	2.1	680
20.....	4.0	2,530	2.05	640
21.....	4.12	2,720	2.0	600
22.....	4.22	2,860	2.0	600
23.....	4.37	3,070	2.0	600
24.....	4.52	3,280	1.95	570
25.....	4.62	3,430	1.9	540
26.....	4.75	3,620	1.9	540
27.....	4.87	3,810	1.85	510
28.....	4.85	3,780	1.85	510
29.....	4.75	3,620	1.9	540
30.....	4.55	3,330	1.92	550
31.....			2.05	640

PUNTLLEDGE RIVER (1063) AT DIVERSION DAM.

Location.—At diversion dam of Puntledge river, hydro-electric installation, Canadian Collieries (Dunsmuir), Limited.

Records available.—June 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—175 square miles.

Gauge.—Wooden staff located on right bank fifty feet above diversion dam.

Channel.—Very even flow.

Discharge measurements.—Daily discharge obtained by weir measurements over diversion dam plus water to flume.

Winter flow.—Open all year.

Co-operation.—All data on this station supplied through the kindness of Mr. L. Netland, resident Engineer for Canadian Collieries (Dunsmuir) Ltd.

PUNTLLEDGE RIVER (1063) AT DIVERSION DAM OF PUNTLLEDGE RIVER HYDRO-ELECTRIC INSTALLATION.

The diversion dam of the Puntledge river hydro-electric installation is located about $2\frac{1}{2}$ miles below Comox lake. The drainage area above dam is 175 square miles.

The station was established in June, 1913, by the Canadian Collieries (Dunsmuir), Limited, and daily discharges are obtained by gauge readings at crest of weir at diversion dam. The flow into flume to intake is added to the discharge over dam.

Mr. L. Netland, resident engineer of the Canadian Collieries Company has kindly supplied all the data on this station.

For climatic conditions, etc., see description of Puntledge river, No. 1036, near mouth.

MONTHLY DISCHARGE of Puntledge River at Diversion dam for Power plant, for 1914.

(Drainage area, 175 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	3,200	380	1,890	10.8	12.5	116,000
February	860	440	540	3.1	3.2	30,000
March	1,850	700	770	4.4	5.1	47,000
April	2,900	1,850	2,420	13.8	15.4	144,000
May	2,080	1,440	1,700	9.7	11.2	105,000
June	4,640	840	2,390	13.7	15.3	142,000
July	2,300	400	880	5.0	5.8	54,100
August	400	240	330	1.9	2.2	20,300
September	1,650	240	510	2.9	3.2	30,300
October	5,780	360	2,740	15.7	18.1	168,000
November	2,160	2,200	2,660	25.2	28.1	158,000
December	2,600	340	1,060	6.1	7.0	65,200
The year	5,780	240	1,490	9.4	127.1	1,079,900

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DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam,
Puntledge River Hydro-electric Installation, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....		380		560		860		1,850		2,080		3,500
2.....		600		600		860		1,850		1,440		5,400
3.....		800		560		800		1,850		1,840		5,100
4.....		960		560		800		2,000		1,840		4,640
5.....		1,200		560		700		2,000		1,760		4,480
6.....		1,480		560		700		2,050		1,760		4,200
7.....		2,200		480		700		2,050		1,750		4,060
8.....		3,200		480		700		2,300		1,650		3,900
9.....		2,200		500		700		2,300		1,650		3,400
10.....		3,000		500		700		2,300		1,650		3,100
11.....		3,000		500		700		2,300		1,650		2,750
12.....		3,200		500		700		2,380		1,520		2,640
13.....		3,180		440		760		2,480		1,520		2,520
14.....		3,000		440		800		2,750		1,650		2,320
15.....		2,900		440		800		2,900		1,750		1,850
16.....		2,800		460		800		2,760		1,740		920
17.....		2,600		460		760		2,600		1,740		800
18.....		2,500		460		1,200		2,600		1,740		1,280
19.....		2,400		460		800		3,100		1,740		1,300
20.....		2,200		460		800		3,100		1,740		1,240
21.....		2,100		460		800		2,740		1,740		1,240
22.....		1,960		460		880		2,800		1,740		1,240
23.....		1,760		520		1,800		2,720		1,730		1,240
24.....		1,650		650		1,800		2,600		1,730		1,160
25.....		1,480		700		1,850		2,600		1,730		1,240
26.....		1,300		700		1,850		2,500		1,730		1,240
27.....		1,150		780		1,850		2,400		1,730		1,240
28.....		1,000		860		1,850		2,300		1,720		1,240
29.....		660				1,850		2,200		1,650		1,240
30.....		400				1,850		2,200		1,560		1,240
31.....		460				1,850				1,560		

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DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam
Puntledge River Hydro-electric Installation, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....		1,440		360		240		900		2,500		2,600
2.....		1,580		360		240		800		2,900		2,600
3.....		1,580		360		240		600		2,760		2,500
4.....		1,590		361		240		560		3,000		2,300
5.....		1,780		360		240		560		2,720		2,050
6.....		2,300		360		240		560		2,720		2,050
7.....		2,050		360		240		500		2,720		2,050
8.....		1,400		360		240		450		2,720		2,000
9.....		700		400		240		450		3,000		1,750
10.....		700		400		240		360		3,160		1,550
11.....		700		360		240		2,500		3,160		1,450
12.....		700		340		240		3,200		2,750		1,200
13.....		700		340		240		2,850		2,750		800
14.....		700		340		240		4,800		2,750		560
15.....		700		340		240		5,760		2,600		480
16.....		700		340		240		5,780		2,500		460
17.....		660		340		240		5,760		2,500		500
18.....		660		340		240		5,300		2,300		500
19.....		660		340		250		4,960		2,200		500
20.....		560		340		260		5,250		2,200		500
21.....		560		340		700		5,250		2,200		460
22.....		560		340		880		4,200		2,200		460
23.....		560		340		880		2,760		2,300		470
24.....		560		340		880		2,760		2,400		420
25.....		560		300		950		2,760		2,550		420
26.....		500		260		950		2,280		2,700		360
27.....		460		250		950		2,280		3,000		360
28.....		460		240		950		2,400		3,000		340
29.....		400		240		1,650		2,400		2,990		340
30.....		400		240		1,600		2,400		2,600		380
31.....		400		240				2,500				420

SHAWNIGAN CREEK (1025).

Location.—Five hundred feet from outlet of Shawnigan lake, upstream side of Esquimalt and Nanaimo Railway bridge, 300 yards from Koenigs station.

Records Available.—Gauge readings daily, May 11, 1914 to December 31, 1914.

Drainage Area.—Twenty-two square miles.

Gauge.—Six-foot enamel staff nailed to piling on left downstream side of highway bridge at outlet from lake.

Channel.—Straight for 50 feet on both sides of section; gravel and sand bed; one channel only.

Discharge Measurements.—One in 1913, Provincial Water Rights Branch; four in 1914, covering all stages.

Winter Flow.—Open all year.

Accuracy.—Between discharge of 0 and 280 cubic feet per second, accuracy

A. Above discharge of 280 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch.

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SHAWNIGAN CREEK (1025).

Shawnigan creek is the outlet of Shawnigan lake to the sea in Mill bay on Saanich inlet. It is some 4 miles in length. The drainage area above the metering section, which is located at the outlet of Shawnigan lake, is 22 square miles.

Shawnigan lake lies at an altitude of 381 feet and covers an area of 3 square miles. The Esquimalt and Nanaimo railway is located along the east shore, and the Canadian Northern railway along the west shore. There are several large sawmills located on Shawnigan lake. The lake is popular with the tourists, there being two hotels, and many fine summer homes along its shores.

The precipitation averages about 40 inches. July and August are dry months, and the water goes very low. In the summer of 1914 Shawnigan creek had no flow for several weeks.

The principal use for the water of this lake would be for municipal supply; with an impounding dam at its outlet, considerable water could be stored.

DISCHARGE MEASUREMENTS of Shawnigan River near Shawnigan Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 11.....	C. E. Webb.....	1057	19	41	0.6	1.71	25.2 ¹
July 5.....	Webb and Cotton.....	1057	18	11	0.3	1.05	3.3 ²
Aug. 8.....	C. P. Cotton.....	1057	3	1	0.3	0.43	0.3
Sept. 16.....	C. E. Webb.....	1057	.....	.....	.....	0.00	0.0
Nov 24.....	".....	1933	32	98	2.5	4.33	245.0

¹ Station established. ² Several different sections used.

MONTHLY DISCHARGE of Shawnigan Creek near Shawnigan Lake, for 1914.

(Drainage area, 22 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	10.0	5.0	8.0	0.36	0.40	476
July.....	5.0	1.2	31.0	1.41	1.63	1,910
August.....	1.2	0.0	0.2	0.01	0.01	12
September.....	0.0	0.0	0.0	0.00	0.00	0
October.....	22.0	0.0	8.0	0.36	0.42	492
November.....	240.0	39.0	180.0	8.18	9.13	10,700
December.....	204.0	59.0	117.0	5.32	6.13	7,190

Accuracy "A."

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DAILY GAUGE HEIGHT AND DISCHARGE of Shawnigan Creek at Shawnigan lake,
for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-3	10	1-1	5-0	0-65	1-2		0-0	0-0	0-0
2			1-3	10	1-1	5-0	0-5	0-6		0-0	0-0	0-0
3			1-3	10	1-1	5-0	0-5	0-6		0-0	0-0	0-0
4			1-3	10	1-1	5-0	0-5	0-6		0-0	0-0	0-0
5			1-3	10	1-1	5-0	0-55	0-8		0-0		0-0
6			1-3	10	1-05	4-0	0-45	0-5		0-0		0-0
7			1-3	10	1-05	4-0	0-4	0-3		0-0		0-0
8			1-3	10	1-05	4-0	0-4	0-3		0-0	0-0	0-0
9			1-3	10	1-0	3-0	0-4	0-3	0-0	0-0	0-05	0-0
10			1-3	10	1-0	3-0	0-4	0-3	0-0	0-0	0-10	0-0
11	1-7	24	1-3	10	1-0	3-0	0-35	0-2	0-0	0-0	0-20	0-1
12	1-7	24	1-3	10	1-0	3-0	0-30	0-2		0-0	0-40	0-3
13	1-7	24	1-3	10	1-0	3-0	0-25	0-2		0-0	0-4	0-3
14	1-65	22	1-25	9	1-0	3-0	0-2	0-1		0-0	0-4	0-3
15	1-65	22	1-25	9	1-0	3-0	0-15	0-1		0-0	0-5	0-6
16	1-6	20	1-25	8	1-05	4-0	0-15	0-1	0-0	0-0	0-6	1-0
17	1-6	20	1-2	7	1-05	4-0	0-10	0-0		0-0	0-8	2-0
18	1-6	20	1-2	7	1-05	4-0	0-10	0-0		0-0	1-0	3-0
19	1-55	18	1-2	7	0-9	2-5	0-05	0-0		0-0	1-2	7-0
20	1-55	18	1-15	6	0-9	2-5	0-0	0-0		0-0	1-4	13-0
21	1-5	16	1-15	6	0-85	2-3		0-0	0-0	0-0	1-5	16-0
22	1-5	16	1-1	5	0-85	2-3		0-0	0-0	0-0	1-55	18-0
23	1-5	16	1-1	5	0-8	2-0		0-0		0-0	1-6	20-0
24	1-45	15	1-1	5	0-8	2-0		0-0		0-0	1-6	20-0
25	1-45	15	1-1	5	0-8	2-0		0-0		0-0	1-6	20-0
26	1-45	15	1-1	5	0-75	1-8		0-0	0-0	0-0	1-6	20-0
27	1-4	13	1-1	5	0-75	1-8		0-0	0-0	0-0	1-6	20-0
28	1-4	13	1-1	5	0-7	1-5		0-0		0-0	1-6	20-0
29	1-35	12	1-1	5	0-7	1-5		0-0		0-0	1-6	20-0
30	1-35	11	1-1	5	0-65	1-3		0-0	0-0	0-0	1-6	20-0
31	1-3	10			0-65	1-2		0-0			1-65	22-0

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DAILY GAUGE HEIGHT AND DISCHARGE of Shawnigan Creek at Shawnigan lake,
for 1914.—*Con.*

DAY.	November.		December.	
	Gauge Height.	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-00	39	4-50	264
2.....	2-7	89	4-0	210
3.....	2-8	97	3-8	190
4.....	3-0	114	3-6	170
5.....	3-1	123	3-4	150
6.....	3-3	141	3-5	160
7.....	3-4	150	3-6	170
8.....	3-5	160	3-65	175
9.....	3-5	160	3-5	160
10.....	3-5	160	3-4	150
11.....	3-55	165	3-3	141
12.....	3-55	165	3-2	132
13.....	3-65	175	3-15	128
14.....	3-8	190	3-1	123
15.....	3-8	190	3-05	118
16.....	3-85	195	3-0	114
17.....	3-9	200	2-9	105
18.....	3-95	205	2-8	97
19.....	4-0	210	2-7	89
20.....	4-0	210	2-65	85
21.....	4-0	210	2-5	73
22.....	4-1	220	2-45	70
23.....	4-2	230	2-4	66
24.....	4-25	235	2-4	66
25.....	4-3	240	2-3	59
26.....	4-3	240	2-35	63
27.....	4-3	240	2-3	59
28.....	4-2	230	2-3	59
29.....	4-1	220	2-3	59
30.....	4-05	215	2-3	59
31.....			2-3	59

SPROAT RIVER, VANCOUVER ISLAND, (1051).

Location.—Eight hundred feet below outlet from Sproat lake, 8 miles from Alberni.

Records Available.—Gauge readings four times a week; March 1, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and twenty-eight square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on lake shore, 300 feet to right of outlet

Channel.—Slight curve at section, straight for 500 feet above and below, gravel and boulder bed, solid rock on left side, good control, rapids and falls below section.

Discharge Measurements.—Six in 1913 by Provincial Water Rights Branch; four in 1914, covering all but highest stage.

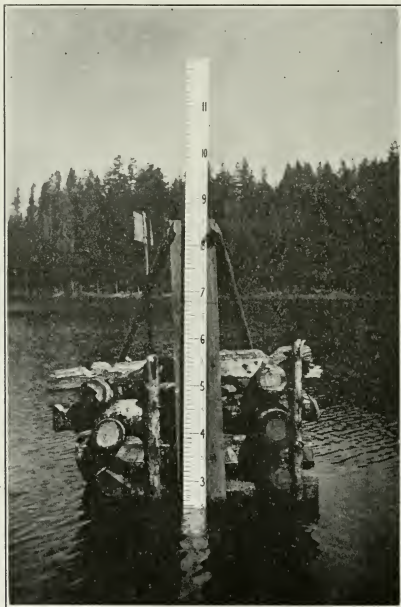
Winter Flow.—Open all winter.

Accuracy.—Between discharge of 700 and 2,100 cubic feet per second, accuracy A. Below discharge of 700 and above 2,100 cubic feet per second, accuracy B.

Co-operation.—Station established in 1913 by Provincial Water Rights Branch.

SPROAT RIVER (1051).

Sproat river is the outlet of Sproat lake, which lies at an altitude of about 80 feet. Sproat river flows in an easterly direction, and is some 3 miles in length. At its mouth it joins the Stamp river. The combined flow of these two streams is known as the Somass river, and is about 4 miles in length. The Somass river empties into the Alberni canal at Alberni.



Wooden Staff Gauge on Sproat lake near outlet, attached to rock filled crib.

The gauging station on Sproat river is located near the outlet from Sproat lake. The drainage area above station is 128 square miles. Sproat lake itself covers an area of 17 square miles.

This drainage is thickly timbered, except, of course, in the highest altitudes. The precipitation is heavy in this district. It varies from about 70 inches at mouth of Sproat river to 110 inches in mountains at headwaters in Clayoquot divide.

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Sproat river offers good possibilities for a hydro-electric development at falls, about half a mile from lake. The river drops 44 feet at this point, and in rapids below it drops another 15 feet in half a mile. It would be feasible to build an impounding dam at outlet from lake to raise water level of lake some 40 feet. By this means a head of nearly 100 feet might be obtained in a distance of 1 mile, and the regulation of the flow of stream.



Metering Section on Sproat river near outlet from Sproat lake.

Another larger development would be to bring water from Great Central lake, a distance of some $3\frac{1}{2}$ miles, by means of a tunnel and pipe line. A head of about 170 feet may be obtained.

DISCHARGE MEASUREMENTS of Sproat River near Sproat Lake, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec -ft
June 18.	Webb and Cotton	1057	98	474	2.3	4.03	977 ¹
July 30.	C. P. Cotton	1057	86	308	1.4	2.48	435
Sept 10.	C. E. Webb	1057	77	212	0.8	1.43	160
Dec. 12.	"	1933	122	596	2.9	5.39	1 700

¹ Station established.

MONTHLY DISCHARGE of Sproat River at Sproat lake, for 1914.

(Drainage area, 128 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	5,900	1,750	3,470	27-10	31-20	213,000	B
February.....	1,840	960	1,260	9-85	10-26	70,000	B
March.....	3,370	1,750	2,360	18-40	21-20	145,000	B
April.....	4,560	1,720	2,950	23-02	25-68	176,000	B
May.....	2,100	1,200	1,540	12-05	13-89	94,700	B
June.....	1,206	830	985	7-69	8-58	58,600	B
July.....	820	440	625	4-88	5-63	38,400	B
August.....	420	200	295	2-30	2-65	18,100	B
September.....	680	160	355	2-77	3-09	21,100	B
October.....	8,100	610	3,440	26-90	31-00	212,000	C
November.....	5,600	2,440	4,120	32-20	35-90	245,000	B
December.....	4,230	740	1,650	12-90	14-90	101,000	B
The year.....	8,100	160	1,920	15-00	203-98	1,392,900	B

DAILY GAUGE HEIGHT AND DISCHARGE of Sproat River at Sproat Lake, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	3-65	820	2-4	420	1-52	200	3-25	680	7-48	3,350	8-3	4,230
2.	3-64	820	2-35	400	1-5	190	3-3	690	7-89	3,780	7-91	3,800
3.	3-5	760		390		190	3-29	680	8-1	4,000	7-55	3,400
4.		760	2-25	380	1-45	180	3-25	670	8-6	4,560	7-15	3,050
5.		770	2-23	370		180		660	8-4	4,340	6-8	2,730
6.	3-55	780		370	1-42	180	3-18	650	8-18	4,100	6-61	2,570
7.		750	2-21	360	1-41	170	3-12	640	8-66	4,600	6-4	2,400
8.	3-42	730	2-21	350	1-5	190	3-03	620	9-25	5,300	6-18	2,220
9.		710		360	1-45	180	3-02	610	9-49	5,570	5-95	2,050
10.	3-3	690	2-2	360	1-45	180	3-08	610	9-02	5,000	5-75	1,930
11.		680	2-15	350		180	3-05	620	8-78	4,760	5-57	1,800
12.	3-21	660		330	1-45	180	3-65	820	8-62	4,580	5-3	1,660
13.	3-19	660	2-05	310	1-45	180	6-95	2,860	8-35	4,300	5-1	1,540
14.	3-15	650	2-0	300		180	8-6	4,560	8-0	3,900	4-95	1,450
15.	3-1	630		290	1-4	170	8-55	4,500	7-55	3,400	4-75	1,330
16.	3-03	610	1-95	280	1-38	160	9-83	6,000	7-2	3,090	4-69	1,300
17.	3-0	600	1-93	280	1-38	160	10-80	7,260	6-78	2,700	4-55	1,230
18.	3-0	600	1-9	270	1-7	230	11-28	8,000	6-56	2,500	4-39	1,150
19.	2-98	590	1-88	270	2-39	410	11-39	8,100	6-55	2,500	4-24	1,080
20.	2-95	580		260	3-1	630	11-39	8,100	6-45	2,440	4-2	1,050
21.	2-9	570	1-8	250	3-15	650	11-00	7,500	6-58	2,540	4-05	990
22.		550		250	3-1	630	10-20	6,500	7-07	3,000	3-97	950
23.	2-8	540	1-8	250	3-05	610	9-50	5,600	7-67	3,550	3-87	900
24.	2-72	510	1-76	240	3-02	600	9-11	5,100	8-8	4,780	3-8	880
25.	2-71	510	1-68	220	2-95	580	8-5	4,450		4,990	3-7	840
26.	2-7	510		220	2-98	590	7-98	3,900	9-25	5,300	3-62	810
27.		500	1-65	220	3-0	600	7-6	3,470	9-35	5,400	3-5	760
28.	2-6	480		220	3-2	660	7-42	3,300	9-5	5,600	3-45	740
29.	2-55	470	1-6	210	3-29	680	7-2	3,090	8-88	4,970	3-45	740
30.	2-5	450	1-58	200	3-28	680	7-25	3,130	8-65	4,600	3-49	750
31.	2-45	440	1-55	200			7-35	3,220			3-5	760

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE OF SPROAT RIVER AT SPROAT LAKE, for 1914
—Con.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		2,000	5-5	1,780	6-9	2,820	5-4	1,720	6-0	2,100	4-5	1,200
2		2,100	5-47	1,750		2,860	5-4	1,720	5-8	1,960		1,190
3	6-55	2,500	5-25	1,630	7-10	3,000	5-8	1,960	5-78	1,950	4-48	1,170
4	7-1	3,000		1,550	7-5	3,370	6-2	2,240		1,880		1,150
5	8-42	4,350	5-0	1,480	7-1	3,000	6-9	2,820	5-52	1,800	4-35	1,130
6	9-75	5,900	4-85	1,400	6-85	2,770		2,800		1,780	4-31	1,110
7		5,550	4-79	1,350	6-7	2,640	6-85	2,770	5-48	1,760		1,080
8	9-2	5,220	4-65	1,270		2,400		2,600	5-48	1,760	4-25	1,070
9	8-6	4,560	4-57	1,230		2,300	6-5	2,480		1,710	4-2	1,050
10		4,700	4-5	1,200	6-1	2,170	6-4	2,400	5-3	1,660		1,030
11	8-89	4,980	4-42	1,160		2,050		2,300		1,630	4-1	1,000
12	9-54	5,640	4-36	1,130	5-8	1,960	6-2	2,240	5-2	1,600	4-1	1,000
13		5,300	4-28	1,090	6-1	2,170	6-6	2,560		1,570	4-0	960
14	9-01	5,000	4-22	1,060	6-8	2,730	7-6	3,470	5-1	1,540		960
15	8-75	4,700		1,040	6-8	2,700		3,570		1,500	4-0	960
16	8-4	4,340		1,000	6-7	2,640	7-8	3,680	5-0	1,480		960
17	7-99	3,900		1,000	6-65	2,600		3,720	4-8	1,360		970
18		3,600		1,000	6-6	2,560	7-9	3,790		1,360	4-05	980
19	7-52	3,400		1,000	6-5	2,480	8-6	4,560	4-8	1,360	4-0	960
20		3,150		1,000	6-5	2,480	8-4	4,340		1,360	3-95	940
21	7-0	2,900		980	6-4	2,400	8-0	3,900	4-8	1,360		930
22	6-68	2,600		980	6-3	2,320		3,600		1,360	3-88	910
23	6-41	2,400	4-0	960	6-1	2,170	7-5	3,370	4-8	1,360	3-85	900
24	6-29	2,200		1,100	5-85	2,000		3,470		1,360		890
25	6-1	2,170	4-6	1,250	5-75	1,930	7-7	3,570	4-8	1,360	3-8	880
26	5-98	2,100	5-0	1,480	5-7	1,900	7-7	3,570	4-8	1,360	3-77	860
27	5-75	1,930	5-3	1,660	5-7	1,900	6-98	2,820		1,330		850
28		1,800	5-6	1,840	5-5	1,780	6-35	2,360	4-7	1,300	3-7	840
29	5-42	1,750				1,760	6-05	2,130	4-65	1,270	3-7	840
30	5-75	1,930			5-45	1,750		2,110	4-6	1,250	3-68	830
31		1,850				1,730			4-5	1,200		

STAMP RIVER, VANCOUVER ISLAND (1052) AT GREAT CENTRAL LAKE.

Location.—Three hundred feet below outlet from Great Central lake, 16 miles from Alberni.

Records Available.—Gauge readings twice daily; February 20, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and seventy-seven square miles.

Gauge.—Twelve-foot wooden staff nailed to crib in lake, 300 feet to right of outlet, near the "Ark."

Channel.—Straight for 300 feet above and 100 feet below; rocky bed, some boulders; one channel at all stages; at extreme high stage there is a discharge from slough 1,000 feet to right of stream.

Discharge Measurements.—Seven in 1913, Provincial Water Rights Branch; four in 1914, covering all but highest stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 90 and 6,000 cubic feet per second, accuracy B. Above discharge of 6,000 cubic feet per second, accuracy C.

Co-operation.—Station established by Provincial Water Rights Branch.

STAMP RIVER (1052) AT GREAT CENTRAL LAKE.

Stamp river is the outlet from Great Central lake, It flows in a northerly direction for a distance of about 3 miles, where it is entered on the left by the Ash river. From this point Stamp river flows south till it enters the Somass river, 4 miles from the Alberni Canal.

This gauging station is located on the river at outlet from Great Central lake. The gauge is situated in the lake close to head of river. The drainage area above gauging station is 177 square miles. Great Central lake covers an area of 19 square miles. It is about 270 feet above sea-level. Two good-sized mountain-fed streams—McBride creek and Drinkwater creek—enter the lake at the western end.

A hydro-electric development, giving a head of some 170 feet, is possible by the construction of a short tunnel through the divide between Great Central lake and Sproat lake, feeding a pipeline to a power-house located at Sproat lake. The total distance is about $3\frac{1}{2}$ miles.

The precipitation is high, varying from about 80 inches at head of river to over 120 inches in mountains at head of lake.

The drainage is thickly timbered except on the higher mountains.

DISCHARGE MEASUREMENTS of Stamp River near Great Central Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
June 19.....	Webb & Cotton.....	1057	140	680	2.9	4.00	1980 ¹
July 30.....	C. P. Cotton.....	1057	130	502	1.8	2.32	919
Sept. 10.....	C. E. Webb.....	1057	107	333	1.2	1.28	410
Dec. 12.....	do.....	1057	136	642	2.8	3.70	1,770

¹Station established.

MONTHLY DISCHARGE of Stamp River at Great Central Lake, for 1914.

(Drainage area, 177 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	4,850	1,820	3,208	18.12	20.90	197,000	B
February.....	1,870	900	1,240	7.01	7.30	68,900	A
March.....	2,760	1,900	2,436	13.75	15.85	150,000	B
April.....	4,820	2,030	3,316	18.72	20.90	197,000	B
May.....	2,540	2,050	2,317	13.08	15.08	143,000	B
June.....	2,070	1,700	1,848	10.44	11.65	110,000	A
July.....	1,750	890	1,368	7.73	8.91	84,200	A
August.....	850	450	437	3.60	4.15	39,200	B
September.....	1,310	340	707	4.00	4.46	42,100	B
October.....	8,300	1,010	3,793	21.42	24.70	233,000	B
November.....	5,370	2,570	4,113	23.24	25.95	245,000	B
December.....	4,200	720	1,731	9.78	11.28	106,000	B
The year.....	8,300	340	2,230	12.60	171.13	1,615,400	B

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DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great Central Lake,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-76	1,820	3-74	1,800	4-20	2,130	4-27	2,180	4-61	2,460	4-04	2,020
2	3-8	1,850	3-62	1,750	4-60	2,450	4-66	2,030	4-71	2,540	4-1	2,060
3	4-24	2,170	3-51	1,650	4-76	2,570	4-24	2,160	4-7	2,530	4-1	2,070
4	5-39	3,100	3-39	1,560	4-87	2,660	4-58	2,430	4-67	2,500	4-69	2,050
5	6-24	3,900	3-28	1,480	4-78	2,600	4-83	2,640	4-54	2,400	3-99	1,980
6	6-91	4,600	3-12	1,380	4-6	2,450	5-35	3,070	4-41	2,300	3-89	1,910
7	6-87	4,550	3-0	1,300	4-49	2,360	5-47	3,180	4-39	2,280	3-79	1,840
8	6-67	4,330	2-92	1,250	4-36	2,270	5-38	3,100	4-46	2,330	3-75	1,800
9	6-35	4,000	3-83	1,870	4-28	2,200	5-29	3,020	4-49	2,360	3-69	1,770
10	6-13	3,800	2-78	1,150	4-08	2,050	5-24	2,980	4-49	2,360	3-66	1,750
11	6-58	4,200	2-7	1,120	3-97	1,970	5-2	2,940	4-48	2,350	3-62	1,720
12	7-13	4,850	2-66	1,100	3-88	1,900	5-19	2,930	4-5	2,370	3-61	1,710
13	7-05	4,750	2-54	1,030	3-95	1,960	5-38	3,100	4-49	2,360	3-66	1,750
14	6-76	4,400	2-49	1,000	4-68	2,500	6-2	3,850	4-48	2,350	3-75	1,800
15	6-79	4,140	2-49	1,000	4-98	2,750	6-86	4,550	4-48	2,350	3-86	1,890
16	6-29	3,900	2-45	970	4-99	2,760	6-86	4,550	4-42	2,300	3-9	1,920
17	5-95	3,600	2-42	950	4-94	2,730	6-66	4,320	4-38	2,270	3-94	1,950
18	5-78	3,450	2-4	940	4-93	2,720	6-73	4,400	4-3	2,210	3-99	1,980
19	5-52	3,250	2-38	930	4-88	2,670	7-1	4,820	4-26	2,170	4-01	2,000
20	5-3	3,030	2-34	900	4-88	2,670	6-98	4,680	4-22	2,150	3-98	1,970
21	5-06	2,800	2-39	930	4-92	2,620	6-79	4,470	4-27	2,190	3-88	1,900
22	5-85	3,500	2-4	940	4-97	2,750	6-38	4,030	4-3	2,210	3-76	1,800
23	5-57	3,300	2-53	1,020	4-96	2,750	5-95	3,600	4-4	2,290	3-67	1,750
24	4-38	2,250	2-73	1,140	4-88	2,670	5-67	3,370	4-52	2,400	3-65	1,740
25	4-28	2,200	2-8	1,180	4-78	2,600	5-44	3,160	4-58	2,430	3-64	1,730
26	4-27	2,200	2-93	1,250	4-71	2,540	5-23	2,970	4-6	2,450	3-62	1,720
27	4-03	2,000	3-25	1,460	4-58	2,430	5-22	2,960	4-5	2,370	3-65	1,740
28	3-87	1,900	3-53	1,670	4-39	2,280	5-02	2,800	4-32	2,230	3-61	1,720
29	3-83	1,880	.....	.....	4-24	2,170	4-83	2,640	4-26	2,170	3-58	1,700
30	3-81	1,860	.....	.....	4-25	2,160	4-73	2,550	4-18	2,110	3-6	1,710
31	3-8	1,850	.....	.....	4-29	2,200	.....	.....	4-08	2,050	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great Central Lake,
for 1914—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-58	1,700	2-25	850	1-37	440	2-96	1,270	6-0	3,660	6-54	4,200
2	3-61	1,720	2-19	820	1-32	420	3-00	1,300	6-14	3,800	6-19	3,840
3	3-67	1,750	2-13	800	1-3	410	2-96	1,270	6-31	3,960	5-89	3,560
4	3-67	1,750	2-1	780	1-26	390	2-88	1,230	6-58	4,240	5-56	3,260
5	3-67	1,750	2-07	750	1-22	380	2-83	1,200	6-51	4,160	5-23	2,970
6	3-64	1,750	2-1	780	1-2	370	2-72	1,130	6-28	3,920	5-0	2,770
7	3-54	1,670	2-07	750	1-22	380	2-66	1,100	6-01	3,670	4-76	2,580
8	3-43	1,600	2-06	750	1-26	390	2-59	1,050	7-19	4,930	4-56	2,400
9	3-32	1,520	2-07	750	1-21	370	2-54	1,020	7-57	5,370	4-28	2,200
10	3-35	1,530	2-01	740	1-22	380	2-51	1,010	7-53	5,340	4-1	2,060
11	3-31	1,510	1-99	720	1-25	390	2-51	1,010	7-42	5,200	3-93	1,950
12	3-24	1,470	1-97	710	1-19	370	3-1	1,360	7-05	4,760	3-74	1,820
13	3-19	1,420	1-95	700	1-17	360	5-98	3,650	6-71	4,380	3-54	1,670
14	3-1	1,360	1-9	680	1-09	340	7-51	5,300	6-34	4,000	3-4	1,570
15	3-17	1,400	1-87	660	1-10	340	7-44	5,210	5-9	3,570	3-23	1,450
16	3-15	1,390	1-83	650	1-14	350	8-48	6,630	5-55	3,250	3-13	1,380
17	3-10	1,360	1-8	630	1-18	370	9-42	7,960	5-39	3,110	3-0	1,300
18	3-09	1,350	1-78	610	1-39	440	9-67	8,300	4-74	2,570	2-83	1,200
19	3-07	1,340	1-76	600	2-32	900	9-56	8,150	4-82	2,630	2-78	1,170
20	3-04	1,330	1-71	590	2-9	1,240	9-56	8,150	4-86	2,660	2-71	1,130
21	2-99	1,300	1-69	580	2-94	1,260	9-1	7,500	4-86	2,660	2-6	1,060
22	2-92	1,250	1-61	540	2-9	1,240	8-51	6,650	5-58	3,280	2-58	1,050
23	2-83	1,200	1-58	510	2-86	1,200	7-86	5,760	5-91	3,580	2-44	960
24	2-76	1,150	1-58	510	2-8	1,180	7-28	5,060	6-72	4,400	2-3	880
25	2-71	1,130	1-52	500	2-76	1,150	6-76	4,440	7-41	5,200	2-1	780
26	2-6	1,060	1-5	490	2-7	1,120	6-39	4,040	7-54	5,360	2-08	770
27	2-54	1,020	1-48	480	2-82	1,200	5-99	3,650	7-54	5,360	2-08	770
28	2-44	960	1-46	470	2-9	1,240	5-63	3,330	7-36	5,130	2-07	760
29	2-34	900	1-41	450	3-02	1,310	5-37	3,100	7-09	4,800	1-99	720
30	2-33	900	1-43	460	2-98	1,300	5-51	3,220	6-78	4,450	2-09	770
31	2-3	880	1-4	450	.....	.....	5-92	3,600	.....	.....	2-11	780

STAMP RIVER, VANCOUVER ISLAND (1053), AT STAMP FALLS.

Location.—One-quarter mile above falls; 8 miles from Alberni on Beaver Creek road.

Records available.—Gauge readings daily, March, 1913, to December 31, 1913, Messrs. Ritchie, Agnew Co., Engineers, Victoria; January 1, 1914, to May 31, 1914, Messrs. Ritchie, Agnew Co., Engineers, Victoria; June 1, 1914, to December 31, 1914.

Drainage area.—Three hundred and thirty-six square miles.

Gauge.—Fourteen-foot wooden staff on left bank 80 feet below measuring section.

Channel.—Straight for 600 feet above section and for 300 feet below. Rock bed with gravel. Good control.

Discharge measurements.—Measurements in 1913 by Messrs. Ritchie, Agnew Co.; measurements in 1914 by Messrs. Ritchie, Agnew Co.; three measurements in 1914 covering all but high stage.

Winter flow.—Open all winter.

Co-operation.—Station established in 1913 by Messrs. Ritchie, Agnew Co.

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STAMP RIVER (1053).

This metering station is located on Stamp river about a quarter of a mile above Stamp falls. Stamp falls are some 3 miles above the junction of the Stamp and Sproat rivers.

At Stamp falls the river has the combined flow of the Ash river and Stamp river from Great Central lake. The drainage area above metering section is 336 square miles. The precipitation varies from about 70 inches at falls to over 100 inches at headwaters.

The Ritchie Agnew Power Company have made extensive surveys and obtained considerable stream data in this locality. It is understood they intend to install a hydro-electric plant at Stamp falls to develop 35,000 horse-power. A head of 110 feet may be obtained by the erection of a dam above the falls.

The towns of Alberni and Port Alberni are about 10 and 12 miles distant respectively, from Stamp falls.

DISCHARGE MEASUREMENTS of Stamp River near Stamp Falls, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 22.....	Webb & Cotton.....	1,057	155	1,130	2.3	2.48	2,630 ¹
July 31.....	C. P. Cotton.....	1,057	150	944	1.2	1.40	1,130
Sept. 11.....	C. E. Webb.....	1,057	141	750	0.7	0.60	500

¹Station established.

MONTHLY DISCHARGE of Stamp River at Stamp Falls, for 1914.

(Drainage area, 336 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	3,190	2,200	2,630	7.8	8.7	157,000	B
July.....	2,510	1,040	1,840	5.5	6.3	113,000	B
August.....	1,040	560	830	2.5	2.9	51,000	B
September.....	1,930	410	1,070	3.2	3.6	63,700	B
October.....	15,100	1,340	5,980	17.8	20.5	358,000	C
November.....	14,400	1,930	7,440	22.1	24.7	443,000	C
December..	5,530	880	2,100	6.3	7.3	129,000	B

NOTE.—Discharge measurements supplied by Messrs. Ritchie, Agnew Co., of Victoria, B.C.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-0	3,190	2-6	2,510	1-4	1,040	0-7	560	1-9	1,560	4-6	7,540
2	3-0	3,190	2-6	2,510	1-4	1,040	0-7	560	1-8	1,450	4-6	7,540
3	2-9	3,020	2-6	2,510	1-3	960	0-6	510	1-8	1,450	4-75	8,110
4	2-8	2,850	2-5	2,340	1-3	960	0-6	510	1-9	1,560	5-1	9,520
5	2-7	2,680	2-5	2,340	1-2	880	0-5	460	1-9	1,560	4-7	7,920
6	2-6	2,510	2-5	2,340	1-2	880	0-4	410	1-9	1,560	4-1	5,800
7	2-6	2,510	2-3	2,060	1-2	880	0-4	410	1-8	1,450	4-0	5,530
8	2-5	2,340	2-3	2,060	1-2	880	0-4	410	1-8	1,450	5-4	10,800
9	2-4	2,200	2-3	2,060	1-3	960	0-6	510	1-7	1,340	6-25	14,400
10	2-4	2,200	2-3	2,060	1-4	1,040	0-6	510	1-7	1,340	5-4	10,800
11	2-5	2,340	2-2	1,930	1-3	960	0-6	510	1-7	1,340	5-1	9,520
12	2-6	2,510	2-2	1,930	1-2	880	0-6	510	3-6	4,490	4-6	7,540
13	2-6	2,510	2-2	1,930	1-2	880	0-9	660	5-1	9,520	4-2	6,100
14	2-6	2,510	2-3	2,060	1-2	880	0-9	660	6-0	13,400	3-75	4,880
15	2-8	2,850	2-3	2,060	1-2	880	1-0	720	6-4	15,100	3-5	4,240
16	2-8	2,850	2-2	1,930	1-2	880	1-3	960	6-4	15,100	3-3	3,800
17	2-9	3,020	2-1	1,800	1-2	880	1-1	800	6-1	13,800	3-1	3,390
18	3-0	3,190	2-1	1,800	1-2	880	2-0	1,670	5-8	12,500	2-2	1,930
19	3-0	3,190	2-1	1,800	1-2	880	2-0	1,670	5-6	11,700	2-25	2,000
20	2-8	2,850	2-0	1,670	1-1	800	2-0	1,670	5-4	10,800	3-2	3,590
21	2-7	2,680	2-0	1,670	1-1	800	2-2	1,930	5-3	10,400	3-25	3,700
22	2-5	2,340	2-0	1,670	1-1	800	2-2	1,930	4-8	8,320	4-2	6,100
23	2-5	2,340	1-9	1,560	1-1	800	2-1	1,800	4-7	7,920	4-8	8,320
24	2-5	2,340	1-8	1,450	0-9	660	2-0	1,670	4-5	7,160	5-3	10,400
25	2-6	2,510	1-8	1,450	0-9	660	2-0	1,670	4-0	5,530	5-6	11,700
26	2-6	2,510	1-8	1,450	0-9	660	2-0	1,670	3-7	4,750	5-8	12,500
27	2-5	2,340	1-8	1,450	0-9	660	2-0	1,670	3-5	4,240	5-25	10,160
28	2-5	2,340	1-7	1,340	0-9	660	2-1	1,800	3-25	3,700	5-4	10,800
29	2-5	2,340	1-6	1,230	0-8	610	2-1	1,800	3-05	3,290	4-75	8,110
30	2-6	2,510	1-5	1,130	0-8	610	1-9	1,560	3-30	3,800	4-3	6,420
31			1-4	1,040	0-7	560			3-30	3,800		

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DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914—*Con.*

DAY.	December.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1	4.0	5,530
2	3.8	5,010
3	3.6	4,490
4	3.4	4,020
5	3.2	3,590
6	3.0	3,190
7	2.8	2,850
8	2.7	2,680
9	2.6	2,510
10	2.45	2,270
11	2.35	2,130
12	2.20	1,930
13	2.10	1,800
14	2.00	1,670
15	1.8	1,450
16	1.8	1,450
17	1.8	1,450
18	1.7	1,340
19	1.6	1,230
20	1.6	1,230
21	1.6	1,230
22	1.5	1,130
23	1.5	1,130
24	1.4	1,040
25	1.4	1,040
26	1.2	880
27	1.2	880
28	1.2	880
29	1.6	1,230
30	1.8	1,450
31	2.5	2,340

TSOLUM RIVER, VANCOUVER ISLAND, (1039).

Location.—Upstream side of footbridge, 2 miles from Sandwick.

Records available.—Gauge readings twice daily, May 31, 1914, to December 31, 1914.

Drainage area.—One hundred and fifty square miles.

Gauge.—Twelve-foot enamel staff, 20 feet downstream from bridge, right bank.

Channel.—Straight for 500 feet above and 300 feet below section; gravel bed; good control; stream confined in cribbing, both banks, in high water.

Discharge measurements.—One in 1912, Provincial Water Rights Branch; one in 1913, Provincial Water Rights Branch; four in 1914, covering all but high stage.

Winter flow.—Open all winter.

Accuracy.—B.

Co-operation.—Gauge installed by Provincial Water Rights Branch in 1912.

TSOLUM RIVER (1039).

Tsolum river rises in the mountains on the east coast, and flows in a southeasterly direction to its mouth in Comox harbour at Courtenay. It is some 20 miles in length, and has a drainage area of 150 square miles above the gauging station, which is located about 2 miles from mouth.

The precipitation varies from about 70 inches at mouth to 90 inches in mountains at headwaters. Wolfe lake, covering an area of about 1 square mile, drains into the Tsolum river about 7 miles from mouth.

The flow of Tsolum river has a large range. Having practically no storage, it is very flashy. From the records available for 1914 it shows a minimum discharge of 3 cubic feet per second on September 4 to a maximum of 2,100 cubic feet per second on September 18. The gauge was washed out during a freshet in October, but was replaced at the first opportunity.

A large proportion of the lower valley of the river is under cultivation. Dairying has been encouraged by the installation of a cream condenser at Courtenay, which takes all the milk available.

DISCHARGE MEASUREMENTS of Tsolum River near Sandwick, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 31.....	Webb & Cotton.....	1057	65	127	1.4	3.78	171 ¹
July 17.....	C. P. Cotton.....	1057	64	98	0.6	3.28	60
Sept. 8.....	C. E. Webb.....	1057	6	2	0.9	2.58	1.8 ²
Nov. 10.....	do.....	1057	98	291	3.0	5.30	882

¹ Station established.

² Low-water section.

MONTHLY DISCHARGE of Tsolum River three miles from mouth, for 1914.

(Drainage area, 150 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	520	95	230	1.53	1.71	13,700
July.....	195	18	63	0.42	0.48	3,870
August.....	28	4	11	0.07	0.08	675
September.....	2,100	3	310	2.06	2.30	18,400
October.....						
November.....	1,330	280	875	5.83	6.50	52,100
December.....	900	115	375	2.50	2.88	23,100

Accuracy "B".

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DAILY GAUGE HEIGHT AND DISCHARGE of Tsolum River three miles from mouth,
for 1914.

DAY.	May.		June.		July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			4.0	260	3.85	195	2.9	18	2.6	4	3.65	130
2			4.1	300	3.75	160	2.9	18	2.6	4	3.9	215
3			4.1	300	3.7	145	2.9	18	2.6	4	3.8	175
4			3.95	230	3.55	105	2.85	15	2.55	3	3.7	145
5			3.75	160	3.5	95	2.8	12	2.5	3	3.7	145
6			3.65	130	3.45	85	2.8	12	2.5	3	3.7	145
7			3.75	160	3.4	75	2.8	12	2.65	6	3.6	115
8			4.15	320	3.4	75	3.0	28	2.7	8	3.6	115
9			3.8	175	3.4	75	2.95	23	2.8	12	3.6	115
10			4.0	260	3.4	75	2.9	18	2.8	12	3.7	145
11			4.0	260	3.4	75	2.9	18	2.8	12	3.7	145
12			4.0	260	3.4	75	2.85	15	2.8	12	6.45	1,430
13			4.05	280	3.4	75	2.8	12	2.8	12		
14			4.0	260	3.35	68	2.8	12	2.8	12		
15			4.15	320	3.25	54	2.8	12	3.15	43		
16			4.3	400	3.2	48	2.8	12	3.75	160		
17			4.15	320	3.25	54	2.75	10	4.25	370		
18			3.85	195	3.2	48	2.7	8	7.8	2,100		
19			3.65	130	3.2	48	2.7	8	7.25	1,820		
20			3.6	115	3.2	48	2.7	8	6.2	1,310		
21			3.65	130	3.1	38	2.7	8	5.8	1,120		
22			3.65	130	3.0	28	2.7	8	4.9	690		
23			3.5	95	3.0	28	2.7	8	4.25	370		
24			3.75	160	3.0	28	2.7	8	4.0	260		
25			4.55	520	3.0	28	2.7	8	3.75	160	4.3	400
26			4.1	300	3.0	28	2.6	4	3.75	160	4.2	350
27			4.0	260	3.0	28	2.6	4	3.85	195	4.1	300
28			3.85	195	2.95	23	2.6	4	3.85	195	4.0	260
29			3.7	145	2.9	18	2.6	4	3.7	145	3.9	215
30			3.7	145	2.9	18	2.6	4		140	4.0	260
31	3.8	176			2.9	18	2.6	4			4.3	400

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Tsolum River three miles from mouth,
for 1914—*Con.*

DAY.	November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	5-0	740	5-35	900
2.....	5-2	830	5-0	740
3.....	5-35	900	4-9	690
4.....	5-35	900	4-8	640
5.....	5-35	900	4-8	640
6.....	4-9	690	4-9	690
7.....	5-05	760	5-0	740
8.....	5-75	1,100	5-0	740
9.....	6-15	1,280	4-9	690
10.....	5-8	1,120	4-7	590
11.....	5-35	900	4-35	420
12.....	4-95	710	4-0	260
13.....	4-6	540	4-0	260
14.....	4-5	500	3-9	215
15.....	4-45	470	3-9	215
16.....	4-35	420	3-9	215
17.....	4-2	350	3-9	215
18.....	4-05	280	3-9	215
19.....	4-45	470	3-8	175
20.....	4-85	660	3-8	175
21.....	5-8	1,120	3-8	175
22.....	6-4	1,410	3-8	175
23.....	6-1	1,260	3-8	175
24.....	5-9	1,170	3-8	175
25.....	6-0	1,220	3-7	145
26.....	6-0	1,220	3-6	115
27.....	5-85	1,150	3-6	115
28.....	6-25	1,330	3-6	115
29.....	5-5	980	3-7	145
30.....	5-3	880	3-9	215
31.....	.....	.....	4-7	590

BRIDGE RIVER (1045).

Location.—Highway bridge on road to Bridge river from Mission on Seton lake. Ten miles from Mission.

Records available.—Daily discharges, October 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—The 1912 provincial map (scale 17.75 miles to 1 inch) shows a drainage area of 2,400 miles for the whole stream. About 1,900 miles of this is above the gauging station, which is near the site of the intake for the proposed hydro-electric plant.

Channel.—Wide and deep, sand and mud bottom, an excellent measuring section.

Discharge measurements.—Seven meter measurements were taken during 1913 and 1914. The rating curve is well defined.

Winter flow.—The stream is open all winter.

Accuracy.—A good rating curve and gauge readings twice a day, should give very accurate results, "A".

Co-operation.—Readings taken in co-operation with Bridge River Power Company.

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DISCHARGE MEASUREMENTS of Bridge River 30 miles from mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Oct. 7.....	Cline & Keys.....	1,057	156	1,050	1.8	2.38	1,890 ¹
1914.							
April 17.....	H. J. E. Keys.....	1,046	156	912	2.05	2.25	1,865
" 19.....	".....	1,046	156	932	2.25	2.43	2,101
June 9.....	Keys & Hughes.....	1,046	156	1,422	3.56	4.75	5,130
" 20.....	H. C. Hughes.....	1,046	156	2,120	5.54	8.10	11,750
Aug. 3.....	".....	1,046	156	1,826	4.83	6.80	8,820
Sept. 21.....	".....	1,046	156	1,044	1.97	2.55	2,060

¹Station established.

MONTHLY DISCHARGE of Bridge River 30 miles from mouth, for 1914.

(Drainage area, 1,900 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	860	520	667	0.35	0.40	41,000	A
February.....	580	580	580	0.30	0.31	32,200	A
March.....	1,110	580	766	0.40	0.46	47,100	A
April.....	2,140	790	1,620	0.85	0.95	96,400	A
May.....	9,900	2,400	5,530	2.91	3.36	340,000	A
June.....	18,800	5,100	9,180	4.83	5.40	546,000	C
July.....	14,900	6,400	12,200	6.42	7.40	750,000	C
August.....	9,200	5,300	7,760	4.08	4.70	477,000	A
September.....	5,700	2,100	3,520	1.85	2.06	209,000	A
October.....	11,100	2,000	3,790	1.99	2.29	233,000	A
November.....	3,650	1,570	2,010	1.06	1.18	120,000	A
December.....	2,970	720	1,770	0.93	1.07	109,000	A
The year.....	18,800	520	4,116	2.17	29.58	3,000,700	B

DAILY GAUGE HEIGHT AND DISCHARGE of Bridge River 30 miles from mouth, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-1	790	0-8	580	0-8	580	1-1	790	2-75	2,400	4-75	5,100
2	1-1	790	0-8	580	0-8	580	1-1	790	3-35	3,100	5-75	6,800
3	1-1	790	0-8	580	0-8	580	1-15	820	3-95	3,900	6-75	8,700
4	1-1	790	0-8	580	0-8	580	1-15	830	3-7	3,600	7-00	9,300
5	1-1	790	0-8	580	0-8	580	1-25	900	3-55	3,400	6-0	7,300
6	1-1	790	0-8	580	0-8	580	1-55	1,150	3-4	3,200	5-35	6,100
7	1-15	820	0-8	580	0-8	580	1-75	1,340	3-4	3,200	5-15	5,800
8	1-2	860	0-8	580	0-8	580	1-85	1,420	3-4	3,200	5-0	5,500
9	1-2	860	0-8	580	0-8	580	1-90	1,470	3-45	3,200	4-8	5,200
10	1-2	860	0-8	580	0-8	580	2-1	1,670	3-8	3,700	5-05	5,600
11	1-1	790	0-8	580	0-8	580	2-15	1,720	4-35	4,500	5-55	6,400
12	1-1	790	0-8	580	0-8	580	2-20	1,770	4-95	5,400	6-1	7,500
13	1-1	790	0-8	580	0-8	580	2-25	1,820	5-35	6,100	6-95	9,200
14	0-9	650	0-8	580	0-85	610	2-3	1,870	5-9	7,100	7-55	10,500
15	0-8	580	0-8	580	1-1	790	2-35	1,930	6-5	8,200	8-5	12,700
16	0-8	580	0-8	580	1-1	790	2-4	1,980	6-4	8,000	9-15	14,400
17	0-8	580	0-8	580	1-1	790	2-3	1,870	5-8	6,900	9-65	15,800
18	0-8	580	0-8	580	1-15	830	2-2	1,770	5-5	6,400	9-7	18,800
19	0-8	580	0-8	580	1-3	940	2-4	1,980	5-35	6,100	9-2	14,500
20	0-8	580	0-8	580	1-45	1,060	2-55	2,140	5-3	6,000	8-3	12,300
21	0-8	580	0-8	580	1-5	1,110	2-45	2,040	5-55	6,400	7-35	10,000
22	0-8	580	0-8	580	1-5	1,110	2-3	1,870	6-1	7,500	6-4	8,000
23	0-8	580	0-8	580	1-5	1,110	2-35	1,920	6-7	8,600	5-8	6,900
24	0-75	550	0-8	580	1-35	980	2-3	1,870	7-3	9,900	5-7	6,700
25	0-7	520	0-8	580	1-35	980	2-25	1,820	7-15	9,600	6-05	7,400
26	0-7	520	0-8	580	1-2	860	2-2	1,770	6-35	7,900	6-65	8,500
27	0-7	520	0-8	580	1-2	860	2-2	1,770	5-45	6,300	7-1	9,500
28	0-7	520	0-8	580	1-2	860	2-2	1,770	4-7	5,000	7-2	9,700
29	0-7	520			1-2	860	2-2	1,770	4-1	4,100	7-45	10,300
30	0-8	580			1-2	860	2-35	1,920	4-1	4,100	7-7	10,800
31	0-8	580			1-15	820			4-2	4,300		

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DAILY GAUGE HEIGHT AND DISCHARGE OF Bridge River 30 miles from mouth,
for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	8.4	12,500	5.8	6,900	5.0	5,500	3.35	3,100	3.75	3,650	2.0	1,570
2	8.95	13,300	6.6	8,400	5.0	5,500	2.95	2,600	3.5	3,300	2.0	1,570
3	9.35	14,900	6.75	8,700	5.1	5,700	2.65	2,300	3.25	2,970	2.0	1,570
4	9.7	18,800	6.8	8,800	4.45	4,600	2.50	2,100	2.0	1,570	1.9	1,470
5	9.6	15,600	6.85	8,900	4.6	4,900	2.4	2,000	2.0	1,570	1.75	1,340
6	9.35	14,900	6.9	9,000	4.6	4,900	2.4	2,000	2.75	2,370	1.7	1,290
7	8.7	13,200	6.95	9,200	4.75	5,100	2.4	2,000	2.7	2,310	1.6	1,200
8	8.5	12,700	6.25	7,700	4.8	5,200	2.45	2,000	2.7	2,310	1.6	1,200
9	8.25	12,100	5.5	6,400	4.4	4,600	2.55	2,100	2.8	2,430	1.45	1,060
10	8.55	12,900	5.35	6,100	4.0	4,000	2.75	2,400	2.75	2,370	1.35	980
11	9.0	14,000	5.8	6,900	3.65	3,500	2.7	2,300	2.65	2,260	0.7	520
12	9.35	14,900	6.35	7,900	3.85	3,800	2.55	2,100	2.45	2,030	1.0	720
13	9.35	14,900	6.2	7,600	3.2	2,900	2.8	2,400	2.4	1,980	1.2	860
14	9.25	14,600	6.65	8,500	3.15	2,800	6.6	8,400	2.15	1,720	1.5	1,110
15	9.20	14,500	6.9	9,000	3.1	2,800	7.8	11,100	2.0	1,570	1.6	1,200
16	9.0	14,000	6.75	8,700	3.1	2,800	7.02	9,300	2.0	1,570	1.65	1,250
17	8.65	13,100	6.55	8,300	2.75	2,400	6.95	9,200	2.0	1,570	1.65	1,250
18	8.75	13,300	6.15	7,500	2.6	2,200	6.25	7,700	2.0	1,570	1.95	1,520
19	8.95	13,900	6.3	7,800	2.7	2,300	5.0	5,500	2.1	1,670	2.35	1,930
20	9.3	14,800	6.5	8,800	2.85	2,500	4.3	4,400	2.25	1,820	3.0	2,670
21	8.85	13,600	6.65	8,500	2.7	2,300	3.8	3,700	2.15	1,720	3.25	2,970
22	7.4	10,100	6.55	8,300	2.5	2,100	3.45	3,200	2.1	1,670	3.2	2,910
23	6.95	9,200	6.15	7,500	2.6	2,200	3.25	3,000	2.1	1,670	3.2	2,910
24	7.0	9,300	5.85	6,800	2.75	2,400	3.05	2,700	2.0	1,570	3.0	2,670
25	7.0	9,300	5.8	6,900	2.9	2,500	3.0	2,700	2.2	1,770	3.0	2,670
26	6.95	9,200	5.85	6,800	3.35	3,100	2.9	2,500	2.6	2,200	3.0	2,670
27	6.75	8,700	6.0	7,300	3.55	3,400	2.9	2,500	2.45	2,040	3.0	2,670
28	5.8	6,800	6.15	7,500	3.4	3,200	2.9	2,500	2.3	1,870	3.0	2,670
29	5.55	6,400	6.0	7,300	3.2	2,900	2.9	2,500	2.05	1,620	2.8	2,430
30	5.55	6,400	5.65	6,600	3.6	3,400	3.2	2,900	2.0	1,570	2.8	2,430
31	5.7	6,700	5.2	5,800			4.26	4,400			2.15	1,720

CAYUSE CREEK (1048).

Location.—At the Pacific Great Eastern Railway trestle, 2 miles from the mouth and $2\frac{1}{2}$ miles from Lillooet.

Records Available.—Daily discharges from April 8, 1914, to December 31, 1914.

Drainage Area.—Three hundred and fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on pile in the trestle; referenced to three benchmarks. Daily readings.

Channel.—Wide and of moderate depth, strewn with boulders and coarse gravel. The current is very swift, especially at the higher stages. The metering section is a good one.

Discharge Measurements.—Four discharge measurements in 1914 define the rating curve very well, except for extremely high and low stages of the water.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a well-defined rating curve should insure a reasonable degree of accuracy except possibly at extremely high stages.

CAYUSE CREEK (1048).

Cayuse creek rises in Duffy lake and discharges into the Fraser river, 1 mile below Lillooet, at an elevation of about 740 feet. The drainage area is about 350 square miles.

The climate in the Cayuse creek watershed is much similar to that in the Lillooet district. The summers are quite hot, and the winters rather severe. At the mouth the mean annual precipitation is probably about 15 inches, and this may increase to 30 inches or more at the higher altitudes near the headwaters.

The discharge figures indicate that there is a considerable quantity of water flowing in Cayuse creek. This water could be made use of for irrigation or for water-power.

A very small fraction of the water is being used at present for irrigation purposes on a few ranches near the mouth. The water could be used very extensively on the Fraser River benches across from Lillooet. The water could be carried, in a flume, from the stream to a point on the Fraser river about 1 mile above Lillooet and taken across the river at this point. This would be a large undertaking, but would reclaim a large tract of first-class fruit-growing land.

The stream falls very rapidly and there is a large fall about 3 miles from the mouth. Water-power could be developed by running a pipe from the head of the falls to the flats below; or the water could be carried around the hill in a flume to a point above Seton lake, and the power-house located beside the lake. The second plan would give a little less head than the first. At present there is little or no market for power in the vicinity.

The main line of the Pacific Great Eastern railway crosses the stream about 2 miles from its mouth and follows it to the Fraser river.

DISCHARGE MEASUREMENTS of Cayuse Creek above Seton Creek, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
April 8.....	H. J. E. Keys.....	1,046	67	171	2-29	0-70	392 ¹
June 13.....	Keys & Hughes.....	1,046	80	326	6-53	2-30	2,131
" 19.....	H. C. Hughes.....	1,046	90	410	8-30	2-70	3,410
Aug. 1.....	".....	1,046	73	275	3-49	1-60	957
Sept. 17.....	".....	1,046	70	213	1-93	0-79	412

¹Station established.

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MONTHLY DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

(Drainage area, 350 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May.....	3,400	480	1,616	4.6	5.3	99,300	B
June.....	6,550	1,350	2,833	8.1	9.0	168,600	B
July.....	6,000	850	2,915	8.3	9.6	179,000	B
August.....	1,050	640	818	2.3	2.7	50,300	B
September.....	780	420	548	1.6	1.8	32,600	B
October.....	1,000	470	603	1.7	2.0	37,100	B
November.....	630	380	475	1.4	1.5	28,300	B
December.....	420	240	298	0.8	0.9	18,300	B

DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			0.9	480	2.3	2,150	2.9	4,150	1.5	850	1.2	640
2.....			1.2	630	2.3	2,150	3.1	4,850	1.5	850	1.15	600
3.....			1.4	780	2.4	2,400	3.2	5,250	1.6	950	1.1	580
4.....			1.5	850	2.5	2,700	3.4	6,000	1.7	1,050	1.1	580
5.....			1.4	780	2.4	2,400	3.3	5,600	1.7	1,050	1.1	530
6.....			1.3	700	2.3	2,150	3.1	4,850	1.7	1,050	0.9	470
7.....			1.3	700	2.2	1,900	2.8	3,750	1.7	1,050	0.9	470
8.....			1.3	700	2.0	1,500	2.6	3,050	1.6	950	0.9	470
9.....			1.3	700	1.9	1,350	2.7	3,400	1.4	780	0.95	500
10.....			1.5	850	1.9	1,350	2.8	3,750	1.5	850	1.0	530
11.....			1.6	950	2.0	1,500	2.9	4,150	1.5	850	1.0	530
12.....			1.75	1,100	2.1	1,700	2.8	3,750	1.5	850	0.9	470
13.....			2.0	1,500	2.3	2,150	2.8	3,750	1.6	950	0.9	470
14.....			2.3	2,150	2.9	4,150	2.7	3,400	1.6	950	0.85	450
15.....			2.5	2,700	3.15	5,050	2.6	3,050	1.5	850	0.85	450
16.....			2.3	2,150	3.45	6,180	2.5	2,700	1.5	850	0.8	420
17.....	0.85	450	2.1	1,700	3.55	6,550	2.4	2,400	1.45	800	0.8	420
18.....	0.85	450	2.2	1,900	3.40	5,980	2.5	2,700	1.4	780	1.0	530
19.....	0.8	420	2.1	1,700	3.15	5,050	2.6	3,050	1.4	780	1.1	580
20.....	0.8	420	2.2	1,900	2.85	3,950	2.4	2,400	1.4	780	1.1	580
21.....	0.8	420	2.2	1,900	2.5	2,700	2.1	1,700	1.4	780	1.15	600
22.....	0.75	400	2.3	2,150	2.2	1,900	2.1	1,700	1.4	780	1.0	530
23.....	0.75	400	2.4	2,400	2.0	1,500	2.0	1,500	1.3	700	1.0	530
24.....	0.75	400	2.7	3,400	1.9	1,350	2.0	1,500	1.3	700	1.1	580
25.....	0.75	400	2.5	2,700	2.1	1,700	2.0	1,500	1.3	700	1.2	640
26.....	0.75	400	2.4	2,400	2.2	1,900	1.9	1,350	1.2	640	1.2	640
27.....	0.75	400	2.3	2,150	2.3	2,150	1.8	1,200	1.2	640	1.2	640
28.....	0.7	390	2.3	2,150	2.5	2,700	1.8	1,200	1.2	640	1.1	580
29.....	0.65	370	2.2	1,900	2.0	3,050	1.7	1,050	1.2	640	1.2	640
30.....	0.9	480	2.2	1,900	2.8	3,750	1.5	850	1.25	660	1.4	780
31.....			2.3	2,150			1.5	850	1.2	640		

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DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek,
for 1914—*Con.*

DAY.	October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-2	640	1-2	630	0-8	420
2	1-2	640	1-2	630	0-7	380
3	1-15	600	1-2	630	0-7	380
4	1-1	570	1-2	630	0-7	380
5	1-0	580	1-1	570	0-7	380
6	1-0	535	1-0	530	0-7	380
7	1-0	530	1-0	530	0-6	350
8	0-95	500	1-0	530	0-6	350
9	0-9	480	1-0	530	0-6	350
10	0-9	480	1-0	530	0-6	350
11	0-9	480	1-0	530	0-5	320
12	0-9	480	1-0	530	0-4	290
13	0-95	500	0-9	480	0-3	260
14	1-0	530	0-7	380	0-2	240
15	1-1	570	0-7	380	0-2	240
16	1-3	700	0-7	380	0-3	260
17	1-65	1,000	0-7	380	0-3	260
18	1-6	950	0-7	380	0-2	240
19	1-5	850	0-7	380	0-2	240
20	1-4	780	0-7	380	0-3	260
21	1-3	700	0-7	380	0-4	290
22	1-2	640	0-7	380	0-4	290
23	1-2	640	0-7	380	0-4	290
24	1-0	530	0-7	380	0-4	290
25	1-0	530	0-7	380	0-3	260
26	1-0	530	0-9	480	0-3	260
27	1-0	530	0-9	480	0-3	260
28	1-0	530	0-9	480	0-3	260
29	0-9	470	0-9	480	0-2	240
30	1-2	650	0-9	480	0-2	240
31	1-2	650			0-2	240

CHEKAMUS RIVER (1034).

Location.—Highway bridge about 1 mile from the mouth and 10 miles from Squamish.

Records Available.—Daily discharges from March 11 to December 31, 1914.

Drainage Area.—Measured from Provincial map dated 1912 (scale 17.75 miles to 1 inch). Area above measuring section is 250 square miles.

Gauge.—Chain gauge from highway bridge. Referenced to three benchmarks. Readings daily.

Channel.—Wide and shallow. The bed is rough and strewn with boulders.

Discharge Measurements.—Seven discharge measurements were taken during 1914 and the winter of 1915.

Winter Flow.—Open water conditions.

Accuracy.—B. and C.

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DISCHARGE MEASUREMENTS of Cheakamus River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 21.....	Keys and Hughes.....	1046	140	555	7.87	4.30	4,370
June 23.....	C. G. Cline.....	1933	140	490	5.80	3.60	2,840
Sept. 2.....	H. C. Hughes.....	1132	140	383	5.38	3.28	2,060
Oct. 8.....	".....	1933	140	300	4.67	2.35	1,400
Nov. 24.....	Dobbie and Hughes.....	1056	140	473	2.96	3.75	2,410

* Channel may have changed during freshet in October.

MONTHLY DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

(Drainage area, 250 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April.....	5,550	1,150	2,618	10.4	11.6	156,000	B
May.....	6,750	2,450	4,250	17.0	19.6	261,000	B
June.....	8,120	2,080	4,333	17.3	19.3	258,000	C
July.....	8,250	2,450	5,020	20.1	23.2	309,000	C
August.....	4,600	2,300	3,200	12.8	14.8	197,000	B
September.....	6,170	1,190	2,011	8.0	9.0	120,000	B
October.....	14,500	1,070	4,080	16.3	18.8	251,000	C
November.....	8,620	950	3,338	13.3	14.8	198,000	B
December.....	1,770	550	790	3.2	3.6	48,600	C

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

DAY.	March.		April.		May.		June.		July.		August.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			2-8	1,770	3-4	2,600	4-55	4,960	5-2	6,500	3-3	2,450
2			2-6	1,530	4-0	3,750	4-55	4,960	5-4	7,000	3-4	2,600
3			2-4	1,330	4-3	4,400	4-35	4,520	5-7	7,750	3-9	3,550
4			2-2	1,150	3-8	3,350	3-95	3,650	5-9	8,250	3-9	3,550
5			4-4	4,600	3-8	3,350	3-55	2,880	5-4	7,000	3-7	3,150
6			3-8	3,350	3-6	2,950	3-45	2,690	5-4	7,000	3-7	3,150
7			3-1	2,150	3-5	2,800	3-45	2,690	4-9	5,800	3-9	3,550
8			3-1	2,150	3-5	2,800	3-05	2,080	4-9	5,800	3-9	3,550
9			3-1	2,150	3-6	2,950	3-05	2,080	4-5	4,850	3-9	3,550
10			3-1	2,150	4-0	3,750	3-05	2,080	4-9	5,800	3-9	3,550
11	1-7	800	3-1	2,150	4-0	3,750	3-25	2,370	4-9	5,800	3-8	3,550
12	1-7	800	3-0	2,020	4-4	4,600	3-75	3,250	4-9	5,800	4-2	4,150
13	2-5	1,430	3-2	2,300	4-7	5,300	4-35	4,520	4-9	5,800	4-4	4,600
14	4-2	4,150	4-8	5,550	4-9	5,800	4-75	5,420	4-9	5,800	4-4	4,600
15	3-0	2,020	4-8	5,550	5-3	6,750	5-05	6,170	4-4	4,600	4-4	4,600
16	3-5	2,800	4-0	3,750	5-3	6,750	5-25	6,630	4-4	4,600	3-9	3,550
17	2-7	1,650	3-7	3,150	4-4	4,600	5-85	8,120	4-9	5,800	3-9	3,550
18	2-8	1,770	3-0	2,020	4-4	4,600	4-95	5,920	4-8	5,550	3-7	3,150
19	3-0	2,020	6-0	8,520	4-4	4,600	4-95	5,920	4-8	5,550	3-7	3,150
20	3-0	2,020	4-0	3,750	4-4	4,600	4-55	4,960	4-3	4,400	3-5	2,800
21	3-0	2,020	3-6	2,950	4-6	5,100	4-25	4,260	4-1	3,950	3-5	2,800
22	3-0	2,020	3-0	2,020	4-8	5,550	3-55	2,880	3-9	3,550	3-4	2,600
23	3-0	2,020	2-9	1,890	5-1	6,250	3-55	2,880	3-9	3,550	3-4	2,600
24	2-7	1,650	2-5	1,430	5-0	6,050	3-65	5,220	3-9	3,550	3-4	2,600
25	2-5	1,430	2-4	1,330	4-6	5,100	4-25	4,260	3-9	3,550	3-5	2,800
26	2-4	1,330	2-3	1,230	4-2	4,150	3-95	3,650	4-2	4,150	3-5	2,800
27	2-3	1,230	2-4	1,330	4-0	3,750	4-45	4,720	3-9	3,550	3-5	2,800
28	2-0	990	2-5	1,430	3-8	3,350	4-75	5,430	3-6	2,950	3-4	2,600
29	2-2	1,150	2-6	1,530	3-6	2,950	4-75	5,420	3-4	2,600	3-3	2,450
30	2-2	1,150	3-2	2,300	3-3	2,450	4-75	5,420	3-3	2,450	3-3	2,450
31	2-0	990			3-6	2,950			3-3	2,450	3-2	2,300

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DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914—*Con.*

DAY.	September.		October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-05	2,080	3-3	2,450	5-75	7,880	2-8	1,770
2.....	3-05	2,080	3-3	2,450	6-05	8,620	2-6	1,530
3.....	3-05	2,080	2-5	1,430	5-35	6,880	2-5	1,450
4.....	3-05	2,080	2-4	1,330	5-55	7,380	2-4	1,330
5.....	2-95	1,950	2-1	1,070	4-05	3,050	2-2	1,150
6.....	2-65	1,590	2-1	1,070	4-05	3,850	2-1	1,070
7.....	2-65	1,590	2-1	1-070	4-25	4,260	1-9	920
8.....	2-75	1,720	2-1	1,070	4-55	4,960	1-8	860
9.....	2-65	1,590	2-2	1,150	4-35	4,520	1-8	860
10.....	2-55	1,480	2-4	1,330	4-15	4,060	1-7	800
11.....	2-55	1,480	2-2	1,150	3-95	3,650	1-6	750
12.....	2-55	1,480	2-3	1,230	3-35	2,530	1-5	700
13.....	2-25	1,190	8-4	14,550	3-05	2,080	1-5	700
14.....	2-35	1,280	6-9	10,750	2-75	1,720	1-4	650
15.....	2-35	1,280	4-7	5,300	2-55	1,480	1-4	650
16.....	2-25	1,190	7-2	11,900	2-45	1,380	1-3	600
17.....	2-25	1,190	8-4	14,550	2-25	1,190	1-3	600
18.....	5-05	6,170	6-4	9,500	2-15	1,110	1-3	600
19.....	4-05	3,850	6-4	9,500	2-35	1,280	1-3	600
20.....	3-55	2,890	4-9	5,800	2-15	1,110	1-3	600
21.....	3-35	2,530	4-2	4,150	1-95	950	1-3	600
22.....	3-25	2,380	3-8	3,350	2-35	1,280	1-3	600
23.....	2-85	1,830	3-3	2,450	3-35	2,530	1-3	600
24.....	2-65	1,590	3-0	2,020	3-45	2,680	1-3	600
25.....	2-45	1,380	3-0	2,020	4-05	3,850	1-3	600
26.....	2-25	1,190	2-9	1,890	3-75	3,250	1-3	600
27.....	2-45	1,380	2-8	1,770	3-75	3,250	1-2	550
28.....	3-65	3,050	2-6	1,530	3-95	3,650	1-2	550
29.....	3-25	2,380	2-6	1,530	3-45	2,680	1-2	550
30.....	3-25	2,380	3-8	3,350	3-15	2,220	1-2	550
31.....			4-4	4,600			1-2	550

FOUNTAIN CREEK (1047).

Location.—About 100 yards above irrigation ditches, $1\frac{1}{2}$ miles from the mouth, and 10 miles from Lillooet.

Records Available.—Daily discharges from June 11, 1914, to October 10, 1914, (irrigation season).

Drainage Area.—Twenty square miles (measured from the provincial map of 1913, scale 12 miles to 1 inch).

Gauge.—Vertical staff nailed to tree about 100 yards above ditches. Referred to three bench-marks. Readings daily.

Channel.—Wide and shallow, gravel bottom. The current is fairly fast. The metering section is a good one.

Discharge Measurements.—Two discharge measurements in 1914 define the rating curve fairly well for the variations during the irrigation season.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—D.

FOUNTAIN CREEK (1047).

Fountain creek has its source in Fountain lake, and discharges into the Fraser river, about 9 miles above Lillooet, at an elevation of some 760 feet. The drainage area is about 20 square miles.

The climate in the Fountain Creek valley is much similar to that of the Lillooet district generally. The summers are hot and the winters rather severe. The mean annual precipitation in the watershed is about 10 inches.

The valley of Fountain creek and the adjacent benches on the Fraser river are well adapted to cultivation, when irrigated, and the water from the creek is used for this purpose. Some attempt has been made to regulate the normal flow to give sufficient water in the low-water season. A small timber dam was installed at the outlet of the lake. In this way the spring and early summer freshets are stored to be used in the late summer when the normal flow is very small. The dam has a sluice-gate in it, and when it is opened the water flows down the natural channel of the stream to the irrigation ditches. This storage scheme could be enlarged upon to a considerable extent.

There is a large ranch at the mouth of the creek called Fountain ranch. It is a splendid place, and a good example of the agricultural possibilities of the surrounding valley.

There is some good timber in the upper part of the valley. A small saw-mill has been built on the lake.

The gauging station was established on June 11, 1914. The regulated flow of the stream is at it. Several water leases have been applied for to divert water from the stream above the gauge. These diversions, will in all probability, be made next spring, so the gauging station may have to be changed.

DISCHARGE MEASUREMENTS of Fountain Creek above intake on irrigation ditch, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 11 ¹	Keys & Hughes.....	.....	.....	.....	.....	.....	.....
Aug. 2.....	H. C. Hughes.....	1046	10	5-35	2-57	1-00	14-0
Sept. 20.....	".....	1046	10	3-50	1-99	0-87	6-96

¹Station established.

MONTHLY DISCHARGE of Fountain Creek above irrigation ditches, for 1914.

(Drainage area, 20 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
July.....	20	4	16-6	0-8	0-9	1,020
August.....	20	4	10-5	0-5	0-6	650
September.....	8	1	6-0	0-3	0-3	360

Accuracy " D."

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DAILY GAUGE HEIGHT AND DISCHARGE of Fountain Creek above irrigation ditches, for 1914.

DAY.	June.		July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1-1	20	1-0	14	0-8	4	0-9	8
2.....			1-1	20	1-0	14	0-8	4	0-9	8
3.....			1-1	20	1-0	14	0-8	4	0-9	8
4.....			1-0	14	1-1	20	0-8	4	0-9	8
5.....			1-1	20	1-0	14	0-8	4	0-9	8
6.....			1-1	20	1-0	14	0-8	4	0-9	8
7.....			1-1	20	1-0	14	0-8	4	0-9	8
8.....			1-1	20	1-0	14	0-8	4	0-9	8
9.....			1-1	20	0-8	4	0-8	4	0-9	8
10.....			1-1	20	1-1	20	0-7	1	0-9	8
11.....			1-1	20	1-0	14	0-7	1		
12.....	1-3	32	1-0	14	1-0	14	0-7	1		
13.....	1-3	32	1-0	14	1-0	14	0-8	4		
14.....	1-4	39	1-0	14	0-9	8	0-9	8		
15.....	1-3	32	1-0	14	0-9	8	0-9	8		
16.....	1-2	26	1-0	14	0-9	8	0-9	8		
17.....	1-3	32	0-9	8	0-9	8	0-9	8		
18.....	1-3	32	1-2	26	1-0	14	0-9	8		
19.....	1-1	20	1-0	14	1-0	14	0-9	8		
20.....	1-1	20	1-0	14	1-0	14	0-9	8		
21.....	1-1	20	1-0	14	0-9	8	0-9	8		
22.....	1-1	20	1-0	14	0-9	8	0-9	8		
23.....	1-2	26	1-2	26	0-9	8	0-9	8		
24.....	1-2	26	1-1	20	0-9	8	0-9	8		
25.....	1-1	20	1-0	14	0-9	8	0-9	8		
26.....	1-1	20	1-0	14	0-9	8	0-9	8		
27.....	1-1	20	1-0	14	0-8	5	0-9	8		
28.....	1-2	26	0-8	4	0-8	4	0-9	8		
29.....	1-2	26	1-1	20	0-8	4	0-9	8		
30.....	1-2	26	1-0	14	0-8	4	0-9	8		
31.....			1-0	14	0-8	4				

GREEN RIVER AT NAIRN FALLS (1035).

Location.—Five miles from the mouth, and 46 miles from Cheakamus.

Records available.—Daily discharges, November and December, 1913; January to December, 1914.

Drainage area.—Drainage areas are measured from the provincial map of 1912 (scale 17.7 miles to 1 inch). Area above gauging station is 180 square miles.

Gauge.—Sloping staff gauge bolted to rocks about 150 yards above falls on left bank. Referred to three bench-marks. Readings taken daily.

Channel.—Wide and fairly deep. Rock and gravel bottom, a good metering section.

Discharge measurements.—Twelve meter measurements taken during 1913, 1914 and 1915 defining the curve quite well for all except the very highest stages.

Winter flow.—Stream is open all year. Slight ice effect in very cold weather.

Accuracy.—Curve fairly well defined; daily gauge readings.

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DISCHARGE MEASUREMENTS of Green River above Nairn Falls, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 18.....	Keys & Cline.....	1046	84	264	3.4	3.80	918 ¹
1914.							
June 1.....	Keys & Hughes.....	1046	100	566	4.4	6.50	2,530
July 16.....	H. C. Hughes.....	1046	105	827	5.7	8.75	4,710
Aug. 11.....	do.....	1046	98	658	4.2	6.60	2,780
Sept. 8.....	do.....	1046	92	533	3.6	5.88	1,938
Nov. 26.....	Dobbie & Hughes.....	1057	87	503	4.7	6.20	2,390
Dec. 28.....	E. C. Dobbie.....	1057	73	203	1.6	2.60	370 ²
1915.							
Jan. 21.....	E. C. Dobbie.....	1057	78	185	1.2	2.10	231
Feb. 6.....	Hughes & Dobbie.....	1057	78	167	1.4	2.15	238
Mar. 9.....	E. C. Dobbie.....	1057	78	202	1.6	2.35	327
Mar. 14.....	do.....	1057	78	230	1.9	2.68	441
Mar. 15.....	do.....	1057	78	354	3.2	4.25	1,140

¹Station established.²Section probably affected by ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1913.

Day.	November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			2.1	240
2.....			2.3	300
3.....			2.3	300
4.....			2.2	270
5.....			2.1	240
6.....			2.0	210
7.....			2.1	240
8.....			2.0	210
9.....			1.7	120
10.....			1.7	120
11.....			1.8	150
12.....			1.8	150
13.....			1.9	180
14.....			2.0	210
15.....			2.3	300
16.....			2.4	330
17.....			2.4	330
18.....			2.3	300
19.....			2.2	270
20.....	2.4	330	1.9	180
21.....	2.4	330	1.8	150
22.....	2.5	360	1.8	150
23.....	2.5	360	1.8	150
24.....	2.3	300	1.8	150
25.....	2.1	240	1.8	150
26.....	2.2	270	1.8	150
27.....	2.1	240	1.8	150
28.....	2.3	300	1.8	150
29.....	2.3	300	1.7	120
30.....	2.3	300	1.7	120
31.....			1.7	120

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DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.7	120	1.7	120	2.2	270	3.5	750	6.0	2,200	6.3	2,440
2	1.7	120	1.7	120	2.2	270	3.5	750			5.9	2,120
3	1.8	150	1.7	120	2.4	330	3.6	800			5.7	1,980
4	2.1	240	1.7	120	2.4	330	3.9	940			5.5	1,850
5	2.6	400	1.7	120	2.4	330	5.5	1,850			3.8	890
6	4.0	990	1.7	120	2.5	360	5.6	1,910			3.1	580
7	3.8	890	1.7	120	2.6	400	5.6	1,910			3.9	940
8	3.5	750	1.7	120	2.6	400	5.6	1,910			4.3	1,150
9	2.9	500	1.7	120	2.6	400	5.7	1,980			6.3	2,440
10	2.6	400	1.7	120	2.6	400	5.7	1,980			6.5	2,600
11	2.5	360	1.7	120	2.6	400	5.7	1,980			6.9	2,950
12	2.5	360	1.7	120	2.7	430	5.9	2,120			7.2	3,200
13	2.4	330	1.8	150	3.5	750	6.0	2,200			9.1	5,050
14	2.4	330	1.9	180	4.1	1,050	6.1	2,280			9.2	5,150
15	2.1	240	1.9	180	3.6	800	6.1	2,280			9.9	5,850
16	2.0	210	1.9	180	3.8	890	6.0	2,200			10.1	6,000
17	2.0	210	1.9	180	3.7	850	6.0	2,200	5.9	2,120	10.2	6,100
18	2.0	210	1.9	180	4.4	1,200	6.0	2,200	6.0	2,200	10.1	6,000
19	2.0	210	2.0	210	4.7	1,350	6.0	2,200	4.5	1,250	8.9	4,900
20	1.9	180	2.0	210	5.1	1,580	6.0	2,200	3.8	890	8.3	4,300
21	1.9	180	2.0	210	5.1	1,580	5.9	2,120	4.3	1,150	7.3	3,300
22	1.8	150	2.0	210	5.1	1,580	5.8	2,050	4.1	1,050	7.3	3,300
23	1.8	150	2.0	210	5.3	1,710	5.7	1,980	4.1	1,050	7.0	3,050
24	1.8	150	2.1	240	5.0	1,520	5.6	1,910	5.3	1,710	6.9	2,950
25	1.8	150	2.1	240	4.7	1,350	5.5	1,850	6.3	2,440	7.8	3,800
26	1.7	120	2.2	270	4.4	1,200	5.5	1,850	5.8	2,050	8.0	4,000
27	1.7	120	2.2	270	4.1	1,050	5.5	1,850	4.5	1,250	8.0	4,000
28	1.7	120	2.2	270	4.0	990	5.0	1,520	4.1	1,050	8.3	4,300
29	1.7	120			3.9	940	5.2	1,650	4.6	1,300	8.7	4,700
30	1.7	120			3.8	890	5.3	1,710	5.3	1,710	9.9	5,850
31	1.7	120			3.6	800			5.7	1,980		

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DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	10-1	6,000	6-3	2,440	6-3	2,440	5-9	2,120	7-5	3,500	5-1	1,580
2.....	10-1	6,000	6-3	2,440	6-3	2,440	5-2	1,650	6-8	2,850	.....	.....
3.....	10-9	6,800	6-4	2,510	6-3	2,440	4-7	1,350	5-9	2,120	4-5	1,250
4.....	11-0	6,900	6-9	2,950	6-3	2,440	4-1	1,050	5-5	1,850	3-9	940
5.....	10-7	6,600	7-0	3,050	6-3	2,440	3-9	940	5-0	1,520	.....	.....
6.....	9-1	5,050	7-4	3,400	6-3	2,440	3-6	800	4-8	1,400	.....	.....
7.....	8-7	4,700	7-3	3,300	5-3	1,710	3-4	710	4-7	1,350	.....	.....
8.....	8-3	4,300	6-9	2,950	5-3	1,710	3-2	620	4-8	1,400	.....	.....
9.....	8-3	4,300	6-7	2,760	5-2	1,650	4-3	1,150	4-9	1,460	.....	.....
10.....	9-1	5,050	6-7	2,760	5-5	1,850	4-6	1,300	4-7	1,350	.....	.....
11.....	9-2	5,150	6-6	2,670	5-7	1,980	4-3	1,150	4-6	1,300	.....	.....
12.....	9-3	5,250	6-6	2,670	5-2	1,650	4-0	990	4-5	1,250	.....	.....
13.....	9-3	5,250	7-2	3,200	5-0	1,520	10-5	6,400	4-5	1,250	2-9	500
14.....	9-3	5,250	7-4	3,400	5-0	1,520	10-0	5,900	4-4	1,200	2-95	520
15.....	9-3	5,250	7-2	3,200	4-8	1,400	12-3	8,200	4-3	1,150	2-9	500
16.....	8-9	4,900	7-2	3,200	.....	.....	13-8	9,700	4-1	1,050	2-85	480
17.....	8-9	4,900	6-9	2,950	.....	.....	12-5	8,400	4-0	990	3-0	540
18.....	8-9	4,900	6-9	2,950	.....	.....	8-5	4,500	3-9	940	3-2	620
19.....	8-9	4,900	6-9	2,950	.....	.....	8-0	4,000	4-0	990	3-0	540
20.....	8-9	4,900	6-9	2,950	.....	.....	7-3	3,300	4-2	1,100	3-0	540
21.....	8-1	4,100	6-9	2,950	.....	.....	6-5	2,600	4-3	1,150	3-0	540
22.....	7-3	3,300	6-9	2,950	.....	.....	5-5	1,850	4-5	1,250	2-9	500
23.....	7-3	3,300	6-9	2,950	.....	.....	4-7	1,350	4-5	1,250	2-85	480
24.....	7-4	3,400	6-9	2,950	.....	.....	4-1	1,050	4-6	1,300	2-8	470
25.....	7-3	3,300	6-7	2,760	.....	.....	4-8	1,400	8-6	4,600	2-8	470
26.....	7-3	3,300	6-5	2,600	.....	.....	4-9	1,460	6-3	2,440	2-7	430
27.....	7-1	3,150	6-7	2,760	.....	.....	5-1	1,580	3-7	850	2-6	400
28.....	6-3	2,440	6-7	2,760	.....	.....	5-9	2,120	3-8	890	2-6	400
29.....	6-3	2,440	6-3	2,440	.....	.....	7-5	3,500	3-7	850	2-5	360
30.....	6-3	2,440	6-3	2,440	.....	.....	6-8	2,850	4-6	1,300	2-5	360
31.....	6-3	2,440	6-3	2,440	.....	.....	6-7	2,760	.....	.....	2-5	360

MONTHLY DISCHARGE of Green River at Nairn Falls, for 1913.

(Drainage area, 180 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
December.....	330	120	200	1-1	1-3	12,300

Accuracy "B".

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MONTHLY DISCHARGE of Green River at Nairn Falls, for 1914.

(Drainage area, 180 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	990	120	280	1.5	1.7	17,200	B
February.....	270	120	172	0.9	1.0	9,550	B
March.....	1,710	270	851	4.7	5.4	52,300	B
April.....	2,280	750	1,838	10.2	11.4	109,000	B
May.....							
June.....	6,100	580	3,524	19.6	21.9	209,000	B
July.....	6,900	2,440	4,515	25.1	28.9	277,000	B
August.....	3,400	2,440	2,861	15.9	18.3	176,000	B
September.....							
October.....	9,700	620	2,800	15.6	17.9	172,000	C
November.....	4,600	850	1,530	8.5	9.5	91,000	B
The period.....	9,700	120					

GREEN RIVER AT GREEN LAKE (1041).

Location.—Highway bridge at mouth of the lake, 42 miles from Squamish.

Records available.—Daily discharges from January to December, 1914.

Drainage area.—Twenty-four square miles; measured from the provincial map of 1912 (scale 3 miles to 1 inch).

Gauge.—Graduated staff. Readings taken by measuring to water surface, from permanent point on the bridge.

Channel.—Narrow and fairly deep. Strewn with boulders.

Discharge measurements.—Six discharge measurements define the rating curve fairly well.

Winter flow.—Open all winter.

Accuracy.—C and D; change in section —

DISCHARGE MEASUREMENTS of Green River at Green Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 22.....	H. J. E. Keyes.....	1,046	26	51.3	3.00	1.32	152 ¹
1914.							
March 17.....	do.....	1,046	33	58.0	2.71	1.47	157 ²
May 28.....	Keys & Hughes.....	1,046	37	96.6	4.37	2.00	422
July 21.....	H. C. Hughes.....	1,046	39	93.0	5.62	2.32	522
Aug. 15.....	do.....	1,046	39	89.2	4.90	2.15	435
Sept. 10.....	do.....	1,046	34	73.1	2.92	1.35	215
Dec. 5.....	Dobbie & Hughes.....	1,057	40	102.0	2.38	1.80	243 ³

¹Station established, gauge not referenced. ²Surface measurement, former gauge gone; new gauge put in and referenced.

³Channel changed by treshot and logs wedged under bridge.

MONTHLY DISCHARGE of Green River at Green Lake, for 1914.

(Drainage area, 24 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total acre-feet.	
January.....	700	145	245	10.2	11.8	15,100	C
February.....	180	120	137	5.7	6.0	7,610	D
March.....	520	145	270	11.2	12.9	16,600	C
April.....	1,000	220	598	24.9	27.8	35,580	D
May.....	850	310	635	26.2	30.3	39,000	D
June.....	1,150	400	648	27.0	30.1	38,600	D
July.....	1,150	440	764	31.9	36.8	47,000	D
August.....	560	310	399	16.6	19.1	24,500	C
September.....	600	160	267	11.1	12.4	15,900	C
October.....	1,650	160	567	23.6	27.2	34,900	D
November.....	1,080	220	440	18.3	20.4	26,200	D
December.....	530	90	154	6.4	7.4	9,500	C
The year.....	1,650	90	427	17.8	24.2	310,490	C

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Green Lake, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-10	160	1-20	180	1-00	145	1-60	280	2-80	750	2-30	520
2.....	1-10	160	1-20	180	1-00	145	1-50	250	2-70	700	2-70	700
3.....	1-20	180	1-10	160	1-00	145	1-40	220	2-80	750	2-80	750
4.....	1-30	200	1-10	160	1-00	145	1-40	220	2-60	650	2-60	650
5.....	1-60	280	1-00	145	1-00	145	1-10	310	2-60	650	2-30	520
6.....	2-10	440	1-00	145	1-00	145	2-40	560	2-70	700	2-10	440
7.....	2-60	650	1-10	160	1-00	145	2-30	520	2-80	750	2-10	440
8.....	2-70	700	0-90	130	1-00	145	2-30	520	2-80	750	2-00	400
9.....	2-50	600	0-90	130	1-00	145	2-30	520	2-90	800	2-00	400
10.....	1-90	370	0-90	130	1-10	160	2-40	560	2-90	800	2-00	400
11.....	1-70	310	0-90	130	1-20	180	2-50	600	2-90	800	2-00	400
12.....	1-40	220	0-90	130	1-20	180	2-50	600	3-00	850	2-30	520
13.....	1-30	200	0-80	120	1-30	200	2-50	600	3-00	850	2-60	650
14.....	1-30	200	0-90	130	1-40	220	2-60	650	2-80	750	2-70	700
15.....	1-30	200	0-90	130	1-40	220	2-60	650	2-80	750	3-00	850
16.....	1-30	200	0-90	130	1-40	220	2-50	600	2-60	650	3-30	1,000
17.....	1-20	180	0-90	130	1-50	250	2-85	780	2-50	600	3-60	1,150
18.....	1-20	180	0-90	130	1-60	280	2-70	700	2-50	600	3-30	1,000
19.....	1-20	180	0-90	130	1-80	340	3-30	1,000	2-50	600	3-10	900
20.....	1-10	160	0-90	130	2-00	400	3-05	870	2-45	580	2-80	750
21.....	1-10	160	0-90	130	2-10	440	3-05	870	2-45	580	2-50	600
22.....	1-20	180	0-80	120	2-10	440	2-90	800	2-45	580	2-40	560
23.....	1-20	180	0-80	120	2-30	520	2-80	750	2-40	560	2-30	520
24.....	1-10	160	0-80	120	2-20	480	2-80	750	2-40	560	2-30	520
25.....	1-10	160	0-90	130	2-10	440	2-60	650	2-40	560	2-50	600
26.....	1-10	160	0-90	130	2-10	440	2-60	650	2-30	520	2-50	600
27.....	1-00	145	1-00	145	2-00	400	2-60	650	2-00	480	2-50	600
28.....	1-00	145	1-00	145	1-90	370	2-50	600	2-00	480	2-70	700
29.....	1-10	160	1-80	340	2-50	600	1-70	310	2-80	750
30.....	1-20	180	1-70	310	2-50	600	1-80	340	3-00	850
31.....	1-20	180	1-60	280	1-90	370

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DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Green Lake, for 1914
—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-90	800	2-10	440	1-10	160	1-60	280	3-20	950	2-05	310
2	3-10	900	2-10	440	1-20	180	1-90	370	3-45	1,080	2-65	530
3	3-50	1,100	2-10	440	1-10	160	2-50	600	3-05	690	2-35	410
4	3-60	1,150	2-00	400	1-10	160	2-30	520	2-65	530	2-15	340
5	3-60	1,150	2-00	400	1-20	180	2-10	440	2-45	450	1-80	240
6	3-10	900	2-10	440	1-10	160	1-40	220	2-35	410	1-60	190
7	3-00	850	2-30	520	1-20	180	0-90	130	2-35	410	1-60	190
8	2-90	800	2-40	560	1-30	200	1-30	200	2-45	450	1-50	170
9	2-90	800	2-30	520	1-40	220	1-30	200	2-45	450	1-50	170
10	3-00	850	2-30	520	1-30	200	1-10	160	2-25	380	1-40	150
11	3-00	850	2-20	480	1-30	200	1-20	180	2-25	380	1-20	110
12	2-90	800	2-20	480	1-30	200	2-00	400	2-15	340	1-20	110
13	3-20	950	2-10	440	1-10	160	2-60	650	2-25	380	1-10	90
14	3-40	1,050	2-10	440	1-10	160	3-20	950	2-55	310	1-30	130
15	3-10	900	2-10	440	1-10	160	2-60	650	2-05	310	1-30	130
16	3-00	850	2-00	400	1-10	160	3-30	1,000	2-05	310	1-30	130
17	3-00	850	2-00	400	1-70	310	4-60	1,650	1-95	280	1-20	110
18	3-10	900	1-90	370	2-30	520	3-60	1,150	1-85	260	1-20	110
19	3-10	900	1-90	370	2-50	600	3-40	1,050	1-85	260	1-20	110
20	2-90	800	1-80	340	2-20	480	3-10	900	1-75	220	1-10	90
21	2-60	650	1-80	340	1-80	340	2-80	750	1-75	220	1-00	75
22	2-30	520	1-90	370	1-60	280	2-30	520	1-95	280	1-00	75
23	2-30	520	1-70	310	1-50	250	2-40	560	2-35	410	1-10	90
24	2-30	520	1-70	310	1-50	250	2-20	480	2-65	530	1-10	90
25	2-20	480	1-80	340	1-50	250	2-30	520	2-95	650	1-10	90
26	2-20	480	1-70	310	1-60	280	2-20	480	3-05	690	1-10	90
27	2-20	480	1-70	310	1-70	310	2-30	520	2-65	530	1-10	90
28	2-10	440	1-80	340	1-80	340	2-20	480	2-25	380	1-10	90
29	2-20	480	1-80	340	1-90	370	2-10	410	2-15	340	1-10	90
30	2-20	480	1-70	310	2-50	600	2-20	480	2-05	310	1-10	90
31	2-20	480	1-50	250	.....	.....	2-60	650	.....	.....	1-10	90

LALUWISSIN CREEK (1050).

Location.—Above the irrigation ditches about 1 mile from the mouth and 26 miles from Lillooet.

Records available.—Daily discharges from June 17, 1914, to September 30, 1914, discontinued at end of irrigation season.

Drainage Area.—Twenty square miles (measured from the provincial map of 1913, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge about 200 yards above irrigation ditches, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders and coarse gravel. The current is fairly swift. The metering section is quite a good one.

Discharge Measurements.—Three discharge measurements in 1914 define the rating curve fairly well for the two and intermediate stages of the water.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should ensure a fair degree of accuracy for the variation during the irrigation season.

LALUWISSIN CREEK (1050).

Laluwissin creek has its source in the mountains to the south-east of Lillooet. Some of the peaks in its vicinity attain an altitude of 6,800 feet. It discharges into the Fraser river 26 miles below Lillooet at an elevation of 450 feet. The drainage area is 25 square miles.

The climate in the Laluwissin creek watershed is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 10 inches.

The Fraser river benches near the mouth of Laluwissin creek are well suited to cultivation. At present most of the normal flow of the stream is being used to irrigate these benches. No attempt has yet been made to store the high-water flow which occurs during the spring and early summer. It is reported that the upper part of the stream runs through large swamps and meadows, and it is very probable that these meadows could be utilized as storage reservoirs; a pack trail follows the stream up to the meadows.

DISCHARGE MEASUREMENTS of Laluwissin Creek above intake at irrigation ditches, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
June 17.....	Keys and Hughes.....	1,046	6-0	7-95	1-62	1-40	12-9 ¹
July 31.....	H. C. Hughes.....	1,046	6-0	6-20	1-05	1-00	6-5
Sept. 13.....	do.....	1,046	6-0	5-35	.88	1-00	4-7

¹Station established.

MONTHLY DISCHARGE of Laluwissin Creek above irrigation ditches, for 1914.

(Drainage area, 25 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
July.....	11	6	7-9	0-3	0-3	490
August.....	6	5	5-3	0-2	0-2	330
September.....	6	5	5-4	0-2	0-2	320

Accuracy "D."

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DAILY GAUGE HEIGHT AND DISCHARGE of Lалуwessin Creek above irrigation ditches, for 1914.

DAY.	June.		July.		August.		September.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-3	11	1-0	6	0-9	5
2			1-3	11	1-0	6	0-9	5
3			1-3	11	1-0	6	0-9	5
4			1-3	11	1-0	6	0-9	5
5			1-3	11	1-0	6	0-9	5
6			1-3	11	1-0	6	0-9	
7			1-3	11	1-0	6	0-9	5
8			1-2	9	1-0	6	0-9	5
9			1-2	9	1-0	6	0-9	5
10			1-2	9	1-0	6	1-0	6
11			1-1	7	0-9	5	1-0	6
12			1-1	7	0-9	5	1-0	6
13			1-1	7	0-9	5	1-0	6
14			1-1	7	0-9	5	1-0	6
15			1-1	7	0-9	5	1-0	6
16			1-1	7	0-9	5	1-0	6
17			1-1	7	0-9	5	1-0	6
18	1-4	13	1-1	7	0-9	5	1-0	6
19	1-4	13	1-1	7	0-9	5	0-9	5
20	1-4	13	1-1	7	0-9	5	1-0	6
21	1-4	13	1-1	7	0-9	5	1-0	6
22	1-3	11	1-1	7	0-9	5	1-0	6
23	1-3	11	1-1	7	0-9	5	0-9	5
24	1-3	11	1-1	7	0-9	5	0-9	5
25	1-4	13	1-0	6	0-9	5	0-9	5
26	1-4	13	1-0	6	0-9	5	0-9	5
27	1-4	13	1-0	6	0-9	5	0-9	5
28	1-4	13	1-0	6	0-9	5	0-9	5
29	1-3	11	1-0	6	0-9	5	0-9	5
30	1-3	11	1-0	6	0-9	5	0-9	5
31			1-0	6	0-9	5		

LILLOOET RIVER (1038).

Location.—Government highway bridge at Agerton, 57 miles from Cheakamus, 8 miles above Lillooet lake, and 2 miles above the mouth of Green river.

Records Available.—Daily discharges.—November 16 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Above mouth is 2,200 square miles; above the lower end of Lillooet lake, 1,600 square miles; above upper end of lake, 1,300 square miles; above gauging station, 800 square miles.

Gauge.—Vertical staff gauge nailed to central pier of bridge. Referenced to three bench-marks. Gauge readings taken daily.

Channel.—Wide and deep, smooth, sandy bed. An excellent measuring section.

Discharge Measurements.—Five discharge measurements taken during 1914 define the curve very well for all stages of the water.

Winter Flow.—The stream is sometimes frozen over in winter.

Accuracy.—Rating curve well defined and daily gauge readings give good accuracy.

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DISCHARGE MEASUREMENTS of Lillooet River near Agerton above lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 16.....	Keys & Cline.....	1046	168	645	2.63	1.83	1,693 ¹
1914.							
March 28.....	H. J. E. Keys.....	1046	174	636	2.42	1.97	1,540
May 31.....	Keys & Hughes.....	1046	185	1,380	3.54	4.92	4,880
June 28.....	Hughes.....	1046	188	2,063	4.37	7.60	9,000
Aug. 10.....	do.....	1046	187	1,831	4.00	6.76	7,400
July 15.....	do.....	1046	188	2,692	6.15	10.4	16,500

¹Station established.

MONTHLY DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

(Drainage area, 800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	1,480	950	1,280	1.60	1.84	79,000	B
February.....	980	950	960	1.20	1.25	53,000	B
March.....	2,670	980	1,770	2.21	2.55	109,000	B
April.....	3,750	1,730	2,860	3.57	3.98	170,000	B
May.....	9,250	3,750	5,870	7.34	8.46	361,000	B
June.....	16,500	4,930	9,140	11.42	12.74	544,000	B
July.....	18,300	6,800	13,010	16.25	19.98	799,000	C
August.....	14,700	7,500	10,560	13.20	15.22	648,000	B
September.....	7,850	3,200	5,030	6.29	7.02	299,000	B
October.....	19,200	2,670	6,590	8.24	9.50	405,000	B
November.....	4,930	2,470	3,540	4.42	4.93	211,000	B
December.....	3,200	1,480	1,890	2.36	2.71	116,000	B
The year.....	19,200	950	5,270	6.51	90.18	3,794,000	B

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DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-5	1,330	Frozen	950	1-0	980	2-0	1,730	4-0	3,750	6-0	6,250
2	1-6	1,400		950	1-4	1,260	2-0	1,730	4-8	4,690	7-5	8,820
3	1-6	1,400		950	1-4	1,260	2-0	1,730	4-6	4,446	8-0	9,970
4	1-6	1,400		950	1-4	1,260	2-0	1,730	4-5	4,320	7-5	8,820
5	1-6	1,400		950	1-4	1,260	2-0	1,730	4-5	4,320	6-9	7,660
6	1-6	1,400		950	1-4	1,260	3-0	2,670	4-5	4,320	6-5	6,690
7	1-7	1,480		950	1-4	1,260	3-2	2,870	4-5	4,320	5-5	5,570
8	1-7	1,480		950	1-4	1,260	3-2	2,870	4-5	4,320	5-0	4,930
9	1-7	1,480		950	1-4	1,260	3-2	2,870	4-8	4,690	5-0	4,930
10	1-7	1,480		950	1-4	1,260	3-5	3,200	5-0	4,930	5-8	5,970
11	1-7	1,480		950	1-4	1,260	3-5	3,200	5-5	5,570	6-4	6,840
12	1-7	1,480		950	1-5	1,330	3-5	3,200	5-5	5,570	6-8	7,480
13	1-6	1,400		950	1-5	1,330	3-8	3,530	6-0	6,250	7-7	9,250
14	1-6	1,400		950	2-0	1,730	3-8	3,530	7-0	7,850	8-2	10,500
15	1-6	1,400	Frozen	950	2-0	1,730	4-0	3,750	7-0	7,850	9-5	13,900
16	1-6	1,400		950	2-0	1,730	4-0	3,750	6-5	6,990	10-1	15,600
17	1-6	1,400		950	2-4	2,090	3-8	3,530	5-9	6,110	10-4	16,500
18	1-6	1,400		950	2-0	1,730	3-5	3,200	5-7	5,830	9-7	14,500
19	1-6	1,400		950	2-2	1,900	3-5	3,200	5-7	5,830	9-0	12,500
20	1-5	1,330		950	2-6	2,280	3-5	3,200	6-2	5,540	8-3	10,700
21	1-4	1,260		950	2-8	2,470	3-6	3,310	7-0	7,850	7-8	9,500
22	1-4	1,260	1-0	980	2-8	2,470	3-5	3,200	7-0	7,850	7-2	8,230
23	1-2	1,110	1-0	980	3-0	2,670	3-2	2,870	7-5	8,820	6-8	7,480
24	1-0	980	1-0	980	3-0	2,670	3-2	2,870	7-7	9,250	6-5	6,990
25	1-0	980	1-0	980	3-0	2,670	3-2	2,870	7-0	7,850	6-8	7,480
26	Frozen	950	1-0	980	2-8	2,470	3-0	2,670	6-7	7,310	7-4	8,620
27		950	1-0	980	2-8	2,470	3-0	2,670	6-0	6,250	7-4	8,620
28		950	1-0	980	2-8	2,470	3-0	2,670	5-0	4,930	7-8	9,480
29		950			2-0	1,730	3-0	2,670	4-8	4,690	8-0	9,970
30		950			2-0	1,730	3-2	2,870	4-8	4,690	8-2	10,400
31		950			2-0	1,730			5-0	4,930		

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DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles from Lillooet Lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	9-4	13,600	8-0	10,000	6-8	7,500	4-0	3,750	5-0	4,930	3-5	3,200
2.....	9-9	15,000	8-5	11,200	6-8	7,500	3-8	3,530	5-0	4,930	3-2	2,870
3.....	10-8	17,700	9-2	13,100	7-0	7,850	3-5	3,200	4-6	4,440	3-0	2,670
4.....	10-8	17,700	9-6	14,200	6-8	7,500	3-0	2,670	4-5	4,320	3-0	2,670
5.....	9-8	14,700	9-0	12,500	6-7	7,300	3-2	2,870	4-5	4,320	2-8	2,470
6.....	9-4	13,600	8-9	12,300	6-4	6,840	3-4	2,990	4-0	3,750	2-7	2,380
7.....	8-7	11,700	7-6	9,000	6-0	6,250	3-4	2,990	3-8	3,530	2-7	2,380
8.....	8-7	11,700	6-6	7,200	6-5	7,000	3-8	3,530	3-7	3,420	2-8	2,470
9.....	8-8	12,000	7-4	8,630	6-0	6,250	3-9	3,640	4-7	4,570	2-6	2,280
10.....	9-5	13,900	7-8	9,500	5-8	5,970	4-0	3,750	4-0	3,750	2-3	2,000
11.....	10-0	15,300	8-2	10,400	5-2	5,180	4-0	3,750	4-2	3,970	2-0	1,730
12.....	9-8	14,700	8-6	11,500	5-0	4,930	5-0	4,930	3-8	3,530	2-0	1,730
13.....	10-6	17,100	9-0	12,500	4-4	4,200	8-55	11,300	3-8	3,530	2-0	1,730
14.....	10-5	16,800	9-8	14,700	4-2	3,970	11-3	19,200	3-6	3,310	1-8	1,570
15.....	10-6	15,300	9-2	13,100	4-1	3,860	10-8	17,700	3-3	2,980	1-8	1,570
16.....	9-2	13,100	9-0	12,500	3-5	3,200	11-0	18,300	3-0	2,670	1-8	1,570
17.....	9-5	13,900	8-6	11,500	3-8	3,530	11-2	18,900	3-0	2,670	1-8	1,570
18.....	10-0	15,300	8-0	10,000	4-0	3,750	7-8	9,500	2-8	2,470	1-7	1,453
19.....	10-8	17,700	8-5	11,200	3-8	3,530	6-4	6,840	2-8	2,470	1-7	1,453
20.....	11-0	18,300	9-0	12,500	3-5	3,200	5-8	6,000	2-8	2,470	1-7	1,480
21.....	9-0	12,500	9-0	12,500	3-5	3,200	5-4	5,440	2-8	2,470	1-7	1,480
22.....	7-5	8,820	9-0	12,500	3-8	3,530	4-8	4,690	3-0	2,670	1-7	1,480
23.....	7-5	8,820	8-4	11,000	3-8	3,530	4-5	4,320	3-0	2,670	1-8	1,570
24.....	8-0	10,000	7-8	9,500	4-0	3,750	4-0	3,750	3-2	2,870	1-8	1,570
25.....	8-4	10,900	7-8	9,500	4-5	4,320	4-0	3,750	4-4	4,200	1-8	1,570
26.....	8-7	11,700	7-5	8,280	5-0	4,930	4-2	3,970	4-8	4,700	1-8	1,570
27.....	8-0	10,000	7-8	9,500	5-0	4,930	4-3	4,080	4-2	3,970	1-9	1,655
28.....	6-4	6,800	7-6	9,000	4-8	4,700	4-2	3,970	4-2	3,970	1-9	1,650
29.....	6-8	7,500	6-8	7,500	4-5	4,320	5-0	4,930	3-8	3,530	1-8	1,570
30.....	7-2	8,200	6-8	7,500	4-5	4,320	7-6	7,850	3-5	3,200	1-8	1,570
31.....	7-5	8,800	6-8	7,500	.....	.....	7-2	8,230	.....	.....	1-8	1,570

RILEY CREEK (1043).

Location.—Above irrigation ditches, about half a mile from the mouth and 9 miles from Lillooet.

Records Available.—Daily discharges from July 28, 1914, to October 14, 1914, (irrigation season).

Drainage Area.—Five square miles (measured from provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to old flume just below the falls. Readings every second day.

Channel.—Fairly wide and shallow. The bed consists mainly of solid rock and gravel. The current is swift. The metering section is a good one.

Discharge Measurements.—Two discharge measurements in 1914 define the rating curve fairly well for the variations during the irrigation season.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—D.

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RILEY CREEK (1043).

Riley creek rises in the mountains to the south of Lillooet and discharges into the Fraser river about 9 miles below Lillooet at an elevation of about 620 feet. The drainage area is about 5 square miles.

The climate in the Riley Creek basin is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 20 inches.

A large fraction of the water flowing in Riley creek is used to irrigate the benches on the Fraser river near the mouth of the stream. It is very probable the remaining flow could be utilized to advantage on these benches. The possibilities of conserving the high-water flow have never been fully investigated.

DISCHARGE MEASUREMENTS of Riley Creek above intake of irrigation ditch, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 28	H. C. Hughes.....	1046	13	11.6	1.84	1.35	21.4
Sept. 16	do	1046	13	6.9	1.08	1.25	7.5

¹ Station established.

MONTHLY DISCHARGE of Riley Creek above irrigation ditches, for 1914.

(Drainage area, 5 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
August	21	4	10.4	2.1	2.4	640
September	13	8	11.0	2.2	2.5	650

Accuracy "D".

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DAILY GAUGE HEIGHT AND DISCHARGE OF Riley Creek above irrigation ditches,
for 1914.—*Con.*

DAY.	July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-3	13		13		13
2				17	1-3	13	1-3	13
3			1-35	21		13		13
4				17	1-3	13	1-3	13
5			1-30	13		13		13
6				13	1-3	13	1-3	13
7			1-30	13		10		13
8				13	1-25	8	1-3	13
9			1-30	13		8		13
10				13	1-25	8	1-3	13
11			1-30	13		8		13
12				10	1-25	8	1-3	13
13			1-25	8		8		13
14				8	1-25	8	1-3	13
15			1-25	8		8		
16				8	1-25	8		
17			1-25	8		8		
18					1-25	8		
19			1-25	8		10		
20				8	1-3	13		
21			1-20	4		13		
22				4	1-3	13		
23			1-20	4		13		
24				6	1-3	13		
25			1-25	8		13		
26				8	1-3	13		
27			1-25	8		13		
28				10	1-3	13		
29	1-3	13	1-30	13		13		
30	1-3	13	1-30	13	1-3	13		
31				13				

SETON CREEK (1049).

Location.—At footbridge at provincial hatchery, about half a mile below Seton lake, and three miles from Lillooet.

Records Available.—Daily discharges from April 6 to December 31, 1914.

Drainage Area.—460 square miles (measured from provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow, and strewn with boulders. The current is quite swift. The measuring section is hardly an ideal one, though about the best obtainable on the stream.

Discharge Measurements.—Four discharge measurements taken in 1914 define the rating curve fairly well except for extremely low or extremely high stages.

Winter Flow.—Open water conditions all year.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should insure a reasonable degree of accuracy, except possibly at the extreme stages.

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SETON CREEK (1049).

Seton Creek has its source in Seton lake at an elevation of 800 feet, and discharges into Cayuse creek at an elevation of 750 feet. The stream itself is only about $1\frac{1}{2}$ miles in length, but the lakes which feed it have a drainage area of some 460 square miles.

Seton creek itself is in the dry belt, though some of the territory it drains is outside. The mean annual precipitation at Lillooet is probably about 15 inches, while it may be as high as 30 or even 40 at the headwaters of some of the tributaries. The general climatic conditions vary in a similar manner.

Seton creek forms part of quite an interesting system of waterways. Anderson river rises near the divide which separates it from the Birkenhead, and flows into Anderson lake, which has a number of other rather important streams tributary to it. Anderson lake discharges through Portage creek into Seton lake, which in its turn is drained by Seton creek. The two lakes at one time formed part of quite an important route into the Lillooet and Cariboo country by Harrison lake and the Lillooet river. The construction of the Yale-Cariboo wagon road caused the practical abandonment of this route years ago, but now the country is being opened up again by the construction of the Pacific Great Eastern railway. The railroad, coming up from Squamish to Pemberton, crosses the divide from the Birkenhead, runs along the shores of Anderson and Seton lakes, follows Seton and Cayuse creeks and then crosses the Fraser river below Lillooet on its way to Clinton and Fort George. During the railroad construction the lakes were used extensively for the transportation of supplies.

The country surrounding Seton and Anderson lakes is very picturesque, and should be a good place for a summer resort. There is plenty of good hunting and fishing in the vicinity in addition to the numerous attractions which the lakes themselves afford.

The Provincial Fisheries Department is operating a fish hatchery on Seton creek. The Salmon coming up from the Fraser river are taken in the creek just below Seton lake. The spawn are hatched and the fry are kept for a time in the tanks at the hatchery. The supply of fresh water required for this purpose is taken from Seton lake.

Owing to the comparatively small fall in Seton creek and the low elevation of Seton lake, there is not much opportunity for using the water for developing water-power or even for irrigation.

There is a considerable quantity of timber on the hills surrounding the two lakes. It is generally fairly easy to get the logs down to the water, and then they can be towed to the saw-mills. There is a saw-mill on each lake.

On account of the proximity of Bridge river to Seton lake, and the great difference in altitude, there is a splendid chance to develop a large amount of water-power. By driving a tunnel through the intervening ridge, water could be diverted from Bridge river and conveyed to a point on the hillside above Seton lake, whence penstocks could be laid to a power-house situated beside the lake. Such an installation could make use of the whole minimum flow of Bridge river at a head of about 2,000 feet. If storage could be obtained on Bridge river, the available flow at low water could be increased. Such a development might mean the addition of more than 500 cubic feet per second to the natural flow of Seton creek and it would be necessary to enlarge its channel in order that it might carry off this greatly increased discharge without damage to the surrounding property. The tunnel portal and the penstocks for such a plant would be located on the hillside above the Pacific Great Eastern railway, and it would be necessary to take extra precautions to prevent leaks or breaks which might wash out the track.

There are three creeks of some importance flowing into Anderson lake, and brief descriptions of them are added here. As yet no measurements have been taken on them by the engineers of this survey, partly on account of the poor transportation facilities. Next season, however, measurements will probably be made on some or all of them.

ANDERSON RIVER.

Anderson river rises in Summit lake at an elevation of 1,600 feet and discharges into the southern end of Anderson lake at an elevation of 850 feet. Cedar, Spruce and Little Blackwater creeks are tributaries of Anderson river.

The climatic conditions in the Anderson Creek valley differ considerably from those around Lillooet. The summers are milder and the winters are not quite as cold. The mean annual precipitation is considerably greater, being between 30 and 40 inches. Irrigation is practised to some extent, but is not so necessary, as in the country immediately surrounding Lillooet.

The soil in the Anderson river valley is very fertile, and much of the best land has been taken up for settlement. This development will probably be increased on account of greatly improved transportation facilities afforded by the railroad. There is a good growth of timber in many parts of the valley. The surrounding hills are rich in minerals, and many claims have been staked, though comparatively little development has been done as yet.

LITTLE BLACKWATER.

Little Blackwater creek, which is a tributary of Anderson river, rises in Little Blackwater lake. About 3 miles of swampy land separate this lake from Big Blackwater lake, which is said to be at a somewhat higher elevation. Little Blackwater creek is quite small itself, but by diverting water into it from Big Blackwater lake, it is possible that a considerable amount of water-power might be developed by a pipeline down the valley of Little Blackwater creek.

MCGILLIVRAY CREEK.

McGillivray creek rises in the hills northwest of Anderson lake, into which it discharges.

Near the mouth of the creek there is a falls about 60 feet high at which a considerable amount of water-power might be developed. A small fraction of the water is being used at present to run a saw-mill which is situated at the mouth. Water is led from the head of the falls through a 6-inch wooden stave pipe to the turbines which drive the mill.

There are gravel deposits on this stream which contain small quantities of gold, and they are being worked to a certain extent.

ROARING CREEK.

This stream empties into Anderson lake about 7 miles from its southern end. It has quite a high water fall on it at which water-power could probably be developed.

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DISCHARGE MEASUREMENTS of Seton Creek near Seton Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 6 ...	H. J. E. Keys	1046	66	112	3.23	1.72	362 ¹
June 13	Keys & Hughes	1046	78	231	6.73	3.30	1,556
" 19	H. C. Hughes	1046	78	261	7.50	3.70	1,967
Sept. 17	do	1046	73	134	3.64	2.20	488

¹ Station established.

MONTHLY DISCHARGE of Seton Creek below Seton Lake, for 1914.

(Drainage area, 460 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	450	300	362	0.8	0.9	21,500
May	1,760	420	1,013	2.2	2.5	62,300
June	2,280	1,660	1,848	4.0	4.5	110,000
July	2,800	1,760	2,390	5.2	6.0	147,000
August	1,760	700	952	2.1	2.4	58,500
September	610	450	492	1.1	1.2	29,300
October	610	450	510	1.1	1.3	31,400
November	610	450	509	1.1	1.2	30,300
December	450	340	382	0.8	0.9	23,500

Accuracy "C".

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DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			2-0	420	3-4	1,660	3-7	1,970	3-5	1,760	2-4	610
2			2-0	420	3-4	1,660	3-7	1,970	3-4	1,660	2-4	610
3			2-0	420	3-4	1,660	3-7	1,970	3-3	1,550	2-4	610
4			2-0	420	3-4	1,660	4-0	2,280	3-2	1,440	2-4	610
5	1-4	320	2-0	420	3-4	1,660	4-2	2,490	2-8	1,030	2-3	540
6	1-3	310	2-1	450	3-4	1,660	4-2	2,490	2-8	1,030	2-3	540
7	1-5	330	2-1	450	3-4	1,660	4-1	2,390	2-8	1,030	2-2	490
8	1-5	330	2-1	450	3-4	1,660	4-2	2,490	2-8	1,030	2-3	540
9	1-5	330	2-2	490	3-4	1,660	4-2	2,490	2-6	810	2-3	540
10	1-6	340	2-2	490	3-4	1,660	4-3	2,600	2-7	920	2-2	490
11	1-6	340	2-3	540	3-4	1,660	4-3	2,600	2-7	920	2-2	490
12	1-6	340	2-4	610	3-4	1,660	4-2	2,490	2-7	920	2-2	490
13	1-7	350	2-5	700	3-4	1,660	4-3	2,600	2-7	920	2-1	450
14	1-7	350	2-6	810	3-4	1,660	4-2	2,490	2-7	920	2-1	450
15	1-7	350	2-7	920	3-5	1,760	4-2	2,490	2-7	920	2-1	450
16	1-7	350	2-8	1,030	3-5	1,760	4-3	2,600	2-7	920	2-0	420
17	1-7	350	2-8	1,030	3-7	1,970	4-4	2,700	2-7	920	2-0	420
18	1-7	350	2-9	1,140	3-8	2,070	4-4	2,700	2-7	920	2-2	490
19	1-7	350	2-9	1,140	3-7	1,970	4-5	2,800	2-6	810	2-2	490
20	1-8	370	3-0	1,250	3-8	2,070	4-5	2,800	2-6	810	2-2	490
21	1-8	370	3-1	1,340	3-9	2,180	4-5	2,800	2-6	810	2-2	490
22	2-1	450	3-2	1,440	4-0	2,280	4-4	2,700	2-6	810	2-1	450
23	2-1	450	3-3	1,550	3-9	2,180	4-3	2,600	2-6	810	2-1	450
24	2-0	420	3-4	1,660	3-9	2,180	4-2	2,490	2-6	810	2-1	450
25	2-0	420	3-4	1,660	3-8	2,070	4-1	2,390	2-6	810	2-1	450
26	2-0	420	3-4	1,660	3-8	2,070	4-1	2,390	2-5	700	2-1	450
27	2-0	420	3-4	1,660	3-7	1,970	3-8	2,070	2-5	700	2-1	450
28	2-0	420	3-5	1,760	3-6	1,860	3-7	1,970	2-5	700	2-1	450
29	2-0	420	3-5	1,760	3-6	1,860	3-6	1,860	2-5	700	2-1	450
30	2-0	420	3-4	1,660	3-7	1,970	3-6	1,860	2-5	700	2-1	450
31			3-4	1,660			3-5	1,760	2-5	700		

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DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for
1914—*Con.*

DAY.	October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-2	490	2-2	490	2-1	450
2.....	2-2	490	2-3	540	2-1	450
3.....	2-2	490	2-4	610	2-1	450
4.....	2-2	490	2-4	610	2-0	420
5.....	2-2	490	2-4	610	2-0	420
6.....	2-2	490	2-4	610	2-0	420
7.....	2-2	490	2-4	610	2-0	420
8.....	2-2	490	2-4	610	2-0	420
9.....	2-2	490	2-4	610	2-0	420
10.....	2-2	490	2-3	540	2-0	420
11.....	2-2	490	2-3	540	1-9	390
12.....	2-2	490	2-3	540	1-9	390
13.....	2-2	490	2-3	540	1-9	390
14.....	2-1	450	2-3	540	1-9	390
15.....	2-1	450	2-2	490	1-8	370
16.....	2-1	450	2-2	490	1-8	370
17.....	2-2	490	2-1	450	1-8	370
18.....	2-2	490	2-1	450	1-8	370
19.....	2-2	490	2-1	450	1-8	370
20.....	2-3	540	2-1	450	1-7	350
21.....	2-3	540	2-1	450	1-7	350
22.....	2-3	540	2-1	450	1-7	350
23.....	2-4	610	2-1	450	1-7	350
24.....	2-4	610	2-1	450	1-7	350
25.....	2-4	610	2-1	450	1-7	350
26.....	2-4	610	2-1	450	1-7	350
27.....	2-3	540	2-1	450	1-6	340
28.....	2-3	540	2-1	450	1-6	340
29.....	2-2	490	2-1	450	1-6	340
30.....	2-2	490	2-1	450	1-6	340
31.....	2-2	490	.....	.....	1-6	340

SIX-MILE CREEK (1061).

Location.—At Highway bridge—1 mile from the mouth, 5 miles from Pemberton, and 56 miles from Squamish.

Records Available.—Daily discharges from June 2, 1914, to December 31, 1914.

Drainage Area.—Thirty square miles (measured from the provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow and strewn with boulders and coarse gravel. The current is very swift. The measuring section is hardly an ideal one, though about the best obtainable on the stream.

Discharge Measurements.—Five discharge measurements in 1914-15 define the rating curve fairly well, except for extremely high stages.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should insure a reasonable degree of accuracy, except possibly at extremely high stages.

SIX-MILE CREEK (1061).

Six-mile creek has its source in the mountains to the southwest of Pemberton and discharges into the Green river at an elevation of about 1,400 feet. It has a drainage area of something like 30 square miles.

The climate in the Six-mile creek watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great. There is a fairly heavy snowfall. The mean annual precipitation of the watershed is about 75 inches.

Six-mile creek is the second largest tributary of Green river. The stream has a very rapid fall, and considerable power might be developed on it. If a suitable strap site can be found on it, it would assist in regulating the flow in Green river for use at the proposed development at Nairn falls. Its value in this capacity has never been fully investigated.

The main line of the Pacific Great Eastern railway crosses the stream about three-quarters of a mile from the mouth. A flag-station, Tisdall, near this point, affords easy access to the gauging station.

There is some good farming land on the benches near the mouth of the stream, but it is little developed as yet.

DISCHARGE MEASUREMENTS of Six-mile Creek at mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 21....	Keys & Hughes.....	1046					
Aug. 12....	H. C. Hughes.....	1046	48	123	6.8	3.32	840
Sept. 9....	do.....	1046	45	66	4.43	2.28	220
" 10....	do.....	1046	45	86.4	5.13	2.80	446
Nov. 27....	Dobbie & Hughes..	1057	45	67.8	5.18	2.40	346 ²

¹ Stations established.

² Channel probably changed by freshet.

MONTHLY DISCHARGE of Six-mile Creek, 5 miles from Pemberton, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June...	1,720	390	866	28.9	32.2	52,000	C
July	1,900	540	1,170	39.0	45.0	71,900	C
August	1,090	390	717	23.9	27.6	44,100	B
September...							
October.	6,580	40	1,620	5.4	6.2	99,600	D
November	1,850	100	590	2.0	2.2	35,000	B

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DAILY GAUGE HEIGHT AND DISCHARGE OF Six-mile Creek at Highway Bridge,
for 1914.

DAY.	June.		July.		August.		September.		October.		November.		
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	
1	3.4	910	3.9	1,360	3.0	600	2.65	410	2.6	390	4.45	1,550	
2	3.4	910	4.2	1,630	3.2	750	2.6	390	2.4	320	4.25	1,680	
3	3.4	910	4.4	1,810	3.3	830	2.6	390	2.2	260	4.15	1,580	
4	3.0	600	4.3	1,720	3.4	910	2.6	390	2.1	230	3.95	1,400	
5	2.9	540	4.0	1,450	3.3	830	2.6	390	2.1	230	3.65	1,130	
6	2.7	440	3.8	1,270	3.3	830	2.6	390	1.9	180	3.35	870	
7	2.7	440	3.7	1,180	3.2	750	2.6	390	1.6	120	3.05	640	
8	2.6	390	3.5	1,000	3.2	750	2.6	390	1.1	40	3.25	790	
9	2.7	440	3.5	1,000	3.0	600	2.5	350	2.2	260	3.45	950	
10	2.8	490	3.4	910	3.0	600	2.3	290	2.7	440	3.15	710	
11	2.9	540	4.2	1,630	3.1	670	2.8	490	2.2	260	2.95	570	
12	3.1	670	4.5	1,900	3.2	750	2.8	490	2.1	230	2.75	460	
13	3.3	830	4.3	1,720	3.6	1,090	2.3	290	6.3	3,520	2.65	420	
14	3.8	1,270	4.4	1,810	3.4	910	2.3	290	6.0	3,250	2.45	330	
15	3.9	1,360	4.5	1,900	3.2	750	2.1	230	8.9	5,860	2.35	300	
16	4.2	1,630	4.3	1,720	3.2	750	2.0	200	9.7	6,580	2.35	300	
17	4.3	1,720	3.7	1,180	3.0	600				6,000	2.15	240	
18	4.0	1,450	3.8	1,270	2.9	540				4,000	1.95	190	
19	3.8	1,270	3.8	1,270	3.3	830				4.55	1,950	2.05	220
20	3.4	910	3.5	1,000	3.5	1,000				4.15	1,580	2.15	240
21	3.1	670	3.2	750	3.1	670				3.75	1,220	2.25	280
22	3.0	600	3.1	670	3.5	1,000				3.45	960	2.15	240
23	3.1	670	3.3	830	2.9	540				3.25	790	2.35	300
24	3.0	600	3.3	830	2.9	540				2.95	570	2.35	300
25	3.4	910	3.3	830	3.1	670				3.15	710	3.25	790
26	3.4	910	3.3	830	3.0	600				3.15	710	2.65	420
27	3.3	830	3.1	670	3.0	600				3.55	1,040	1.70	140
28	3.4	910	3.0	600	3.1	670				4.45	1,850	1.80	160
29	3.5	1,000	2.9	540	3.0	600				5.55	2,850	1.60	120
30	3.7	1,180	3.0	600	3.0	600				4.85	2,220	1.50	100
31			3.0	600	2.6	390				4.25	1,680		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Six-mile Creek at Highway Bridge,
for 1914—*Con.*

DAY.	December.	
	Gauge Height.	Discharge
	Feet.	Sec.-ft.
1	2.05	220
2	2.00	200
3	1.95	190
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	1.45	90
14	1.30	60
15	1.30	60
16	1.35	70
17		60
18	1.20	50
19	1.25	50
20		50
21		50
22	1.25	50
23		50
24		60
25	1.30	60
26		50
27	1.30	60
28		70
29	1.40	80
30	1.40	80
31	1.40	80

SOO RIVER (1037).

Location.—At Highway bridge, 2 miles from the mouth; 6½ miles from Pemberton, and 56 miles from Squamish.

Records Available.—Six meter measurements. Gauge readings are available from December 5, 1914. These can be used to get discharges when the curve is more thoroughly defined.

Drainage Area.—Seventy-five square miles (measured from the Provincial map of 1912, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders, gravel and silt. The current is fairly swift. The metering section is an excellent one.

Discharge Measurements.—Six meter measurements.

Winter Flow.—The measuring section is usually frozen over and the channel is affected by ice at times during the winter.

SOO RIVER (1037).

Soo river has its source in the mountains to the northwest of Green lake, and discharges into the Green river about 11 miles from its mouth, at an elevation of some 1,500 feet. It has a drainage area of something like 75 square miles.

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The climate in the Soo river watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great, and there is a fairly heavy snowfall. The mean annual precipitation for the whole watershed is about 75 inches.

The discharge figures indicate that there is a considerable quantity of water flowing in Soo river. This could be used to develop power in a small canyon about 2 miles from the mouth, in which there is a large fall. The stream could also be used to good advantage as a storage reservoir for power development on Green river at Nairn falls. About 20 miles from the mouth there is a string of fair-sized lakes and several large meadows which are well adapted for this purpose. A pack trail follows the stream up to the lakes.

The main line of the Pacific Great Eastern railway follows along the right bank for about 2 miles, and crosses 4 miles from the mouth.

There is some good farming land on the flats near the mouth of the stream. The Soo river is fairly well-timbered.

DISCHARGE MEASUREMENTS of Soo River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 24.....	H. J. E. Keys.....		107	329	2.67	2.93	
May 30.....	Keys & Hughes.....	1046	115	426	4.42	3.87	1,880
July 19.....	H. C. Hughes.....	1046	110	366	3.60	3.50	1,320
Aug. 13.....	do.....	1046	90	223	1.61	1.10	357 ²
Dec. 3.....	Dobbie & Hughes.....	1057					

Station established.

² Channel probably changed by freshet.

TEXAS CREEK (1044).

Location.—At the highway bridge, 14 miles from Lillooet, and on the west side of the Fraser river.

Records Available.—Daily discharges from April 14 to September 14, 1914 (irrigation season).

Drainage Area.—Fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to bridge pier, and referenced to three bench-marks. Gauge readings taken three times a week.

Channel.—Wide and shallow, covered with boulders. The measuring section on the lower side of the bridge is rather poor but is the best obtainable.

Discharge Measurements.—Four meter measurements taken during the spring and summer of 1914 define the rating curve fairly well for all but the highest stages.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—The four meter measurements agree fairly well and cover all but the highest stages. The gauge readings were taken only three times a week.

TEXAS CREEK (1044).

Texas creek has its source in the mountains to the south of Lillooet. Some of the mountain peaks in its vicinity attain an altitude of 8,000 feet. It discharges into the Fraser river some 14 miles below Lillooet, at an elevation of about 600 feet. It has a drainage area of something like 50 square miles.

6 GEORGE V, A. 1916

The climate in the Texas creek watershed is much similar to that of the Lillooet district generally; the summers are quite hot and the winters rather severe. At the mouth the mean annual precipitation is probably about 20 inches, and this may increase to 30 inches or more at the higher altitudes near the head-waters.

The discharge figures indicate that there is a considerable quantity of water flowing in Texas creek during the irrigation season, and in a dry part of the country like the Lillooet district, this water should be quite valuable. Unfortunately, the benches near the mouth are so high above the stream that it would be very costly to get the water up to them. There are large areas of good land on the opposite side of the Fraser river which might be irrigated from Texas creek, though the expense of conveying the water across the river would be quite high.

DISCHARGE MEASUREMENTS of Texas Creek one mile from mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 14	H. J. E. Keys	1046	19	29.7	3.60	1.20	107 ¹
June 7	Keys & Hughes	1046	22	42.7	5.47	2.00	233
July 29	H. C. Hughes	1046	22	43.0	2.96	1.50	137
Sept. 16	do	1046	20	26.3	2.39	1.00	63

¹ Station established, gauge referenced to bench-marks.

MONTHLY DISCHARGE of Texas Creek one mile from mouth, for 1914.

(Drainage area, 50 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	340	120	247	4.9	5.6	15,200
June	560	210	337	6.7	7.5	20,000
July	280	140	211	4.2	4.8	13,000
August	130	70	100	2.0	2.3	6,100
September	100	50	71	1.4	1.6	4,200

Accuracy "C".

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DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek one mile from mouth,
for 1914.

Day.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1.4	120	2.6	360	2.1	250		130	1.05	70
2			1.4	120		390		250	1.45	130		70
3			1.7	170	2.8	410	2.1	250		130	1.05	70
4			1.6	160		390		240	1.45	130		70
5			1.5	140	2.6	360	2.0	230		120	1.0	60
6			1.5	140		320		230	1.4	120		60
7			1.5	140	2.2	280	2.0	230		120	1.0	60
8			1.5	140		250		240	1.4	120		60
9			1.7	170	2.0	230	2.1	250		120	0.9	50
10			1.8	190		240		260	1.35	110		50
11				220	2.1	250	2.2	280		110	0.9	50
12			2.1	250		280		260	1.3	100		60
13				260	2.3	300	2.1	250		100	1.0	60
14			2.2	280		360		240	1.3	100		70
15	1.3	100		280	2.9	440	2.0	230		100	1.05	70
16	1.3	100	2.2	280		480		220	1.25	100		70
17	1.4	120		290	3.2	510	1.9	210		100	1.0	60
18	1.4	120	2.3	300		540		220	1.25	100		60
19	1.4	120		300	3.4	560	2.0	230		90	1.0	60
20	1.4	120	2.3	300		390		220	1.2	90		70
21	1.3	100		310	1.9	210	1.9	210		90	1.05	70
22	1.3	100	2.4	320		240		190	1.2	90		80
23	1.3	100		330	2.2	280	1.7	170		90	1.1	70
24	1.5	140	2.5	340		290		160	1.15	80		80
25	1.5	140		320	2.2	280	1.6	150		80	1.2	90
26	1.4	120	2.3	300		290		150	1.15	80		90
27	1.4	120		290	2.3	300	1.55	150		80	1.25	100
28	1.4	120	2.2	280		300		140	1.1	70		100
29	1.4	120		290	2.3	300	1.5	140		70	1.3	100
30	1.4	120	2.3	300		280		140	1.05	70		100
31				330			1.5	140		70		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek, one mile from mouth,
for 1914—*Con.*

DAY.	October.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1.....		100
2.....	1-3	100
3.....		100
4.....	1-25	100
5.....		90
6.....	1-2	90
7.....		90
8.....	1-15	80
9.....		80
10.....	1-1	70
11.....		70
12.....	1-05	70
13.....		70
14.....	1-0	60
15.....		
16.....		
17.....		
18.....		
19.....		0-8
20.....		
21.....		
22.....		
23.....		
24.....		
25.....		
26.....		
27.....		
28.....		
29.....		
30.....		
31.....		

MISCELLANEOUS METERING STATIONS.

Date.	Stream.	Tributary to—	Locality.	Gauge Height.	Discharge.	
				Feet.	Sec.-ft.	
		SOUTHERN DISTRICT.				
Aug. 26.....	Black.....	Howe sound.....	Above intake.....	0-49	1-40	
May 22.....	Trout—east.....	Trout lake.....	Hastings townsite.....		1-6	
	Trout—west.....	".....	".....		0-8	
July 14.....	Skagit.....	Gulf of Georgia.....	International boundary.....	2-68	1,240	
Aug. 12.....	Windermere.....	Burrard inlet.....	Bidwell bay.....	0-31	0-34	
" 14.....	".....	".....	".....	0-31	0-25	
Sept. 24.....	Capilano intake from Capilano creek				40-2	
	Overflow from intake.....				12-9	
	Amount entering city pipes.....				27-3	
		VANCOUVER ISLAND.				
June 11.....	Sooke.....	Sooke inlet.....	Two miles from mouth.....		57	
July 31.....	Ash.....	Mouth.....		2-00	247	
Sept. 11.....	".....	".....		1-68	141	
Dec. 14.....	".....	".....		2-30	382	

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 6

Kamloops Division—Hydrographic Data

CHAPTER VI.

KAMLOOPS DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

BOLEAN CREEK (2002).

Location.—Section 10, township 18, range 12, west 6th meridian.

Records Available.—May 23 to December 31, 1911; January 1 to September 16, 1912; April 27 to September 19, 1913; April 1 to December 8, 1914.

Drainage Area.—Eighty square miles.

Gauge.—Vertical staff gauge. Read by Clement Stickney, Falkland, B.C.

Channel.—Gravel, sandy and clean. One permanent channel. Average width about 20 feet.

Discharge Measurements.—In freset, measurements are made with a stay line and 6½ pound weight from a log. Low-water measurements are made by wading. Gauge-height discharge curve is fairly well defined from twelve meterings.

Winter Flow.—Partial ice conditions usually prevail during December and January.

Accuracy.—Fairly high, being probably within 10 per cent of obtaining conditions.

DISCHARGE MEASUREMENTS of Bolean Creek near Falkland, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 22.....	C. Corbould	1915	26.0	26.0	2.4	1.8	63.0 ¹
July 23.....	"	1915	20.0	15.1	1.38	1.3	20.8
Sept. 24.....	"	1915	16.5	6.8	1.13	1.15	7.7

¹See meterings 1911 and 1912, Water Resources Paper No. 1.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE OF Bolean Creek near Stickney's Ranch,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-25	15-6	2-24	148-4	2-42	210-8
2.....	1-30	18-2	2-47	230-3	2-40	203-0
3.....	1-30	18-2	2-67	311-4	2-42	210-8
4.....	1-40	24-0	2-57	270-0	2-32	174-2
5.....	1-42	25-3	2-50	242-0	2-25	151-5
6.....	1-47	28-5	2-30	167-0	2-20	136-0
7.....	1-57	35-7	2-30	167-0	2-15	122-5
8.....	1-55	34-2	2-35	185-0	2-15	122-5
9.....	1-57	35-7	2-75	345-0	2-10	109-0
10.....	1-60	38-0	2-85	387-0	2-20	136-0
11.....	1-60	38-0	2-80	366-0	2-30	167-0
12.....	1-65	42-5	2-90	408-0	2-25	151-5
13.....	1-75	52-0	2-87	395-4	2-22	142-2
14.....	1-90	71-0	3-05	470-0	2-17	127-9
15.....	1-97	82-9	3-02	457-4	2-10	109-0
16.....	2-00	88-0	2-95	428-5	2-10	109-0
17.....	1-92	74-4	2-80	366-0	2-05	98-5
18.....	1-87	66-8	2-72	332-4	2-00	88-0
19.....	1-85	64-0	2-66	307-2	1-90	71-0
20.....	2-00	88-0	2-60	282-0	1-85	64-0
21.....	1-95	79-5	2-60	282-0	1-80	57-0
22.....	1-90	71-0	2-60	282-0	1-80	57-0
23.....	1-85	64-0	2-67	311-4	1-82	59-8
24.....	1-90	71-0	2-70	324-0	1-82	59-8
25.....	1-90	71-0	2-57	270-0	1-90	71-0
26.....	1-90	71-0	2-52	250-0	1-82	59-8
27.....	1-95	79-5	2-42	210-8	1-72	49-0
28.....	2-00	88-0	2-37	192-2	1-70	47-0
29.....	2-00	88-0	2-30	167-0	1-70	47-0
30.....	2-05	98-5	2-27	157-7	1-65	42-5
31.....			2-3	167-0		

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DAILY GAUGE HEIGHT AND DISCHARGE of Bolean Creek near Stickney's Ranch for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-60	38-0	1-15	10-5	1-00	3-0	1-30	18-2	1-32	19-4	1-25	15-6
2	1-52	32-0	1-15	10-5	0-97	2-1	1-25	15-6	1-40	24-0	1-25	15-6
3	1-47	28-5	1-10	8-0	1-00	3-0	1-25	15-6	1-35	21-1	1-30	18-2
4	1-42	25-3	1-10	8-0	0-97	2-1	1-25	15-6	1-30	18-2	1-25	15-6
5	1-40	24-0	1-10	8-0	1-00	3-0	1-22	14-4	1-32	19-4	1-20	13-0
6	1-40	24-0	1-10	8-0	0-97	2-1	1-20	13-0	1-35	21-1	1-20	13-0
7	1-35	21-1	1-10	8-0	0-97	2-1	1-20	13-0	1-35	21-1	1-27	16-6
8	1-30	18-2	1-10	8-0	1-00	3-0	1-20	13-0	1-30	18-2	1-35	21-1
9	1-30	18-2	1-10	8-0	1-00	3-0	1-20	13-0	1-30	18-2		
10	1-30	18-2	1-10	8-0	1-00	3-0	1-20	13-0	1-30	18-2		
11	1-30	18-2	1-10	8-0	1-00	3-0	1-20	13-0	1-30	18-2		
12	1-32	19-4	1-10	8-0	1-07	6-5	1-27	16-6	1-30	18-2		
13	1-52	32-0	1-05	5-5	1-10	8-0	1-40	24-0	1-30	18-2		
14	1-77	54-0	1-05	5-5	1-15	10-5	1-32	19-4	1-25	15-6		
15	1-65	42-5	1-02	4-0	1-20	13-0	1-30	18-2	1-25	15-6		
16	1-47	28-5	1-00	3-0	1-15	10-5	1-30	18-2	1-30	18-2		
17	1-40	24-0	1-00	3-0	1-20	13-0	1-30	18-2	1-25	15-6		
18	1-37	22-3	1-00	3-0	1-25	15-6	1-30	18-2	1-25	15-6		
19	1-35	21-1	1-00	3-0	1-25	15-6	1-30	18-2	1-30	18-2		
20	1-35	21-1	1-00	3-0	1-22	14-4	1-30	18-2	1-30	18-2		
21	1-40	24-0	1-00	3-0	1-20	13-0	1-30	18-2	1-30	18-2		
22	1-30	18-2	1-00	3-0	1-20	13-0	1-30	18-2	1-27	16-6		
23	1-30	18-2	1-00	3-0	1-20	13-0	1-30	18-2	1-25	15-6		
24	1-30	18-2	1-00	3-0	1-15	10-5	1-24	15-0	1-27	16-6		
25	1-30	18-2	1-00	3-0	1-15	10-5	1-25	15-6	1-30	18-2		
26	1-25	15-6	1-00	3-0	1-20	13-0	1-25	15-6	1-30	18-2		
27	1-25	15-6	1-00	3-0	1-70	47-0	1-25	15-6	1-30	18-2		
28	1-20	13-0	1-00	3-0	1-45	27-2	1-25	15-6	1-30	18-2		
29	1-20	13-0	1-00	3-0	1-35	21-1	1-20	13-0	1-30	18-2		
30	1-20	13-0	1-00	3-0	1-30	18-2	1-20	13-0	1-25	15-6		
31	1-20	13-0	1-00	3-0			1-20	13-0				

MONTHLY DISCHARGE of Bolean Creek near Stickney's Ranch, for 1914.

(Drainage area, 80 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet
April	98-5	15-6	57-4	0-7	0-8	3-415
May	470-0	148-4	286-4	3-6	4-1	17-610
June	210-8	42-5	108-5	1-3	1-4	6-430
July	54-0	13-0	22-9	0-3	0-3	1-408
August	10-5	3-0	5-3	0-6	0-06	26
September	47-0	2-1	10-8	0-13	0-14	644
October	24-0	13-0	16-0	0-2	0-2	984
November	24-0	15-6	18-1	0-23	0-26	1-077
December						
The period	470-0	2-1	65-7	0-81	7-26	31-919

NOTE—Winter conditions obtained after December 8.

CAMPBELL CREEK (2004).

Location.—Section 26, township 19, range 16, west 6th meridian.

Records Available.—May 27 to October 4, 1911; April 1 to September 16, 1912; May 1 to August 31, 1913; April 1 to August 31, 1914.

Drainage Area.—Two hundred square miles.

Gauge.—Vertical staff gauge read by A. Holt of Barnhart Vale.

Channel.—Straight for about 100 feet at measuring section. Bed of stream sandy and fairly permanent. Average width of channel about 10 feet.

Discharge Measurements.—Gauge height discharge curve is very well defined from seven meterings taken during 1914. Measurements in high water taken from bridge with 6-pound weight. In low water, measurements taken by wading. Flow in this stream ceased altogether on August 23.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High; results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Campbell Creek at Todd's Corners, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 17.....	E. M. Dann.....	1505	9	6.7	0.83	0.88	5.5 ¹
May 5.....	E. M. Dann & E. H. Tredcroft.....	1055	9	17.0	1.75	1.6	29.7
May 15.....	do do.....	1055	20	33.9	2.13	2.6	72.0
June 20.....	C. B. Corbould.....	1915	9	10.0	1.1	1.05	11.0
June 25.....	do.....	1915	7	8.4	1.7	1.5	14.0
July 16.....	do.....	1915	11	12.1	1.56	1.25	19.0 ²
July 21.....	do.....	1915	11	10.7	1.29	1.15	13.8
Sept. 26.....	do.....	1915	5	1.1	0.7	0.55	0.8

Meterings not all made at same sections.

¹Dam at Campbell Lake closed.

²The only ranchers diverting water above station on this date were Messrs Pratt & Blackwell. The former using about 0.7 sec.-ft. and the latter about 1.2 sec.-ft.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek at Todd's Corners,
for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-20	15-5	1-12	13-1	1-75	35-5
2	1-20	15-5	1-17	14-6	1-67	32-4
3	1-20	15-5	1-25	17-2	1-62	30-5
4	1-20	15-5	1-31	19-2	1-51	26-4
5	1-21	15-8	1-52	26-8	1-45	24-2
6	1-15	14-0	1-83	38-7	1-45	24-2
7	1-11	12-8	1-87	40-3	1-45	24-2
8	1-10	12-5	1-92	42-3	1-42	23-1
9	1-01	10-1	1-97	44-4	1-40	22-4
10	1-01	10-1	2-00	45-7	1-40	22-4
11	1-01	10-1	2-10	50-0	1-35	20-6
12	1-00	9-8	2-25	56-6	1-30	18-9
13	0-99	9-3	2-45	65-5	1-30	18-9
14	0-96	8-7	2-60	72-2	1-27	17-9
15	0-95	8-4	2-60	72-2	1-20	15-5
16	0-91	7-5	2-60	72-2	1-20	15-5
17	0-90	7-3	2-60	72-2	1-25	17-2
18	0-86	6-4	2-55	70-0	1-25	17-2
19	0-85	6-2	2-50	67-7	1-15	14-0
20	0-95	8-4	2-40	63-3	1-06	11-4
21	1-00	9-8	2-32	59-7	1-03	10-6
22	1-00	9-8	2-28	57-9	1-05	11-1
23	0-95	8-4	2-22	55-3	1-02	10-3
24	0-90	7-3	2-18	53-6	1-02	10-3
25	1-00	9-8	2-02	46-5	1-00	9-8
26	1-05	11-1	2-00	45-7	0-97	8-9
27	1-05	11-1	1-95	43-6	0-95	8-4
28	1-05	11-1	1-91	41-9	0-97	8-9
29	1-05	11-1	1-90	41-5	0-92	7-8
30	1-10	12-5	1-86	39-9	0-92	7-8
31			1-81	37-9		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek near Todd's Corners,
for 1914—*Con.*

DAY.	July.		August.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-90	7-3	0-70	3-2
2	0-90	7-3	0-70	3-2
3	0-90	7-3	0-66	2-6
4	0-82	5-5	0-72	3-6
5	0-87	6-6	0-72	3-6
6	0-87	6-6	0-70	3-2
7	0-85	6-2	0-70	3-2
8	0-77	4-5	0-66	2-6
9	0-67	2-7	0-65	2-4
10	0-77	4-5	0-65	2-4
11	0-82	5-5	0-65	2-4
12	0-90	7-3	0-65	2-4
13	0-95	8-4	0-65	2-4
14	1-00	9-8	0-65	2-4
15	1-30	18-9	0-65	2-4
16	1-25	17-2	0-65	2-4
17	1-20	15-5	0-62	1-9
18	1-15	14-0	0-60	1-6
19	1-12	13-1	0-60	1-6
20	1-02	10-3	0-60	1-6
21	1-02	10-3	0-60	1-6
22	1-02	10-3	0-60	1-6
23	1-02	10-3		
24	0-87	6-6		
25	0-75	4-2		
26	0-75	4-2		
27	0-75	4-2		
28	0-80	5-1		
29	0-80	5-1		
30	0-71	3-4		
31	0-70	3-2		

MONTHLY DISCHARGE of Campbell Creek near Todd's Corners, for 1914.

(Drainage area, 200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	15-8	6-2	10-7	0-05	0-06	637-0
May	72-2	13-1	48-0	0-24	0-28	2,951-0
June	35-5	7-8	17-5	0-09	0-10	1,041-0
July	18-9	2-7	8-0	0-04	0-05	492-0
August	3-6	0-0	1-7	0-01	0-01	104-5
The period	72-2	0-0	17-2	0-09	0-50	5,225-0

NOTE.—No water coming down the creek at the station after August 22.

Precipitation is low (probably 12 inches per annum), and evaporation from lake surfaces near headwaters large.

SESSIONAL PAPER No. 25e

CANYON CREEK (2057).

Location.—Section 32, township 21, range 15, west 6th meridian.

Records Available.—June 7 to August 28, 1914.

Drainage Area.—Seven square miles.

Gauge.—Standard staff gauge read daily by D. A. McKenzie.

Channel.—Channel straight at measuring section, banks very heavily timbered, velocity fairly swift, bed of stream rocky with several channels at high water.

Discharge Measurements.—Four discharge measurements were obtained during 1914 at various stages. Stream generally runs dry during end of August, and remains so until following spring.

Winter Flow.—Ice conditions always exist on this stream throughout the winter.

Accuracy.—The accuracy of returns will eventually be high but more data are required before the stream can be properly rated.

DISCHARGE MEASUREMENTS of Canyon Creek above Hefley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 2.....	C. B. Corbould.....	1,915	5	2.7	1.44	.....	3.9
June 7.....	do	1,915	5	5.45	0.72	1.8	3.9
June 30.....	do	1,915	4.5	3.5	0.33	1.45	1.17
Aug. 13.....	do .....	.....	.....	.....	.....	0.15	0.0 ¹

¹Water standing in pools.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Hefley Lake,
for 1914.

DAY.	June.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1		
2		
3		
4		
5		
6		
7	1-80	3-9
8	1-80	3-9
9	1-80	3-9
10	1-80	3-9
11	1-76	3-5
12	1-72	3-1
13	1-72	3-1
14	1-70	2-8
15		
16	1-60	2-0
17		
18		
19	1-50	1-4
20		
21		
22	1-40	1-1
23		
24	1-45	1-3
25		
26	1-55	1-7
27		
28		
29	1-50	1-4
30	1-45	1-3

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Heffley Lake,
for 1914—*Con.*

DAY.	July.		August.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			0-45	0-1
2.....				
3.....	1-35	0-9		
4.....			0-40	0-1
5.....				
6.....			0-35	0-1
7.....	1-20	0-7		
8.....				
9.....	1-10	0-6		
10.....			0-25	0-05
11.....				
12.....				
13.....	0-95	0-4	0-1	0-0
14.....				
15.....				
16.....				
17.....				
18.....	0-75	0-3		0-0
19.....				
20.....				
21.....	0-70	0-3		
22.....				
23.....				
24.....				
25.....	0-60	0-2		
26.....				0-0
27.....				
28.....	0-50	0-2		
29.....				
30.....				
31.....				

MONTHLY DISCHARGE of Canyon Creek above Heffley Lake, for 1914.

(Drainage area, 7 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	3-9	1-1	2-6	0-4	0-4	155
July.....	0-9	0-2	0-4	0-06	0-07	24 8
August.....	0-1	0-0	0-05	0-01	0-01	3 0

NOTE.—Station was established on June 7. Creek stopped running on August 10. No precipitation records available

CLEARWATER RIVER (2047).

Location.—Near Raft River; Water District No. 2.

Records Available.—August 12 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—2,400 square miles.

Gauge.—Standard chain gauge graduated in feet and tenths, and read by Theo. Brookfield, rancher.

Measuring Section.—500 feet above gauge; width of channel 230 feet. Bed of stream rocky and permanent. Deepest point in measuring section at highest recorded water level 22 feet. Highest mean velocity 7.78 feet per second.

Methods of Gauging.—Discharge measurements are made from car suspended from $\frac{3}{4}$ inch steel cable.

Channel.—The channel varies in width throughout its course from 100 to 400 feet, and passes over several small falls and rapids.

Winter Flow.—The Clearwater river is seldom frozen during winter to the extent of materially affecting the accuracy of returns.

Accuracy.—The accuracy on the whole will be high, the curve being well rated, and the only possibility of error being in the present chain gauge which it is proposed to replace early in the spring of 1915.



Confluence of Myrtle and Clearwater rivers.

Photograph by F. R. Arehibald

The Myrtle river is in the foreground flowing north-westerly. The Clearwater, flowing south swings to the south-west at its junction with the Myrtle. Both rivers have storage facilities for power purposes.

SESSIONAL PAPER No. 25e

CLEARWATER RIVER.

Twenty-four miles above its confluence with the North Thompson the two principal component tributaries of the Clearwater river join. The more westerly stream of the two, geographers have named the Clearwater, while the other, which is probably the more important, is known as the Myrtle.

The Clearwater river above its junction with the Myrtle.—The Clearwater river rises in the steep hills and glaciers surrounding Upper Clearwater lake, a sheet of water with a superficial area of some 15 square miles, distant about $5\frac{1}{2}$ miles by trail from the head of Quesnel lake. Mr. F. C. Green, B.C.L.S., places the elevation of Upper Clearwater lake at 405 feet above Quesnel lake, whose altitude the Geological Survey gives as 2,250 feet above sea-level. Clearwater river, discharging from its south end is said to fall 600 feet in a distance of 7 miles in its tumultuous course to Lower Clearwater lake. (This amount is thought to be overestimated since it makes the elevation of Lower Clearwater lake coincide with the elevation of the confluence of the Myrtle and Clearwater as determined by Mr. R. H. Lee, B.C.L.S.) Two tributaries join from the east in this distance Goat creek about a mile and a half south of the Upper lake, and the outlet of Blue lake about 4 miles farther down. Blue lake lies but a quarter of a mile east, and is represented as being a beautiful rockbound sportsman's paradise, with rainbow trout and cariboo in abundance. It is said to be about 15 miles long and 1 mile wide. Navigation by canoe is possible between Blue lake and Lower Clearwater lake, which is about 17 miles long and a mile wide. The Clearwater river, draining from its south end joins the Myrtle about 13 miles below at an elevation of about 2,000 feet above the sea. Little information could be obtained regarding the course of the Clearwater between Lower Clearwater lake and the Myrtle river.

The Myrtle river.—(see description Myrtle river.)

The Clearwater river below its junction with the Myrtle.—In the twenty-four miles of its course to the North Thompson, the Clearwater river drops about 675 feet at a rate of about 31 feet to the mile. It passes through a series of rocky canyons in its course, but so far as is known there is no large natural concentrated fall. The width of the river in this part is from 200 to 500 feet.

The principal tributaries are:—

FROM THE WEST.

Mahood river (or Bridge creek).—This stream drains Canim and Mahood lakes and enters about 4 miles below the Myrtle. It is said to be a small stream "about the size of the Little Clearwater." Its drainage area is very large, though the probable low precipitation, and evaporation losses from the two large regulating lakes are contributing causes to a low run-off.

FROM THE EAST.

Little Clearwater river joins the Clearwater about 15 miles above its confluence with the Thompson. (See hydrographic data, Little Clearwater river.)

Beaver creek.—A small mountain torrent, 40 to 50 feet wide and a reported fall of 750 feet in three quarters of a mile. (June 10, 1914, 190 second-feet high water.) Joins Clearwater about 14 miles above North Thompson.

Bear creek, which joins the Clearwater about 8 miles from its mouth, is said to fall 800 feet in its last mile. (On June 11, 1914, its flow was 162 second-feet and on September 4, 1914, it was 7.4 second-feet.

Candle creek, joining about 4 miles from the river's mouth had a flow of 49.7 second-feet on June 11, and on 0.3 second-feet on August 29, 1914.

The station on the Clearwater was established by Mr. K. G. Chisholm in March, 1914, and cable station installed from which numerous meterings covering the range of stream-flow have been obtained. (See report British Columbian Minister of Lands for 1913 and, in particular articles on the Clearwater valley by Messrs. Green and Lee, British Columbia Land Surveyors.)

DISCHARGE MEASUREMENTS of Clearwater River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of	Mean	Gauge	Discharge.
				Section.	Velocity.	Height.	
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 16.....	K. G. Chisholm.....	1055	200	2,043	2.04	0.57	4.170
May 30.....	E. Tredcroft.....	1923	234.5	2,778	5.84	4.8	16,227 ¹
" 31.....	".....	1923	234	2,735	5.75	4.6	15,739 ¹
June 1.....	".....	1923	234	2,667	5.56	4.1	14,854 ¹
" 12.....	".....	1923	236	2,890	6.8	5.3	19,650 ¹
" 15.....	".....	1923	238	3,049	7.63	6.0	23,292 ¹
" 16.....	".....	1923	239	3,174	7.93	6.5	25,165 ¹
" 17.....	".....	1923	240	3,300	7.78	7.0	25,703 ¹
" 25.....	".....	1923	234	2,599	5.66	4.2	14,717 ¹
Sept. 19.....	E. M. Dann and E. H. Tredcroft.....	1923	201.5	2,022	2.61	1.29	5,283

¹Surface velocity; coefficient 0.89.

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1.50	5,650	1.70	6,100	4.10	14,475
2.....	1.50	5,650	1.90	6,600	4.70	17,000
3.....	1.40	5,450	2.60	8,700	5.40	19,975
4.....	1.40	5,450	2.60	8,700	6.05	22,825
5.....	1.40	5,450	2.70	9,050	6.20	23,500
6.....	1.30	5,275	2.70	9,050	5.90	22,150
7.....	1.20	5,100	2.70	9,050	5.75	21,475
8.....	1.10	4,950	2.70	9,050	5.50	20,400
9.....	1.00	4,800	2.90	9,775	5.30	19,550
10.....	0.70	4,360	3.10	10,525	5.30	19,550
11.....	0.60	4,230	3.40	11,675	5.30	19,550
12.....	0.50	4,110	3.60	12,475	5.30	19,550
13.....	0.20	3,750	3.90	13,675	5.30	19,550
14.....	0.00	3,560	4.20	14,875	5.50	20,400
15.....	0.40	3,960	5.30	19,550	6.00	22,600
16.....	0.60	4,230	5.66	20,825	6.60	25,250
17.....	0.70	4,360	5.50	20,400	7.10	27,500
18.....	0.80	4,490	5.50	20,400	7.20	27,950
19.....	0.90	4,640	5.40	19,975	7.05	27,275
20.....	1.00	4,800	5.30	19,550	6.80	26,150
21.....	1.00	4,800	5.30	19,550	6.60	25,250
22.....	1.10	4,950	5.40	19,975	6.30	23,950
23.....	1.10	4,950	5.50	20,400	6.00	22,600
24.....	1.10	4,950	5.90	22,150	5.60	20,825
25.....	1.20	5,100	6.00	22,600	5.30	19,550
26.....	1.20	5,100	5.90	22,150	5.20	19,125
27.....	1.20	5,100	5.65	21,037	5.20	19,125
28.....	1.30	5,275	5.35	19,762	5.30	19,550
29.....	1.40	5,450	5.10	18,700	5.40	19,975
30.....	1.50	5,650	4.80	17,425	5.50	20,400
31.....			4.60	16,575		
Total.....		145,650		480,324		647,025

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914
—Con.

(Drainage area, 2,400 square miles.)

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	5.60	20,825	3.80	13,225	2.05	7,012	3.00	10,150	1.10	4,950	0.00	3,590
2.	5.90	22,150	3.70	12,875	2.05	7,012	3.00	10,150	1.20	5,100	-0.10	3,490
3.	6.00	22,600	3.70	12,875	1.95	6,737	2.80	9,400	1.30	5,275	-0.10	3,490
4.	6.00	22,600	3.60	12,475	1.85	6,475	2.60	8,700	1.20	5,100	-0.10	3,490
5.	6.10	23,050	3.60	12,475	1.75	6,225	2.30	7,725	1.10	4,950	-0.10	3,490
6.	6.10	23,050	3.50	12,075	1.75	6,225	2.10	7,150	1.00	4,800	-0.20	3,400
7.	5.90	22,150	3.50	12,075	1.75	6,225	1.90	6,800	0.90	4,640	-0.20	3,400
8.	5.70	21,250	3.50	12,075	1.75	6,225	1.70	6,100	0.90	4,640	-0.30	3,300
9.	5.40	19,975	3.40	11,675	1.85	6,475	1.60	5,850	0.80	4,490	-0.40	3,200
10.	5.30	19,550	3.10	10,525	1.85	6,475	1.50	5,650	0.80	4,490	-0.50	3,110
11.	5.30	19,550	3.00	10,150	1.95	6,737	1.40	5,450	0.70	4,360	-0.60	3,020
12.	5.30	19,550	2.80	9,400	1.75	6,225	1.30	5,275	0.70	4,360	-0.60	3,020
13.	5.50	20,400	2.60	8,700	1.55	5,750	1.20	5,100	0.60	4,230	-0.60	3,020
14.	5.70	21,250	2.50	8,350	1.35	5,362	1.10	4,950	0.50	4,110	-0.60	3,020
15.	6.00	22,600	2.50	8,350	1.15	5,025	1.00	4,800	0.40	3,990	-0.70	2,920
16.	6.00	22,600	2.50	8,350	1.05	4,875	0.90	4,640	0.30	3,870	-0.70	2,920
17.	5.70	21,250	2.30	8,350	1.05	4,875	1.00	4,800	0.30	3,870	-0.70	2,920
18.	5.30	19,550	2.30	7,725	1.10	4,950	1.20	5,100	0.20	3,750	-0.70	2,920
19.	5.10	18,700	2.45	8,187	1.40	5,540	1.40	5,450	0.20	3,750	-0.70	2,920
20.	4.90	17,850	2.45	8,187	1.60	5,850	1.50	5,650	0.10	3,640	-0.70	2,920
21.	4.80	17,425	2.35	7,875	1.70	6,100	1.50	5,650	0.10	3,640	-0.70	2,920
22.	4.60	16,575	2.35	7,875	1.70	6,100	1.40	5,450	0.10	3,640	-0.60	3,020
23.	4.60	16,575	2.25	7,575	1.70	6,100	1.30	5,275	0.10	3,640	-0.60	3,020
24.	4.60	16,575	2.25	7,575	1.80	6,350	1.30	5,275	0.10	3,640	-0.70	2,920
25.	4.50	16,150	2.15	7,287	1.80	6,350	1.20	5,100	0.10	3,640	-0.70	2,920
26.	4.30	16,150	2.05	7,012	2.00	6,875	1.20	5,100	0.00	3,590	-0.80	2,820
27.	4.40	15,725	2.05	7,012	2.20	7,425	1.10	4,950	0.00	3,590	-0.80	2,820
28.	4.20	14,875	2.15	7,287	2.40	8,025	1.00	4,800	0.00	3,590	-0.90	2,720
29.	4.10	14,475	2.15	7,287	2.80	9,400	0.90	4,640	0.10	3,640	-0.90	2,720
30.	4.00	14,075	2.15	7,287	3.00	10,150	0.90	4,640	0.10	3,640	-0.90	2,720
31.	3.90	13,675	2.05	7,012	.....	.....	0.90	4,640	.....	.....	-0.90	2,720
Total.	.....	592,775	.....	289,183	.....	193,060	.....	184,210	.....	124,615	.....	94,880

MONTHLY DISCHARGE of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April.	5,650	3,590	4,855	2.0	2.3	288,895
May	22,600	6,100	15,494	6.5	7.5	953,000
June	27,950	14,475	21,567	9.0	10.0	1,283,320
July	23,050	13,675	19,122	8.0	9.2	1,175,764
August	13,225	7,012	9,328	3.9	4.5	568,026
September	10,150	4,875	6,435	2.7	3.0	382,900
October	10,150	4,649	5,942	2.5	2.9	361,362
November	5,275	3,590	4,154	1.7	1.9	247,185
December	3,590	2,720	3,061	1.3	1.5	188,212
The period.	27,950	2,720	9,995	4.1	42.8	5,452,659

NOTE.—There are no available precipitation records of the Clearwater catchment basin. Maps are unreliable, and it would appear from the run-off figures shown that the drainage area given is not as large as the actual drainage area of the river. Since it was taken off the most reliable map available, however, it has been thought best not to alter it merely on the evidence of run-off figures for a period of one year.

LITTLE CLEARWATER CREEK (2056).

Location.—Near Raft River, Water District No. 2.

Records Available.—June 17 to December 31, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge set near footbridge at crossing of Myrtle River trail, and read by P. McDougal, rancher.

Channel.—Average width 40 feet. The velocities are low even at high water, seldom exceeding 2.0 feet per second. Maximum flow recorded during 1914, 272 second-feet. Bed of stream at measuring section composed of mud and silt.

Winter Flow.—Partial ice conditions exist during latter end of January and beginning of February.

Accuracy.—The accuracy of returns will eventually be high, but owing to the lateness of the season when the station was established, and the difficult means of access to this stream, especially during the winter months, only two discharge measurements were obtained during 1914.

LITTLE CLEARWATER RIVER.

The Little Clearwater is tributary to the Clearwater river at a point about 15 miles north of the latter's junction with the North Thompson. It rises in the Raft River range of mountains and flows in a southwesterly direction. It is probably about 12 miles in length, its average width about 50 feet, and its depth during ordinary stages about 3 or 4 feet. Its flow at the gauging station on McDougall's ranch (lot 3188), is somewhat sluggish, but in the lowest 4 miles of its course it falls at the rate of about 50 feet to the mile. High water occurs in June, and during January and February and sometimes part of December and March the stream is frozen over. A station was established by Mr. E. H. Tredcroft on June 6, 1915, on lot 3188, which is about 7 miles from the Clearwater junction.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Little Clearwater River near Green Mountain,
for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914. June 6.....	E. H. Tredcroft.....	1923	41	147	1.8	2.5	272
Sept. 3.....	E. H. Tredcroft and C. B. Corbould.....	1923	37	68	0.2	0.6	13.7

An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain for 1914.

DAY.	June.	
	Gauge Height	Discharge
	Feet.	Sec.-ft.
17.....	2.7	306
18.....	2.8	32
19.....	2.6	289
20.....	2.5	272
21.....	2.2	221
22.....	2.8	323
23.....	2.6	249
24.....	2.4	255
25.....	2.6	289
26.....	2.8	323
27.....	2.5	272
28.....	2.4	255
29.....	2.3	238
30.....	2.1	205

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-0	188	1-0	46	0-6	13	1-3	81	1-0	46	0-8	27
2.....	1-9	172	1-0	46	0-6	13	1-2	68	1-1	56	0-8	27
3.....	1-8	156	1-0	46	0-6	13	1-2	68	1-0	46	0-8	27
4.....	1-7	140	1-0	46	0-6	13	1-2	68	1-0	46	0-7	20
5.....	1-6	124	0-9	36	0-6	13	1-1	56	0-9	36	0-7	20
6.....	1-5	109	1-4	94	0-6	13	1-1	56	0-9	36	0-7	20
7.....	1-4	94	1-1	56	0-6	13	1-0	46	0-9	36	0-7	20
8.....	1-3	81	1-0	46	0-7	20	1-0	46	0-9	36	0-7	20
9.....	1-2	68	0-9	36	0-9	36	1-0	46	0-9	36	0-7	20
10.....	1-2	68	0-9	36	0-9	36	1-0	46	0-9	36	0-6	13
11.....	1-2	68	0-9	36	1-2	68	1-0	46	0-9	36	0-6	13
12.....	1-2	68	0-9	36	1-2	68	0-9	36	0-9	36	0-6	13
13.....	1-2	68	0-9	36	1-2	68	1-1	56	0-9	36	0-6	13
14.....	1-9	172	0-8	27	1-0	46	1-0	46	1-0	46	0-7	20
15.....	2-5	272	0-8	27	0-9	36	1-0	46	0-9	36	0-7	20
16.....	1-6	124	0-8	27	0-9	36	1-0	46	0-9	36	0-7	20
17.....	1-7	140	0-8	27	1-1	56	1-7	140	0-9	36	0-7	20
18.....	1-6	124	0-8	27	1-6	124	1-4	94	0-9	36	0-7	20
19.....	1-4	94	0-7	20	1-2	68	1-2	68	0-9	36	0-7	20
20.....	1-6	124	0-7	20	1-2	68	1-1	56	0-8	27	0-7	20
21.....	1-6	124	0-8	27	1-1	56	1-1	56	0-8	27	0-7	20
22.....	1-4	94	0-8	27	1-1	56	1-0	46	0-8	27	0-7	20
23.....	1-4	94	0-8	27	1-2	68	1-0	46	0-8	27	0-7	20
24.....	1-6	124	0-8	27	1-1	56	0-9	36	0-9	36	0-7	20
25.....	1-4	94	0-7	20	1-1	56	0-9	36	0-9	36	0-7	20
26.....	1-3	81	0-7	20	1-1	56	0-9	36	0-9	36	0-7	20
27.....	1-9	172	0-7	20	1-9	172	0-9	36	0-8	27	0-7	20
28.....	1-6	124	0-7	20	1-6	124	0-9	36	0-8	27	0-6	13
29.....	1-4	94	0-6	13	1-6	124	0-9	36	0-8	27	0-6	13
30.....	1-2	68	0-6	13	1-5	109	1-0	46	0-8	27	0-6	13
31.....	1-1	56	0-6	13	.....	.....	1-0	46	.....	.....	0-6	13

MONTHLY DISCHARGE of Little Clearwater River near Green Mountain, for 1914.

(Drainage area, 100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	323	205	276	2-76	3-08	16,423 ¹
July.....	272	56	115	1-15	1-32	7,071
August.....	94	13	32	0-32	0-37	1,967
September.....	172	13	57	0-57	0-63	3,391
October.....	140	36	54	0-54	0-62	3,320
November.....	56	27	36	0-36	0-39	2,142
December.....	27	13	19	0-19	0-22	1,168
The period.....	323	13	84-1	0-84	6-63	35,482

¹Station was established on June 17; results for June are therefore only approximate. No precipitation records available.

SESSIONAL PAPER No. 25e

CHERRY CREEK (2005).

Location.—Section 14, township 19, range 19, west 6th Meridian.

Records Available.—June 5 to September 1, 1911; April 24 to September 15, 1912; April 19 to October 19, 1913; May 1 to August 19, 1914.

Drainage Area.—Sixty-two square miles.

Gauge.—Standard chain gauge installed during 1914 in canyon, and read daily by F. Bowers, during high water, and twice weekly during low water. To replace station at Cornwall's ranch.

Channel.—Is straight at measuring section. Velocity swift at all stages. Control is fairly good.

Discharge Measurements.—Three discharge measurements were obtained during 1914 by wading at all stages.

Winter Flow.—Stream generally runs dry during August or September.

Accuracy.—Owing to shifting channel, too much reliance cannot be placed on returns from old station, but returns for new station established 1914 point to an exceptionally high degree of accuracy eventually being obtained.

DISCHARGE MEASUREMENTS of Cherry Creek above Bower's Ranch, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 13.....	E. H. Tredcroft.....	1055	14	14	5.02	1.7	70.3
June 11.....	C. Corbould.....	1915	12	5.1	1.8	0.7	9.0
July 3.....	do	1915	7	1.7	0.8	0.5	1.5

An effort will be made to completely rate this station during 1915. See meterings listed under miscellaneous measurements taken at Cornwall's ranch above diversion.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch,
for 1914.

DAY.	May.		June.		
	Gauge Height	Discharge	Gauge Height	Discharge	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	
1		14.5	0.65	6.9	
2		15.8	0.65	6.9	
3		17.2	0.60	4.9	
4		18.5	0.60	4.9	
5		19.9	0.60	4.9	
6		21.2	0.60	4.9	
7		22.6	0.60	4.9	
8		24.0	0.65	6.9	
9		44.0	0.65	6.9	
10		65.0	0.65	6.9	
11		86.0	0.70	9.0	
12		78.2	0.70	9.0	
13		1.70	70.3	0.70	9.0
14		1.70	70.3	0.65	6.9
15		1.60	62.8	0.65	6.9
16		1.55	59.1	0.65	6.9
17		1.45	51.9	0.60	4.9
18		1.40	48.5	0.60	4.9
19		1.40	48.5	0.55	3.2
20			38.4	0.55	3.2
21			28.2	0.55	3.2
22		0.90	18.0	0.50	1.4
23		0.90	18.0	0.55	3.2
24		0.85	15.5	0.55	3.2
25		0.80	13.0	0.60	4.9
26		0.80	13.0	0.55	3.2
27		0.75	11.0	0.55	3.2
28		0.70	9.0	0.55	3.2
29		0.70	9.0	0.55	3.2
30		0.65	6.9	0.55	3.2
31		0.65	6.9		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch,
for 1914—*Con.*

DAY.	July.		August.	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-50	1-4		0-4
2	0-50	1-4		0-3
3	0-50	1-4	0-30	0-3
4	0-45	1-1		0-3
5	0-45	1-1	0-30	0-3
6	0-40	0-8		0-3
7	0-40	0-8	0-30	0-3
8	0-40	0-8		0-3
9	0-35	0-5		0-3
10	0-35	0-5	0-30	0-3
11	0-35	0-5		0-3
12	0-35	0-5	0-30	0-3
13	0-35	0-5		0-3
14	0-30	0-3	0-30	0-3
15	0-30	0-3		0-3
16	0-30	0-3		0-2
17	0-30	0-3	0-25	0-2
18	0-30	0-3		0-2
19	0-30	0-3	0-25	0-2
20		1-8		
21	0-55	3-2		
22		6-1		
23	0-70	9-0		
24		8-0		
25	0-65	6-9		
26		5-9		
27	0-60	4-9		
28		2-8		
29	0-40	0-8		
30		0-7		
31	0-35	0-5		

MONTHLY DISCHARGE of Cherry Creek near Bower's Ranch, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet
May	86	6-9	33-1	1-10	1-12	2,035
June	9	1-4	5-2	0-17	0-19	307
July	9	0-3	2-05	0-07	0-08	126-4
August	0-4	0-0	0-17	0-006	0-007	10-4
The period	86	0-0	10-13	0-34	1-397	2,478-7

NOTE.—Station established May 13 to replace station at Cornwall's ranch, where a constantly shifting channel made results unreliable. It was also alleged that a very large loss by seepage occurred between the present station and Cornwall's ranch. Data acquired during 1914 disprove this allegation.

From May 1 to May 13, figures shown have been compiled from miscellaneous measurements at Cornwall's ranch on April 27, May 8, and May 11, by interpolation.

The creek stopped flowing at the gauge on August 19.

ESSELL CREEK (2011).

Location.—Section 36, township 17, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 7, 1912; April 16 to September 14, 1913; April 1 to December 4, 1914.

Drainage Area.—Six square miles.

Gauge.—Standard staff gauge read tri-weekly by T. F. Teagle.

Channel.—The channel is gravelly and permanent. Control is good, and velocities are not excessive.

Discharge Measurements.—Well-distributed meterings have been taken at all stages of water.

Winter Flow—Winter conditions are not, as a rule, severe; the stream is usually dry during the winter months.

A storage dam on Summit lake controls its flow, which is augmented by a diversion from Monte creek.

Accuracy.—The accuracy of results on the whole is fairly high, and should fall within ten per cent.

DISCHARGE MEASUREMENTS of Essell Creek below Summit Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 7.....	E. M. Dann & E. H. Tredcroft.....	1055	17	11.5	3.06	1.47	35.4
June 24.....	C. B. Corbould.....	1915	11	9.1	2.47	1.30	22.5
July 22.....	".....	1915	9.5	5.23	0.80	0.95	4.2
Sept. 25.....	".....	1915	5.5	1.03	0.56	0.70	0.6

For further measurements see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-90	3-2		25-8		35-0
2		3-3	1-38	28-5		34-5
3		3-4		32-6	1-45	34-0
4	0-91	3-5		36-7		36-7
5		3-4		40-8		39-5
6		3-4	1-58	44-8	1-55	42-2
7		3-3		48-3		42-7
8	0-90	3-2		51-8		43-1
9		3-8	1-70	55-3		43-5
10		4-4		55-3	1-57	44-0
11	0-97	5-0		55-3		42-5
12		4-6		55-3		41-1
13		4-1	1-70	55-3	1-52	39-7
14		3-6		66-3		38-6
15	0-90	3-2		77-3		37-6
16		3-4	2-05	88-3		36-6
17		3-6		82-4	1-47	35-6
18	0-92	3-7		76-4		33-0
19		3-9		70-4		30-4
20		4-1	1-86	64-4	1-37	27-8
21		4-3		62-0		27-4
22	0-95	4-5		59-5		27-0
23		4-7	1-72	57-1		26-6
24		4-8		55-0	1-35	26-2
25	0-97	5-0		52-8		27-5
26		8-9		50-7		28-8
27		12-8		48-6	1-40	30-0
28		16-7	1-60	46-5		30-0
29	1-27	20-5		42-8		30-0
30		23-2		39-2		30-0
31			1-47	35-6		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914—Con.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-40	30-0	1-10	10-2		1-7		0-9		2-5	0-82	2-0
2		28-8		9-1	0-80	1-7		1-0		2-5		2-1
3		27-5		8-0		1-6	0-75	1-2		2-5		2-3
4	1-35	26-2		6-9		1-4		1-1	0-85	2-5	0-85	2-5
5		24-8	1-00	5-8	0-75	1-2		1-0		2-5		
6		23-4		5-6		1-2		0-9		2-6		
7		22-0		5-3		1-2	0-72	0-8	0-87	2-7		
8	1-27	20-5	0-97	5-0		1-2		0-7		2-7		
9		21-2		5-2	0-75	1-2		0-6		2-6		
10		21-8		5-4		1-0	0-70	0-6		2-6		
11	1-30	22-5		5-6		0-8		0-8	0-85	2-5		
12		22-0	1-00	5-8	0-70	0-6		1-0		2-3		
13		21-5		4-9		0-6		1-2		2-0		
14		21-0		4-0		0-6	0-77	1-4	0-80	1-7		
15	1-27	20-5	0-90	3-2		0-6		1-5		1-9		
16		17-0		3-2	0-70	0-6		1-6		2-2		
17		13-6		3-2		0-6	0-80	1-7		2-4		
18	1-10	10-2		3-2		0-6		1-7	0-87	2-7		
19		8-9	0-90	3-2	0-70	0-6		1-7		2-7		
20		7-6		3-6		0-6		1-7		2-6		
21		6-3		4-0		0-6	0-80	1-7	0-85	2-5		
22	0-97	5-0	0-95	4-5		0-6		2-0		2-5		
23		4-4		3-8	0-70	0-6		2-2		2-6		
24		3-8		3-1		0-8	0-85	2-5		2-7		
25	0-90	3-2		2-4		1-0		2-5	0-87	2-7		
26		5-2	0-80	1-7	0-75	1-2		2-5		2-7		
27		7-2		1-7		1-1		2-5		2-6		
28		9-2		1-7		1-0	0-85	2-5	0-85	2-5		
29	1-12	11-3	0-80	1-7		0-9		2-5		2-3		
30		11-0		1-7	0-72	0-8		2-5		2-1		
31		10-6		1-7			0-85	2-5				

MONTHLY DISCHARGE of Essell Creek below Summit Lake, for 1914.

(Drainage area, 6 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.			RUN-OFF.
	Maximum.	Minimum.	Mean.	Total in acre-feet.
	April...	23-2	3-2	6-0	356-5
May.....	88-3	25-5	53-6	3,295-1
June....	44-0	26-2	34-7	2,066-0
July....	30-0	3-2	15-7	965-4
August..	10-2	1-7	4-3	264-4
September.	1-7	0-6	0-9	53-5
October..	2-5	0-6	1-6	98-4
November	2-7	1-7	2-5	149-0
December..	2-5	2-0		
The period	88-3	0-6	14-9	7,248-3

NOTE.—Winter conditions obtained after December 4.

The indicated run-off of Essell creek is not a true function of the drainage area, since its natural flow is augmented by a diversion from Monte creek to Summit lake. The flow out of Summit lake is also artificially controlled by a dam at its outlet.

No precipitation records available.

SESSIONAL PAPER No. 25e

GUICHON CREEK (2014).

Location.—Near Mamit lake, Water District No. 3.

Records Available.—June 3 to December 31, 1911; January 1 to November 14, 1912; April 26 to September 29, 1913; April 1 to November 30, 1914.

Drainage Area.—Three hundred and fifteen square miles.

Gauge.—Standard vertical staff gauge read daily by O. Quenville.

Channel.—Channel is straight at measuring section. Velocities fairly high. Bed of stream composed of sand and gravel, and considered permanent.

Discharge Measurements.—Twenty three discharge measurements have been taken on this creek. Curve is well defined,

Winter Flow.—Ice conditions generally prevail on this stream throughout January and February.

Accuracy.—Curve has been well defined and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Guichon Creek above Mamit Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 16.	C. B. Corbould.	1,915	26.0	58.4	1.7	2.9	98.9

For further meterings made at other points on Guichon creek during 1914, see list of miscellaneous measurements. For other hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-52	28-9	4-85	229-5	3-55	139-5
2.....	1-40	23-0	5-35	277-7	3-35	126-7
3.....	1-45	25-5	5-80	355-0	3-25	126-7
4.....	1-90	46-0	5-82	360-0	3-05	108-2
5.....	2-90	98-5	5-97	397-4	3-00	105-0
6.....	3-15	114-5	6-00	405-0	2-85	95-8
7.....	3-05	108-2	5-00	405-0	2-80	93-0
8.....	2-95	101-7	5-90	379-0	2-80	93-0
9.....	3-02	106-3	5-92	384-2	2-85	95-8
10.....	2-92	99-8	6-25	483-7	3-05	108-2
11.....	3-10	111-5	6-32	506-8	3-10	111-5
12.....	3-22	118-8	6-17	454-7	3-10	111-5
13.....	3-60	142-5	6-12	441-5	3-00	105-0
14.....	3-77	153-2	6-15	451-2	2-95	101-7
15.....	3-95	165-2	6-15	451-2	2-95	101-7
16.....	4-15	178-7	6-10	435-0	2-85	95-8
17.....	4-07	173-0	6-10	435-0	2-75	90-2
18.....	4-10	175-0	6-10	435-0	2-50	76-5
19.....	4-15	178-7	6-07	426-0	2-32	66-6
20.....	4-50	203-0	5-95	392-0	2-32	66-6
21.....	4-57	208-0	5-85	367-0	2-30	65-5
22.....	4-40	195-2	5-75	344-2	2-30	65-5
23.....	4-40	195-2	5-65	323-7	2-30	65-5
24.....	4-40	195-2	5-35	277-7	2-30	65-5
25.....	4-40	195-2	5-20	261-5	2-30	65-5
26.....	4-32	190-2	4-70	218-0	2-30	65-5
27.....	4-35	192-1	4-70	218-0	2-30	65-5
28.....	4-30	189-0	4-60	210-1	2-30	65-5
29.....	4-27	187-0	4-60	210-1	2-30	65-5
30.....	4-32	190-2	3-95	165-2	2-30	65-5
31.....			3-70	149-0		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake,
for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-30	65-5	1-50	28-0	1-10	12-0	1-15	14-0	1-20	16-0
2	2-20	60-5	1-47	26-5	1-10	12-0	1-15	14-0	1-20	16-0
3	2-10	55-5	1-45	25-5	1-10	12-0	1-15	14-0	1-20	16-0
4	2-00	50-5	1-45	25-5	1-10	12-0	1-15	14-0	1-20	16-0
5	1-92	46-9	1-45	25-5	1-10	12-0	1-15	14-0	1-20	16-0
6	1-90	46-0	1-45	25-5	1-05	10-0	1-15	14-0	1-20	16-0
7	1-90	46-0	1-45	25-5	1-07	10-8	1-15	14-0	1-37	21-8
8	1-90	46-0	1-50	28-0	1-10	12-0	1-15	14-0	1-30	19-0
9	1-80	41-0	1-55	30-2	1-15	14-0	1-15	14-0	1-25	17-5
10	1-80	41-0	1-60	32-5	1-20	16-0	1-17	14-8	1-25	17-5
11	1-80	41-0	1-52	28-9	1-20	16-0	1-20	16-0	1-20	16-0
12	1-75	39-0	1-42	24-0	1-20	16-0	1-20	16-0	1-20	16-0
13	1-70	37-0	1-30	19-0	1-20	16-0	1-20	16-0	1-20	16-0
14	1-65	34-7	1-30	19-0	1-25	17-5	1-40	23-0	1-20	16-0
15	1-62	33-4	1-30	19-0	1-30	19-0	1-37	21-8	1-20	16-0
16	1-60	32-5	1-30	19-0	1-30	19-0	1-25	17-5	1-20	16-0
17	1-60	32-5	1-30	19-0	1-30	19-0	1-25	17-5	1-20	16-0
18	1-60	32-5	1-30	19-0	1-30	19-0	1-22	16-6	1-20	16-0
19	1-60	32-5	1-27	18-1	1-35	21-0	1-20	16-0	1-20	16-0
20	1-50	28-0	1-25	17-5	1-35	21-0	1-20	16-0	1-20	16-0
21	1-50	28-0	1-25	17-5	1-25	17-5	1-20	16-0	1-25	17-5
22	1-50	28-0	1-25	17-5	1-20	16-0	1-20	16-0	1-25	17-5
23	1-50	28-0	1-25	17-5	1-20	16-0	1-20	16-0	1-25	17-5
24	1-50	28-0	1-20	16-0	1-20	16-0	1-20	16-0	1-25	17-5
25	1-50	28-0	1-20	16-0	1-20	16-0	1-20	16-0	1-25	17-5
26	1-50	28-0	1-20	16-0	1-20	16-0	1-20	16-0	1-25	16-9
27	1-40	23-0	1-10	12-0	1-20	16-0	1-20	16-0	1-25	17-5
28	1-40	23-0	1-10	12-0	1-17	14-8	1-20	16-0	1-20	16-0
29	1-40	23-0	1-20	16-0	1-15	14-0	1-20	16-0	1-20	16-0
30	1-40	23-0	1-15	14-0	1-15	14-0	1-20	16-0	1-20	16-0
31	1-40	23-0	1-15	14-0	.....	.....	1-20	16-0	.....	.....

MONTHLY DISCHARGE of Guichon Creek near Mamit Lake, for 1914.

(Drainage area, 315 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	208-0	23-0	142-9	0-45	0-5	8,503
May	506-8	149-0	346-7	1-1	1-2	21,317
June	139-5	65-5	89-4	0-28	0-31	5,320
July	65-5	23-0	36-3	0-11	0-13	2,232
August	32-5	12-0	20-7	0-07	0-08	1,273
September	21-0	12-0	15-4	0-05	0-06	916
October	21-8	14-0	15-9	0-05	0-06	978
November	21-8	16-0	16-7	0-05	0-06	994
December	.....	.....	.....	.....	.....	.....
The period	506-8	12-0	85-5	0-27	2-40	41,533

NOTE.—No precipitation data are available, but the total rainfall (including snowfall expressed in terms of rainfall) is probably 15 inches.

HEFFLEY CREEK—UPPER (2019).

Location.—Section 9, township 22, range 16, west 6th meridian.

Records Available.—May 25 to December 8, 1911; April 1 to September 20, 1912; May 11 to September 19, 1913; May 1 to December 9, 1914.

Drainage Area.—Twenty-eight square miles.

Gauge.—Standard vertical staff gauge read daily by F. S. Lawrence.

Channel.—Straight at measuring section and permanent bed.

Discharge Measurements.—Curve is well defined with series of meterings at all stages.

Winter Flow.—Ice conditions generally prevail during January and February. A dam at Heffley lake regulates the flow.

Accuracy.—The accuracy is considered to be fairly high, results should fall within 10 per cent at all stages.

DISCHARGE MEASUREMENTS of Heffley Creek below Heffley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 28.....	K. G. Chisholm.....	1,055	8-0	5-30	0-77	3-75	4-1
June 3.....	C. B. Corbould.....	1,915	10-0	7-03	0-90	3-92	6-3
June 30.....	do.....	1,915	10-0	6-50	0-91	3-90	5-9
Aug. 11.....	do.....	1,915	10-0	10-60	2-10	4-24	22-3
Oct. 29.....	do.....	1,673	8-0	3-47	0-28	3-40	1-0

For further measurements during 1914 on this stream, see Heffley Creek Lower Station, and for further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hefley Creek below Hefley Lake,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3-80	4-5	3-90	5-9
2			3-90	5-9	3-90	5-9
3		3-1	4-00	8-3	3-90	5-9
4		4-4	4-00	8-3	3-92	6-3
5		5-7	4-00	8-3	3-95	7-1
6		4-4	3-90	5-9	3-95	7-1
7		4-4	3-90	5-9	4-05	10-2
8		4-4	3-90	5-9	4-04	10-2
9		4-4	3-95	7-1	4-10	12-2
10		4-4	4-00	8-3	4-10	12-2
11		4-4	4-65	10-2	4-10	12-2
12		4-4	4-25	23-2	4-05	10-2
13		4-4	4-30	27-8	4-05	10-2
14		5-7	4-30	27-8	4-05	10-2
15		5-7	4-40	38-1	4-00	8-3
16		5-7	4-55	56-5	4-00	8-3
17		5-7	4-55	56-5	4-00	8-3
18		5-7	4-55	56-5	4-00	8-3
19		5-7	4-50	49-8	3-95	7-1
20		5-7	4-50	49-8	3-95	7-1
21		3-6	4-45	43-9	3-90	5-9
22		2-8	4-30	27-8	3-85	5-2
23		2-8	4-05	10-2	3-90	5-9
24		2-8	4-00	8-3	3-95	7-1
25		3-3	3-95	7-1	4-00	8-3
26		3-3	3-95	7-1	3-95	7-1
27		2-9	3-90	5-9	3-90	5-9
28		4-0	3-95	7-1	3-90	5-9
29		4-0	3-90	5-9	3-90	5-9
30		4-5	3-90	5-9	3-90	5-9
31			3-90	5-9		

DAILY GAUGE HEIGHT AND DISCHARGE of Hefley Creek below Hefley Lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-85	5-2	4-25	23-2	3-65	3-1	5-0	2-2	3-49	2-2	3-45	2-0
2.....	3-85	5-2	4-25	23-2	3-65	3-1	3-50	2-2	3-45	2-0	3-45	2-0
3.....	3-80	4-5	4-25	23-2	3-60	2-8	3-50	2-2	3-45	2-0	3-45	2-0
4.....	3-90	5-9	4-25	23-2	3-58	2-7	3-50	2-2	3-45	2-0	3-45	2-0
5.....	3-90	5-9	4-25	23-2	3-55	2-5	3-50	2-2	3-45	2-0	3-45	2-0
6.....	3-90	5-9	4-25	23-2	3-55	2-5	3-50	2-2	3-45	2-0	3-45	2-0
7.....	4-00	8-3	4-25	23-2	3-55	2-5	3-50	2-2	3-45	2-0	3-42	1-9
8.....	4-00	8-3	4-20	18-7	3-55	2-5	3-47	2-1	3-48	2-1	3-40	1-8
9.....	4-00	8-3	4-15	15-4	3-55	2-5	3-45	2-0	3-46	2-0	.....	.....
10.....	4-00	8-3	4-10	12-2	3-55	2-5	3-43	1-9	3-46	2-0	.....	.....
11.....	3-95	7-1	4-25	23-2	3-55	2-5	3-43	1-9	3-47	2-1	.....	.....
12.....	3-90	5-9	4-20	18-7	3-55	2-5	3-45	2-0	3-48	2-1	.....	.....
13.....	3-85	5-2	4-15	15-1	3-55	2-5	3-45	2-0	3-48	2-1	.....	.....
14.....	3-85	5-2	4-15	15-1	3-58	2-7	3-45	2-0	3-48	2-1	.....	.....
15.....	3-90	5-9	4-10	12-2	3-58	2-7	3-45	2-0	3-48	2-1	.....	.....
16.....	3-85	5-2	4-05	10-2	3-55	2-5	3-45	2-0	3-47	2-1	.....	.....
17.....	3-80	4-5	4-00	8-3	3-55	2-5	3-46	2-1	3-46	2-0	.....	.....
18.....	3-80	4-5	4-00	8-3	3-55	2-5	3-48	2-1	3-45	2-0	.....	.....
19.....	3-75	4-0	4-00	8-3	3-55	2-5	3-49	2-2	3-45	2-0	.....	.....
20.....	3-80	4-5	3-95	7-1	3-55	2-5	3-49	2-2	3-45	2-0	.....	.....
21.....	4-00	8-3	3-95	7-1	3-55	2-5	3-45	2-0	3-43	1-9	.....	.....
22.....	4-00	8-3	3-90	5-9	3-55	2-5	3-45	2-0	3-43	1-9	.....	.....
23.....	4-05	10-2	3-85	5-2	3-55	2-5	3-45	2-0	3-42	1-9	.....	.....
24.....	4-20	18-7	3-80	4-5	3-55	2-5	3-42	1-9	3-42	1-9	.....	.....
25.....	4-20	18-7	3-75	4-0	3-55	2-5	3-41	1-8	3-45	2-0	.....	.....
26.....	4-20	18-7	3-75	4-0	3-55	2-5	3-41	1-8	3-45	2-0	.....	.....
27.....	4-20	18-7	3-75	4-0	3-55	2-5	3-41	1-8	3-45	2-0	.....	.....
28.....	4-20	18-7	3-75	4-0	3-51	2-3	3-40	1-8	3-45	2-0	.....	.....
29.....	4-20	18-7	3-75	4-0	3-50	2-2	3-40	1-8	3-45	2-0	.....	.....
30.....	4-20	18-7	3-65	3-1	3-50	2-2	3-40	1-8	3-45	2-0	.....	.....
31.....	4-25	23-2	3-60	2-8	.....	.....	3-40	1-8	.....	.....	.....	.....

MONTHLY DISCHARGE of Hefley Creek below Hefley Lake, for 1914.

(Drainage area, 28 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April.....	5-7	2-8	4-4	0-15	0-17	262
May.....	56-5	4-5	19-3	0-7	0-8	1,187
June.....	12-2	5-9	7-9	0-3	0-33	470
July.....	23-2	4-0	9-6	0-3	0-35	590
August.....	23-2	2-8	12-3	0-4	0-46	756
September.....	3-1	2-2	2-5	0-09	0-10	149
October.....	2-2	1-8	2-0	0-07	0-08	123
November.....	2-2	1-9	2-0	0-07	0-08	119
December.....	2-0	1-8	(for period	December 1	to December 8.)	.....
The period.....	56-5	1-8	7-5	0-26	2-37	3,656

NOTE.—Ice conditions after December 8.

April flow compiled from flow at Hefley Creek (upper station) plus the flow in Anderson's and Crawshaw's diversions of Hefley creek.

Regular station established at outlet of Hefley lake on April 27 to replace the three former stations mentioned above. The flow at this station is artificially controlled to some extent by a dam on Hefley Lake.

SESSIONAL PAPER No. 25e

HEFFLEY CREEK, LOWER (2018).

Location.—Section 11, township 22, range 17, west 6th meridian.

Records Available.—August 19 to October 31, 1911; April 3 to September 15, 1912; April 13 to September 15, 1913; April 1 to December 6, 1914.

Drainage Area.—65 square miles.

Gauge.—Vertical staff gauge read daily by Mrs J. Austin.

Channel.—About 15 feet wide with rocky bed. The flow varies from a minimum of zero to a maximum of 55 cubic feet per second. The flow is partly subject to artificial regulation by a dam on Heffley lake.

Discharge Measurements.—Stream is well rated by well-distributed meterings.

Winter Flow.—Stream usually frozen over during winter months.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of HEFFLEY Creek (Lower) at mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft	Ft. per sec.	Feet.	Sec.-ft.
June 1.....	C. B. Corbould.....	1915	10	5.75	1.30	1.20	7.5
" 29.....	".....	1915	8	5.50	1.21	1.10	6.7
Aug. 14.....	".....	1915	8	5.70	1.21	1.15	6.9
Sept. 8.....	E. H. Trederoft and C. B. Corbould.....	1923	7.0	2.50	0.30	0.80	0.8
Oct. 29.....	C. B. Corbould.....	1673	7.5	4.60	0.57	1.00	2.6

For further measurements during 1914 on this stream, see Heffley Creek Upper Station, and for further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hefley Creek (Lower) near mouth,
for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.
1.	1-05	4-3	1-50	18-4	1-20	8-1
2.	1-05	4-3	1-50	18-4	1-17	7-3
3.	1-05	4-3	1-75	31-7	1-12	5-9
4.	1-10	5-4	1-75	31-7	1-12	5-9
5.	1-20	8-1	1-65	25-6	1-12	5-9
6.	1-20	8-1	1-60	23-3	1-10	5-4
7.	1-20	8-1	1-60	23-3	1-20	8-1
8.	1-20	8-1	1-57	21-8	1-25	9-5
9.	1-15	6-7	1-57	21-8	1-30	11-0
10.	1-15	6-7	1-75	31-7	1-37	13-3
11.	1-12	5-9	1-75	31-7	1-37	13-3
12.	1-15	6-7	1-80	35-5	1-35	12-6
13.	1-20	8-1	1-90	42-6	1-35	12-6
14.	1-20	8-1	1-90	42-6	1-35	12-6
15.	1-22	8-7	2-00	50-3	1-32	11-6
16.	1-35	12-6	2-00	50-3	1-32	11-6
17.	1-50	18-4	2-05	54-5	1-30	11-0
18.	1-50	18-4	2-05	54-5	1-25	9-5
19.	1-50	18-4	2-00	50-3	1-25	9-5
20.	1-50	18-4	1-90	42-6	1-15	6-7
21.	1-47	17-2	1-85	39-1	1-05	4-3
22.	1-40	14-3	1-80	35-5	1-05	4-3
23.	1-40	14-3	1-70	27-9	1-07	4-7
24.	1-40	14-3	1-55	20-8	1-10	5-4
25.	1-40	14-3	1-40	14-3	1-15	6-7
26.	1-40	14-3	1-35	12-6	1-20	8-1
27.	1-40	14-3	1-35	12-6	1-20	8-1
28.	1-40	14-3	1-30	11-0	1-15	6-7
29.	1-40	14-3	1-30	11-0	1-15	6-7
30.	1-40	14-3	1-30	11-0	1-10	5-4
31.			1-30	11-0		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Heflley Creek (Lower) at mouth, for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft	Feet.	Sec.-ft.
1	1.07	4.7	1.20	8.1	0.77	0.7	0.95	2.5	1.00	3.2	1.05	4.3
2	1.05	4.3	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.05	4.3
3	1.05	4.3	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.07	4.7
4	1.05	4.3	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.07	4.7
5	1.02	3.6	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.07	4.7
6	1.00	3.2	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.07	4.7
7	1.00	3.2	1.20	11.0	0.80	0.8	0.95	2.5	0.90	1.7		
8	1.62	3.6	1.20	8.1	0.80	0.8	0.95	2.5	1.00	3.2		
9	1.00	3.2	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2		
10	1.00	3.2	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2		
11	1.00	3.2	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2		
12	1.00	3.2	1.25	9.5	0.80	0.8	0.95	2.5	0.97	2.7		
13	0.97	2.7	1.20	8.1	0.80	0.8	0.95	2.5	0.97	2.7		
14	0.97	2.7	1.15	6.7	0.85	1.3	0.95	2.5	0.97	2.7		
15	0.97	2.7	1.15	6.7	0.90	1.7	0.97	2.7	0.97	2.7		
16	0.95	2.5	1.10	8.1	0.90	1.7	0.97	2.7	0.97	2.7		
17	0.95	2.5	1.05	4.3	0.90	1.7	0.97	2.7	1.00	3.2		
18	0.95	2.5	1.02	3.6	0.90	1.7	0.97	2.7	1.02	3.6		
19	0.90	1.7	1.00	3.2	0.90	1.7	0.97	2.7	1.02	3.6		
20	0.90	1.7	0.95	2.5	0.95	2.5	0.97	2.7	1.07	4.7		
21	1.07	4.7	0.90	1.7	0.95	2.5	0.97	2.7	1.00	3.2		
22	1.10	5.4	0.87	1.5	0.92	2.0	1.00	3.2	1.00	3.2		
23	1.10	5.4	0.80	0.8	0.92	2.0	1.00	3.2	1.02	3.6		
24	1.15	6.7	0.80	0.8	0.92	2.0	1.00	3.2	1.07	4.7		
25	1.30	11.0	0.80	0.8	0.92	2.0	1.00	3.2	1.07	4.7		
26	1.20	11.0	0.80	0.8	0.95	2.5	1.00	3.2	1.05	4.3		
27	1.27	10.1	0.82	0.9	0.95	2.5	1.00	3.2	1.07	4.7		
28	1.27	10.1	0.80	0.8	0.95	2.5	1.00	3.2	1.07	4.7		
29	1.25	9.5	0.80	0.8	0.95	2.5	1.00	3.2	1.00	4.7		
30	1.25	9.5	0.80	0.8	0.95	2.5	1.00	3.2	1.00	3.2		
31	1.20	8.1	0.77	0.7			1.00	3.2				

MONTHLY DISCHARGE of Heflley Creek (Lower) near mouth, for 1914.

(Drainage area, 65 square miles.)

Month.	DISCHARGE IN SECOND FEET.		
	Maximum.	Minimum	Mean
April	18.4	4.3	11.1
May	54.5	11.0	29.3
June	13.3	4.3	8.4
July	11.0	1.7	5.0
August	11.0	0.7	5.7
September	2.5	0.7	1.5
October	3.2	2.5	2.8
November	4.7	1.7	3.4
December	4.7	4.3	
The period	34.5	0.7	8.4

NOTE.—The flow of Heflley creek at mouth is not the natural discharge, since several large diversions are made above this point, and the run off is regulated; also by a dam on Heflley lake.

Precipitation is low, varying probably from 10 to 15 inches per annum. There is probably some evaporation loss from Heflley lakes.

INGRAM CREEK (2020).

Location.—Section 23, township 17, range 13, west 6th meridian.

Records Available.—April 1 to October 4, 1911; April 1 to August 31, 1912; April 1 to September 16, 1913.

Drainage Area.—Twenty-five square miles.

Gauge.—The gauge is a vertical staff gauge read daily by Miss M. King during high water, and tri-weekly at low stages.

Channel.—Channel is straight at measuring section. Bed of stream is rocky and permanent, only one channel at all stages.

Discharge Measurements.—The curve is well defined, measurements having been taken at all stages.

Winter Flow.—Ice conditions usually exist during December, January and February.

Accuracy.—The general accuracy of results is considered high.

DISCHARGE MEASUREMENTS of Ingram Creek near Grand Prairie, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 6.....	E. M. Dann & E. H. Tredcroft.....	1055	18	13.95	3.14	1.92	43.9
June 23.....	C. B. Corbould.....	1915	17	7.10	1.70	1.25	12.2
July 23.....	do.....	1915	8	4.90	0.65	1.00	3.2
Sept. 24.....	do.....	1915	7	2.80	0.40	0.88	1.1

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie,
for 1914.

DAY.	May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1-50	22-0
2.....			1-40	17-75
3.....			1-50	22-0
4.....			1-40	17-75
5.....			1-40	17-75
6.....	1-92	43-9	1-50	22-0
7.....			1-40	17-75
8.....			1-40	17-75
9.....	2-20	61-2	1-35	15-75
10.....	2-40	74-4	1-35	15-75
11.....	2-30	67-6	1-40	17-75
12.....	2-40	74-4	1-40	17-75
13.....	2-30	67-6	1-30	13-75
14.....	2-20	61-2	1-30	13-75
15.....	2-40	74-4	1-25	11-8
16.....	2-50	81-1	1-20	9-8
17.....	2-45	77-7	1-20	9-8
18.....	2-30	67-6	2-20	9-8
19.....	2-10	54-7	1-20	9-8
20.....	2-00	48-5	1-20	9-8
21.....	1-90	42-5	1-20	9-8
22.....	1-90	42-5	1-15	8-1
23.....	1-90	42-5	1-20	9-8
24.....	1-90	42-5	1-20	9-8
25.....	1-90	42-5	1-20	9-8
26.....	1-80	36-8	1-20	9-8
27.....	1-80	36-8	1-20	9-8
28.....	1-70	31-5	1-15	8-1
29.....	1-65	29-0	1-10	6-4
30.....	1-60	26-5	1-10	6-4
31.....	1-55	24-2		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie,
for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	1-10	6-4	0-80	0-70		1-1		2-6	0-55	0-20
2.	1-05	5-0		0-9	0-85	1-1		3-8		0-20
3.	1-05	5-0		1-1		0-95	1-05	5-0		0-20
4.	1-05	5-0		1-3		0-80	1-00	3-5	0-55	0-20
5.	1-00	3-5	0-90	1-5	0-80	0-70		3-2		0-21
6.	1-00	3-5		1-3	0-80	0-70		2-8		0-23
7.	1-00	3-5		1-3		1-30	0-95		0-60	0-25
8.	1-05	5-0	0-85	1-1		1-90		2-2	0-50	0-15
9.	1-05	5-0	0-80	0-7	0-95	2-50		1-9		0-17
10.	1-00	3-5		0-7		2-80	0-9	1-5		0-19
11.	1-05	5-0		0-7		3-1	0-9	1-5	0-55	0-20
12.	1-10	6-4	0-80	0-7	1-0	3-5		2-6		
13.	1-25	11-8		1-0	1-0	3-5		3-8		
14.	1-30	13-75		1-2		4-4	1-05	5-0		
15.	1-00	3-5	0-90	1-5		5-4		3-8		
16.	1-00	3-5	0-75	0-55	1-1	6-4		2-6		
17.	1-05	5-0	0-75	0-55		7-0		1-4		
18.	1-00	3-5		0-55		7-5	0-60	0-25		
19.	1-00	3-5	0-75	0-55	1-15	8-1		0-23		
20.	1-25	11-8		0-75	1-00	3-5		0-21		
21.	1-10	6-4		0-95		2-8	0-55	0-20		
22.	1-00	3-5	0-85	1-10		2-0		0-19		
23.	1-00	3-5	0-90	1-00	0-90	1-5		0-17		
24.	1-00	3-5	0-80	0-70		2-75	0-50	0-15		
25.	1-00	3-5		0-70		3-90	0-55	0-20		
26.	0-95	2-5	0-80	0-70	1-05	5-00		0-20		
27.	0-95	2-5		0-80	1-05	5-0		0-20		
28.	0-90	1-5		0-9		3-9		0-20		
29.	0-90	1-5	0-85	1-1		2-7		0-20		
30.	0-90	1-5	0-85	1-1	0-90	1-5		0-20		
31.	0-85	1-1		1-1			0-55	0-20		

MONTHLY DISCHARGE of Ingram Creek near Grand Prairie, for 1914.

(Drainage area, 25 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May.	81-1	24-2	52-1	2-08	2-40	3,203
June	22-0	6-4	13-2	0-53	0-59	785
July	13-7	1-1	4-6	0-18	0-21	285-9
August	1-5	0-55	0-92	0-04	0-05	57-1
September	8-1	0-7	3-2	0-13	0-14	190
October	5-0	0-15	1-7	0-07	0-08	104
November	0-25	0-20	(for period	November	1 to November 11.)	
December.						
The period.	81-1	0-15	12-6	0-50	3-47	4,625

NOTE.—Creek became frozen up on November 12, when water ceased running.
No precipitation records available.

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JAMIESON CREEK (2022).

Location.—Section 21, township 22, range 17, west of the 6th meridian.

Records Available.—June 22 to October 30, 1911; April 3 to October 30, 1912; May 1 to October 1, 1913; January 1 to January 24, and April 1 to December 9, 1914.

Drainage Area.—Sixty-six square miles.

Gauge.—Vertical staff gauge situated above British Columbia Fruitlands Division, and read daily by J. Crack, rancher.

Channel.—Is approximately 30 feet in width, with rocky bed.

Discharge Measurements.—Are made from Highway bridge at high water and by wading at low water.

Accuracy.—The accuracy of the returns are considered fairly high, having been compiled from a well-defined curve; meterings have been procured at all stages.

Winter Flow.—Ice conditions on this stream vary considerably. Some years obtaining for two months (January and February) and some years remaining open.

DISCHARGE MEASUREMENTS of Jamieson Creek near Black Pines, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 10	E. H. Tredcroft	1055	28	63.3	7.50	3.80	490 ¹
" 25	E. H. Tredcroft & C. Corbould	1923	30	54.1	5.61	3.50	343 ¹
June 30	E. H. Tredcroft	1923	35	34.0	1.90	2.36	65.5
Aug. 5	C. B. Corbould	1915	24	39.6	0.60	2.00	26.0
" 26	E. H. Tredcroft & C. B. Corbould	1923	20	18.4	0.46	1.81	8.6

¹ Measurements made at highway bridge and added to flow of div.
For further hydrographic data see Water Resources Papers Nos. 1 and 8

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pine,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-90	13-0					2-00	20	3-30	551	3-00	172
2	1-90	13-0					2-00	20	3-60	375	2-90	150
3	1-80	8-0					2-00	20	3-90	570	2-90	150
4	1-70	4-5					2-00	20	3-60	375	2-80	130
5	1-60	3-0					2-10	29	3-60	375	2-60	97
6	1-55	2-2					2-10	29	3-50	325	2-60	97
7	1-55	2-2					2-20	40	3-45	305	2-65	104
8	1-45	1-0					2-30	53	3-45	305	2-60	97
9	1-45	1-0					2-40	67	3-60	375	2-55	89
10	1-40	0-5					2-40	67	3-80	500	2-55	89
11	1-40	0-5					2-45	74	4-10	730	2-55	89
12	1-40	0-5					2-45	74	4-20	810	2-45	74
13	1-40	0-5					2-50	82	4-25	852	2-45	74
14	1-45	1-0					2-50	82	4-30	895	2-45	74
15	1-45	1-0					2-60	97	4-40	980	2-40	67
16	1-45	1-0					2-75	121	4-60	1,155	2-35	60
17	1-45	1-0					2-80	130	4-40	980	2-40	67
18	1-45	1-0					3-90	150	4-25	852	2-35	60
19	1-45	1-0					2-80	130	3-80	500	2-20	40
20	1-40	0-5					2-75	121	3-90	570	2-20	40
21	1-40	0-5					2-75	121	3-80	500	2-20	40
22	1-40	0-5					2-75	121	3-80	500	2-30	53
23	1-40	0-5					2-75	121	3-70	432	2-40	67
24	1-40	0-5					2-75	121	3-70	432	2-45	74
25	1-40	0-5					2-75	121	3-50	325	2-50	82
26							2-80	130	3-40	285	2-55	89
27							2-85	140	3-40	285	2-60	97
28							2-90	150	3-30	251	2-65	104
29							2-95	161	3-20	222	2-60	97
30							3-20	222	3-10	196	2-50	82
31									3-00	172		

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DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pines, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-35	60	1-95	16	1-72	4-5	1-77	6-0	1-87	10-5	1-77	6-0
2	2-35	60	1-95	16	1-67	3-7	1-77	6-0	1-92	13-0	1-82	8-0
3	2-30	53	1-95	16	1-67	3-7	1-77	6-0	1-92	13-0	1-82	8-0
4	2-30	53	1-95	16	1-67	3-7	1-77	6-0	1-92	13-0	1-82	8-0
5	2-25	46	1-95	16	1-67	3-7	1-77	6-0	1-87	10-5	1-87	10-5
6	2-20	40	1-95	16	1-67	3-7	1-77	6-0	1-87	10-5	1-92	13-0
7	2-20	40	1-95	16	1-67	3-7	1-77	6-0	1-87	10-5	1-92	13-0
8	2-15	34	1-95	16	1-72	4-5	1-77	6-0	1-87	10-5	1-87	10-5
9	2-10	29	1-95	16	1-77	6-0	1-72	4-5	1-82	8-0	1-87	10-5
10	2-10	29	1-90	13	1-87	10-5	1-72	4-5	1-82	8-0		
11	2-05	24	1-90	13	1-77	6-0	1-77	6-0	1-82	8-0		
12	2-05	24	1-90	13	1-72	4-5	1-82	8-0	1-87	10-5		
13	1-95	16	1-85	10	1-72	4-5	1-87	10-5	1-92	13-0		
14	2-10	29	1-85	10	1-77	6-0	1-82	8-0	1-97	16-0		
15	2-40	67	1-90	13	1-82	8-0	1-77	6-0	1-97	16-0		
16	2-40	67	1-90	13	1-77	6-0	1-77	6-0	1-92	13-0		
17	2-30	53	1-90	13	1-82	8-0	1-77	6-0	1-87	10-5		
18	2-25	46	1-85	10	1-87	10-5	1-82	8-0	1-82	8-0		
19	2-20	40	1-85	10	1-87	10-5	1-87	10-5	1-87	10-5		
20	2-20	40	1-85	10	1-87	10-5	1-97	16-0	1-82	8-0		
21	2-10	29	1-85	10	1-87	10-5	1-92	13-0	1-82	8-0		
22	2-20	40	1-85	10	1-87	10-5	1-92	13-0	1-82	8-0		
23	2-30	53	1-85	10	2-07	24-0	1-87	10-5	1-82	8-0		
24	2-40	67	1-85	10	1-92	13-0	1-87	10-5	1-82	8-0		
25	2-40	67	1-75	6	1-87	10-5	1-87	10-5	1-87	10-5		
26	2-30	53	1-80	8	1-87	10-5	1-82	8-0	1-87	10-5		
27	2-20	40	1-75	6	1-82	8-0	1-82	8-0	1-82	8-0		
28	2-05	25	1-75	6	1-82	8-0	1-82	8-0	1-77	6-0		
29	2-05	25	1-80	8	1-77	6-0	1-82	8-0	1-77	6-0		
30	1-95	16	1-75	6	1-77	6-0	1-82	8-0	1-77	6-0		
31	1-90	13	1-75	6			1-82	8-0				

MONTHLY DISCHARGE of Jamieson Creek near Black Pines, for 1914.

(Drainage area, 66 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	222	20	94	1-4	1-6	5,593
May	1,155	172	506	7-7	8-9	31,113
June	172	40	87	1-3	1-4	5,176
July	67	13	41	6-6	0-7	2,521
August	16	6	11	0-2	0-3	676
September	24	3-7	7	0-1	0-1	416
October	16	4-5	8	0-1	0-1	492
November	16	6-0	10	0-2	0-2	595
The period	1,155	3-7	95	1-45	13-3	46,582

NOTE—Summary given under "the period" covers only the months of April to November inclusive. Precipitation probably varies from about 10 inches at the mouth to 30 inches in the higher altitudes.

LOUIS CREEK (2023).

Location.—Section 33, township 23, range 15, west 6th meridian.

Records Available.—July 16 to October 31, 1911; April 1 to November 16, 1912; May 1 to October 14, 1913; April 1 to December 11, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge read daily during high water, and tri-weekly during low water, by D. G. McKnight.

Channel.—The width of stream averages 25 to 35 feet at measuring section. Control is good.

Discharge Measurements.—Nine well-distributed meterings have been taken on this stream, and curve is well defined.

Winter Flow.—Ice conditions obtain on this stream usually throughout January, February and March.

Accuracy.—Accuracy of returns on the whole is high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Louis Creek at Lesie's Ranch, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Aug. 13	C. B. Corbould.....	1,915	21.0	27.3	1.0	0.59	28.0

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-45	89	2-50	230
2	0-55	26	1-80	130	2-80	278
3			2-05	165	3-10	326
4	0-55	26	1-90	144	2-90	294
5			1-80	130	2-60	246
6	0-65	30	1-75	123	2-40	215
7			1-70	117	2-45	222
8			1-75	123	2-35	207
9			1-90	144	2-30	200
10	0-75	35	2-20	186	2-55	238
11			2-30	200	2-90	294
12			2-45	222	2-95	302
13	0-85	40	2-50	230	2-80	278
14			3-10	326	2-80	278
15			3-55	398	2-85	286
16			3-55	398	2-90	294
17	1-10	57	3-30	358	2-90	294
18			3-05	318	2-70	262
19			2-90	294	2-50	230
20	1-05	53	2-75	270	2-50	230
21			2-75	270	2-10	172
22			2-85	286	1-95	151
23			3-00	310	2-05	165
24	1-10	57	3-20	342	2-00	158
25			3-15	334	2-15	179
26			2-85	286	2-05	165
27	1-15	61	2-40	215	1-95	151
28			2-40	215	1-85	137
29			2-30	200	2-05	165
30			2-20	186	1-80	130
31			2-30	200		

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-70	117										
2	1-60	105					0-55	26	0-70	32		
3	1-50	94	0-60	28								
4	1-45	89			0-45	22					0-50	24
5	1-30	74					0-50	24				
6	1-25	69							0-60	28		
7			0-60	28	0-40	20					0-50	24
8												
9							0-50	24	0-55	26		
10	1-05	53	0-65	30								
11					0-50	24					0-50	24
12							0-50	24				
13	0-90	43							0-55	26		
14			0-55	26	0-50	24						
15	1-40	84										
16							0-50	24	0-55	26		
17	1-10	57	0-55	26								
18					0-55	26						
19							0-60	28				
20												
21			0-50	24	0-55	26			0-50	24		
22	0-90	43										
23							0-55	26				
24			0-50	24					0-50	24		
25	0-80	37			0-50	24						
26							0-50	24				
27												
28			0-45	22	0-60	28			0-50	24		
29	0-70	32										
30							0-50	24	0-50	24		
31	0-65	30	0-45	22								

MONTHLY DISCHARGE of Louis Creek near mouth, for 1914.

(Drainage area, 100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	61	26	43-0	0-4	0-4	2,559
May	398	89	233-0	2-3	2-6	14,327
June	326	130	225-9	2-2	2-4	13,442
July	117	30	66-2	0-7	0-8	4,070
August	30	22	25-5	0-2	0-2	1,568
September	28	20	24-2	0-2	0-2	1,440
October	28	24	24-9	0-2	0-2	1,531
November	32	24	26-0	0-3	0-3	1,547
December						
The period	398	20	83-6	0-8	7-1	50,484

NOTE.—No precipitation data available, but it is probable that it has an annual variation from 15 to 20 inches. Ice conditions existed subsequent to December 11.

SESSIONAL PAPER No. 25e

MONTE CREEK, DIV. TO SUMMIT LAKE (2026).

Location.—At Graham's ranch.*Records Available.*—May 25 to October 2, 1911; June 20 to September 30, 1913; April 1 to November 17, 1914.*Gauge.*—Vertical staff gauge read daily by E. C. Lewis.*Channel.*—About 10 feet in width, with gravelly bed. This diversion supplements the natural run-off of Summit lake (or Essell creek).*Discharge Measurements.*—Gauge height discharge curve, only fairly well defined by three meterings in 1914.*Winter Flow.*—Stream frozen up during the winter months.*Accuracy.*—Fairly good, within about 10 per cent of true accuracy.DISCHARGE MEASUREMENTS of Monte Creek Diversion to Summit Lake,
for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 7.....	E. M. Dann & E. H. Tred- croft.....	1,055	9.0	7.35	3.15	1.19	24.7
June 22.....	C. B. Corbould.....	1,915	8.0	5.00	2.24	1.00	11.2 ¹
July 22.....	do.....	1,915	3.5	0.90	0.63	0.20	0.6
Sept. 23.....	do.....					0.10	0.2 ²

¹New gauge installed on this date. Old gauge reading 0.65.²Estimated.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek Diversion to Summit Lake, for 1914.

Up to June 22nd: old gauge used.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-55	3-1	1-20	25-1	.....	11-0
2	0-55	3-1	1-40	35-9	.....	11-0
3	0-62	4-3	1-50	41-6	.....	11-0
4	0-72	6-5	1-40	35-9	.....	11-0
5	0-80	8-7	1-30	30-4	.....	11-0
6	0-92	12-7	1-30	30-4	.....	11-0
7	1-00	15-9	1-20	25-1	.....	11-0
8	1-10	20-1	1-20	25-1	.....	11-0
9	1-25	27-7	1-30	30-4	.....	11-0
10	1-30	30-4	1-40	35-9	.....	11-0
11	1-35	33-1	1-40	35-9	.....	11-0
12	1-40	35-9	1-30	30-4	.....	11-0
13	1-45	38-7	1-10	20-1	.....	11-0
14	1-50	41-6	1-20	25-1	.....	11-0
15	1-50	41-6	1-20	25-1	.....	11-0
16	1-50	41-6	1-00	15-9	.....	11-0
17	1-50	41-6	0-90	12-0	.....	11-0
18	1-50	41-6	0-90	12-0	.....	11-0
19	1-50	41-6	0-90	12-0	.....	11-0
20	1-50	41-6	.....	11-0	.....	11-0
21	1-50	41-6	.....	11-0	.....	11-0
22	1-50	41-6	.....	11-0	1-00	11-0
23	1-50	41-6	.....	11-0	1-00	11-0
24	1-40	35-9	.....	11-0	1-05	12-4
25	1-40	35-9	.....	11-0	1-10	13-7
26	1-30	30-4	.....	11-0	1-05	12-4
27	1-20	25-1	.....	11-0	1-00	11-0
28	1-20	25-1	.....	11-0	1-00	11-0
29	1-20	25-1	.....	11-0	1-00	11-0
30	1-20	25-1	.....	11-0	1-00	11-0
31	.....	.....	.....	11-0	.....	.....

SESSIONAL PAPER No. 25c

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek River Div. to Summit Lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-90	8-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
2	0-90	8-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
3	0-90	8-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
4	0-80	6-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
5	0-80	6-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
6	0-80	6-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
7	0-80	6-8	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
8	0-70	5-2	0-20	0-7	0-05	0-1	0-1	0-3	0-3	1-2
9	0-70	5-2	0-20	0-7	0-05	0-1	0-15	0-5	0-3	1-2
10	0-70	5-2	0-10	0-3	0-05	0-1	0-2	0-7	0-3	1-2
11	0-60	3-9	0-10	0-3	0-05	0-1	0-2	0-7	0-3	1-2
12	0-50	2-8	0-10	0-3	0-05	0-1	0-2	0-7	0-3	1-2
13	0-30	1-2	0-10	0-3	0-05	0-1	0-2	0-7	0-2	0-7
14	0-30	1-2	0-10	0-3	0-05	0-1	0-2	0-7	0-2	0-7
15	0-20	0-7	0-10	0-3	0-05	0-1	0-2	0-7	0-2	0-7
16	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7	0-2	0-7
17	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7	0-3	1-2
18	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7		
19	0-20	0-7	0-10	0-3	0-22	0-8	0-2	0-7		
20	0-20	0-7	0-10	0-3	0-20	0-7	0-3	1-2		
21	0-30	1-2	0-10	0-3	0-20	0-7	0-3	1-2		
22	0-20	0-7	0-10	0-3	0-1C	0-3	0-3	1-2		
23	0-20	0-7	0-10	0-3	0-10	0-3	0-5	2-8		
24	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7		
25	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7		
26	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7		
27	0-20	0-7	0-10	0-3	0-10	0-3	0-2	0-7		
28	0-20	0-7	0-10	0-3	0-10	0-3	0-3	1-2		
29	0-20	0-7	0-10	0-3	0-10	0-3	0-3	1-2		
30	0-20	0-7	0-10	0-3	0-10	0-3	0-3	1-2		
31	0-20	0-7	0-10	0-3			0-3	1-2		

MONTHLY DISCHARGE of Monte Creek Div. to Summit Lake, for 1914.

(Drainage area, — square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.			RUN-OFF.
	Maximum.	Minimum.	Mean.	Total in acre-feet
April	41-6	3-1	28-6	1 792
May	43-6	11-0	20-5	1 260
June	13-7	11-0	11-2	666
July	8-8	0-7	2-9	178
August	6-7	0-3	1-4	25
September	0-8	0-1	0-2	12
October	2-8	0-3	0-7	43
November	1-2	0-7	For period Nov 16	Nov 1 to
The period	41-6	0-1	9-2	3 886

NOTE.—This diversion carries Monte Creek water to Summit lake, where it is stored—being used, when needed, upon lands in the Salmon river valley, near Grand Prairie.

MONTE CREEK, BELOW DIV. TO SUMMIT LAKE (2025).

Location.—Section 22, township 13, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 17, 1912; June 20 to September 30, 1913; April 1 to November 17, 1914.

Drainage Area.—Forty-five square miles.

Gauge.—Standard vertical gauge read daily by E. C. Lewis.

Channel.—Width of channel averages 10 feet. Bed of stream gravelly and permanent.

Discharge Measurements.—The curve is well defined, with measurements taken at varying stages.

Winter Flow.—Ice conditions generally prevail throughout winter months.

Accuracy.—Accuracy on the whole is fairly high, and is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Monte Creek below Summit Lake Div.
for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 22.....	C. B. Corbould.....	1915	13	8.7	0.54	4.00	4.7
July 22.....	do	1915	12	7.5	0.41	3.93	3.11
Sept. 23.....	do	1915	11	5.8	0.15	3.83	0.90

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. Summit Lake, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3.8	1.9	4.6	59.0	4.3	20.7
2	3.82	2.0	4.7	73.3	4.3	20.7
3	3.9	2.7	4.8	90.4	4.3	20.7
4	3.97	4.1	4.6	59.0	4.3	20.7
5	4.05	6.4	4.7	73.3	4.3	20.7
6	4.1	8.0	4.6	59.0	4.25	16.8
7	4.1	8.0	4.5	44.5	4.2	13.0
8	4.12	9.0	4.5	44.5	4.2	13.0
9	4.1	8.0	4.7	73.3	4.2	13.0
10	4.12	9.00	4.9	107.4	4.3	20.7
11	4.2	13.0	5.0	125.5	4.3	20.7
12	4.2	13.0	5.0	125.5	4.4	31.5
13	4.3	20.7	4.7	73.3	4.35	26.0
14	4.25	16.8	4.6	59.0	4.3	20.7
15	4.2	13.0	4.7	73.3	4.3	20.7
16	4.2	13.0	4.85	98.5	4.3	20.7
17	4.1	8.0	4.8	90.4	4.2	13.0
18	4.07	6.9	4.7	73.3	4.2	13.0
19	4.0	4.7	4.6	59.0	4.2	13.0
20	4.1	8.0	4.6	59.0	4.15	10.5
21	4.1	8.0	4.55	51.7	4.1	8.0
22	4.02	5.3	4.50	44.5	4.05	6.4
23	4.0	4.8	4.5	44.5	4.0	4.7
24	4.0	4.8	4.5	44.5	4.0	4.7
25	4.0	4.8	4.47	40.5	4.1	8.0
26	4.1	8.0	4.4	31.5	4.05	6.4
27	4.2	13.0	4.4	31.5	4.0	4.7
28	4.2	13.0	4.4	31.5	3.9	2.7
29	4.35	26.0	4.4	31.5	4.0	4.7
30	4.5	41.5	4.35	26.0	4.0	4.7
31			4.3	20.7		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. to Summit Lake, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	4-0	4-7	3-8	1-9	3-7	1-5	3-9	2-7	4-1	8-0
2	4-0	4-7	3-8	1-9	3-7	1-5	3-9	2-7	4-9	4-75
3	4-0	4-7	3-8	1-9	3-7	1-5	3-9	2-7	4-0	4-75
4	4-0	4-7	3-8	1-9	3-7	1-5	3-9	2-7	4-0	4-75
5	4-0	4-7	3-8	1-9	3-7	1-5	3-9	2-7	4-0	4-75
6	3-9	2-7	3-8	1-9	3-7	1-5	3-9	2-7	4-0	4-75
7	3-9	2-7	3-8	1-9	3-8	1-9	3-9	2-7	4-0	4-75
8	4-0	4-7	3-8	1-9	3-8	1-9	3-9	2-7	4-0	4-75
9	4-0	4-7	3-8	1-9	3-8	1-9	4-0	4-7	4-0	4-75
10	4-0	4-7	3-7	1-5	3-8	1-9	4-0	4-7	4-0	4-75
11	3-9	2-7	3-7	1-5	3-9	2-7	4-0	4-7	4-0	4-75
12	3-85	2-3	3-7	1-5	3-9	2-7	4-0	4-7	3-9	2-7
13	3-8	1-9	3-8	1-9	3-9	2-7	4-0	4-7	3-9	2-7
14	4-0	4-7	3-8	1-9	3-9	2-7	4-0	4-7	3-95	3-7
15	4-0	4-7	3-8	1-9	3-9	2-7	4-0	4-7	4-0	4-75
16	4-0	4-7	3-8	1-9	3-9	2-7	4-05	6-4		
17	4-0	4-7	3-8	1-9	3-9	2-7	4-1	8-0		
18	3-9	2-7	3-7	1-5	3-9	2-7	4-0	4-7		
19	3-9	2-7	3-7	1-5	3-9	2-7	4-0	4-7		
20	4-0	4-7	3-7	1-5	3-9	2-7	4-0	4-7		
21	3-95	3-7	3-7	1-5	3-8	1-9	4-0	4-7		
22	3-9	2-7	3-7	1-5	3-8	1-9	3-9	2-7		
23	3-9	2-7	3-8	1-9	3-8	1-9	3-85	2-3		
24	3-9	2-7	3-75	1-7	3-8	1-9	4-0	4-7		
25	3-9	2-7	3-7	1-5	3-8	1-9	4-1	8-0		
26	3-9	2-7	3-7	1-5	3-8	1-9	4-1	8-0		
27	3-9	2-7	3-7	1-5	3-8	1-9	4-05	6-4		
28	3-9	2-7	3-7	1-5	3-8	1-9	4-0	4-7		
29	3-9	2-7	3-7	1-5	3-8	1-9	4-0	4-7		
30	3-9	2-7	3-7	1-5	3-8	1-9	4-1	8-0		
31	3-8	1-9	3-7	1-5			4-1	8-0		

MONTHLY DISCHARGE of Monte Creek below Summit Lake Div., for 1914.

(Drainage area, 45 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.		
	Maximum.	Minimum.	Mean.
April	44-5	1-9	10-3
May	125-5	26-7	61-9
June	31-5	2-7	14-2
July	4-7	1-9	3-5
August	1-9	1-5	1-7
September	2-7	1-5	2-1
October	8-0	2-3	4-7
November	8-0	2-7	
December			
The year	125-5	1-5	14-0

NOTE.—The run-off is not a function of the drainage area since a large diversion is made above this station which carries water to Summit lake. During April to November, 1914, 3,886 acre-feet were so diverted.
Rainfall probably varies to a maximum of 20 inches annually.

SESSIONAL PAPER No. 25e

MONTE CREEK, ABOVE BOSTOCK'S DIVERSION (2024).

Location.—Section 25, township 19, range 15, west 6th meridian.

Records Available.—May 20 to June 30, 1911; August 8, 1911; April 8 to September 7, 1912; April 16 to September 13, 1913; April 1 to December 4, 1914.

Drainage Area.—One hundred and ten square miles.

Gauge.—Standard vertical gauge read semi-weekly by T. F. Teagle.

Channel.—About 15 feet wide, with rocky bed. Flow varies from zero to about 100 cubic feet per second.

Discharge Measurements.—Gauge-height discharge curve is very well defined.

Winter Flow.—Ice conditions prevail during December, January and February.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of Monte Creek above Bostock's Diversion, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 7.....	E. H. Tredcroft.....	1055	22	28.4	1.71	1.70	48.6
June 21.....	C. B. Corbould.....	1915	10	11.4	0.54	0.90	6.2
July 21.....	do.....	1915	8	7.6	0.32	0.70	2.5
Sept. 22.....	do.....	1915	7	2.9	0.66	0.59	1.9

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	0-99	8-6	.....	37-1	.....	20-0
2.....	.....	8-7	1-59	40-3	.....	13-7
3.....	.....	8-8	.....	44-0	1-22	17-4
4.....	1-00	8-9	.....	47-8	.....	17-9
5.....	.....	10-2	.....	51-5	.....	18-4
6.....	.....	11-5	1-78	55-3	1-25	18-9
7.....	.....	12-8	.....	50-8	.....	17-2
8.....	1-14	14-0	.....	46-3	.....	15-6
9.....	.....	15-6	1-61	41-8	.....	14-0
10.....	.....	17-2	.....	50-1	1-10	12-3
11.....	1-25	18-9	.....	58-4	.....	12-6
12.....	.....	21-0	.....	66-7	.....	12-9
13.....	.....	23-1	1-97	75-0	1-12	13-1
14.....	.....	25-2	.....	71-2	.....	12-4
15.....	1-40	27-3	.....	67-5	.....	11-8
16.....	.....	28-0	1-87	63-8	.....	11-2
17.....	.....	28-6	.....	59-7	1-05	10-6
18.....	1-43	29-2	.....	55-5	.....	10-0
19.....	.....	28-8	.....	51-3	.....	9-4
20.....	.....	28-5	1-68	47-1	1-00	8-9
21.....	.....	28-2	.....	42-8	.....	8-3
22.....	.....	27-9	.....	38-6	.....	7-7
23.....	1-41	27-3	1-51	34-4	.....	7-1
24.....	.....	26-7	.....	34-6	0-91	6-5
25.....	1-38	26-1	.....	34-7	.....	6-2
26.....	.....	27-2	.....	34-8	.....	5-9
27.....	.....	28-3	.....	35-0	0-87	5-6
28.....	.....	29-4	1-52	35-2	.....	5-3
29.....	1-45	30-5	.....	30-6	.....	4-9
30.....	.....	33-8	.....	26-0	.....	4-5
31.....	.....	.....	1-30	21-3	.....	.....

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0.80	4.2	0.60	1.8		0.3	1.4		2.7	0.70		2.8
2		4.1		1.8	0.40	0.2	1.5		2.7			2.0
3		3.9		1.7		0.4	0.57	1.5	2.6			3.0
4	0.77	3.8		1.6		0.6	1.5	0.67	2.5	0.72		3.1
5		3.5	0.57	1.5	0.50	0.8	1.6		2.6			
6		3.3		1.5		0.8	1.7		2.7			
7		3.0		1.6		0.8	0.60	1.8	0.70	2.8		
8	0.70	2.8		1.7		0.9	1.8		2.8			
9		2.8	0.60	1.8	0.51	0.9	1.9		2.8			
10		2.8		1.7		0.9	0.62	2.0	2.8			
11	0.70	2.8		1.5		0.8	2.0	0.70	2.8			
12		3.1	0.55	1.3	0.50	0.8	2.0		2.7			
13		3.5		1.2		1.0	2.0		2.6			
14		3.9		1.0		1.1	0.62	2.0	0.67	2.5		
15	0.80	4.2	0.50	0.8		1.2	2.2		2.5			
16		4.0		0.8	0.55	1.3	2.4		2.6			
17		3.9		0.8		1.3	0.67	2.5	2.7			
18	0.77	3.8		0.8		1.3	2.5	0.70	2.8			
19		3.6	0.50	0.8	0.55	1.3	2.4		2.7			
20		3.3		0.8		1.3	2.3		2.6			
21		3.0		0.8		1.3	0.65	2.3	0.67	2.5		
22	0.70	2.8	0.50	0.8		1.3	2.3		2.8			
23		2.7		0.8	0.55	1.3	2.4		3.2			
24		2.5		0.7		1.3	0.67	2.5	3.5			
25	0.65	2.3		0.6		1.4	2.5	0.77	3.8			
26		2.1	0.45	0.5	0.57	1.5	2.5		3.5			
27		2.0		0.5		1.4	2.5		3.1			
28		1.9		0.5		1.4	0.67	2.5	0.70	2.8		
29	0.60	1.8	0.45	0.5		1.3	2.6		2.8			
30		1.8		0.5	0.55	1.3	2.7		2.8			
31		1.8		0.4			0.70	2.8				

MONTHLY DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

(Drainage area, 110 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.		
	Maximum.	Minimum.	Mean.
April	33.8	8.6	22.0
May	75.0	21.3	46.7
June	20.0	4.5	11.5
July	4.2	1.8	3.1
August	1.8	0.4	1.1
September	1.5	0.2	1.0
October	2.8	1.4	2.1
November	3.8	2.5	2.8
December			
The period	75.0	0.2	11.3

NOTE.—Summary for "the period" covers April to November (inclusive).

The run-off (not given in table) is not a direct function of the drainage area, since there is a large diversion from Monte Creek to Summit Lake.

Rainfall varies from 10 to 20 inches annually.

MYRTLE RIVER.

The Myrtle river rises in Myrtle lake just a mile west of the Blue River divide. Myrtle lake is surrounded by fairly level country, and is at an elevation of about 3,000 feet. Its superficial area is about 15 square miles. No information has been obtained regarding the storage facilities of the lake; however, it is interesting to note that with the area given above, a 5-foot dam



Myrtle River, Dawson Falls

Photograph by F. R. Archibald

One of the many natural power sites on the Myrtle river. This photograph, taken at a low water stage shows Dawson falls, which are about four miles upstream from Helmcken Falls.

would give an increased storage capacity of 48,000 acre-feet (at least), which would mean an increase in minimum flow for continuous power of about 80 second-feet (assuming a shortage of water for 300 days). The wonderful latent power possibilities of the river warrant a much more thorough investigation.

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The following are the more important power sites:—

Name of Falls.	Natural Head.	Distance from mouth of Myrtle River and Location.
Helmcken falls.....	450 feet (triangulated).....	1 mile; in lot 3210.
Dawson falls.....	Three lower falls 20 feet each (approx.) Upper fall 50 feet (approx.).....	3 miles; in lot 3208.
Un-named falls.....	25 feet (approx.).....	10 miles; in lot 3494.
Horseshoe falls.....	35 feet (approx.).....	12 miles; in lot 3499.
Meadow falls.....	20 feet (approx.).....	13 miles; in lot 3998.
Un-named falls.....	Said to be about 40 feet.....	20 miles; a mile or two below lake outlet.



Helmcken Falls and Myrtle river canyon.

Photograph by F. R. Archibald.

This photograph of Helmcken falls on the Myrtle river is one of the first ever taken of what is probably one of the finest natural power sites of British Columbia's vast hinterland. A sheer fall of 450 feet (triangulated) over which a stream plunges whose estimated minimum flow is 400 sec.-ft., and whose maximum is probably 10,000 sec.-ft., is an unusual sight and one which for majestic grandeur is probably unsurpassed in the Dominion. Studies of the flow of the Myrtle river have been commenced and a year's cycle will be complete on Sept. 1, 1915.

For a matter of historic record it should be stated that Helmcken falls (a photograph of which is printed elsewhere) were discovered by two members of a land survey party in charge of Mr. R. H. Lee, of Kamloops, in the summer of 1913 (Messrs. Luce and Hossack). Although they were said to be known to the Indians, who spoke of them as "the falls which are two big cedars high," these two men are the first white men which are known to have seen the falls. For scenic beauty this wonderful natural power-site is probably without a peer, and will sooner or later become a mecca for tourists from various parts of the world.

The total length of Myrtle river is about 22 miles between the lake and the river's confluence with the Clearwater.

A gauge was established on the Myrtle river on September 1, 1914, by Messrs. E. H. Tredcroft and C. B. Corbould, and a meter measurement made showing a flow of 800 second-feet. After further measurements are made, a year's cycle of records will be available on September 1, 1915. Gauge readings are taken by Mr. P. McDougall weekly. Owing to the inaccessibility of the station, it has been impossible to procure more readings, but, since the stream's behaviour is fairly regular, it is thought that fairly reliable results will be obtained. A very rough estimate, made by comparison of the Myrtle drainage area with that of the Clearwater, places the minimum flow at 400 and the maximum at 10,000 second-feet.

PAUL CREEK (2032).

Location.—Section 31, township 20, range 16, west 6th meridian.

Records available.—July 1 to October 6, 1911; May 12 to September 25, 1912; May 18 to September 30, 1913; April 20 to September 27, 1914.

Drainage area.—Sixty-five square miles.

Gauge.—Vertical staff gauge read weekly by E. L. Ridout.

Channel.—Channel is rocky, and current is very swift at high stages.

Discharge measurements.—The gauge-height curve is fairly well defined. The flow is artificially controlled by a dam on Paul lake.

Winter flow.—Stream usually dries up during winter, or else ice conditions obtain.

Accuracy.—Accuracy, with the exception of flood times, is considered high.

DISCHARGE MEASUREMENTS of Paul Creek below Paul Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 27.....	E. M. Dann.....	1505	5.5	4.60	9.02	2.25	41.4
May. 19.....	C. B. Corbould.....	1673	5.7	6.05	11.50	2.75	69.9
July 14.....	C. B. Corbould.....	1915	7.0	2.70	5.50	1.95	14.8
" 25.....	E. M. Dann and C. E. Webb..	1915	5.8	1.98	6.44	1.73	12.7
Aug. 8.....	C. B. Corbould.....	1915	6.0	3.26	7.90	2.12	25.7

For further hydrographic data see Water Resources, Paper Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Paul Creek below Paul Lake, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				42.9		14.9		30.8		12.0		13.2
2				45.4		17.4		30.0	1.72	11.7		12.7
3				48.0		20.0		29.2		13.0		12.2
4			2.50	50.5		22.5		28.4		14.2		11.7
5				55.0		25.0	2.15	27.6		15.5		11.2
6				59.5		27.5		26.8		16.6		10.7
7				64.0	2.20	30.2		25.9		17.9	1.65	10.2
8				68.5		31.8		25.0		19.2		9.5
9				73.0		33.4		24.1	2.00	20.5		8.8
10			2.85	77.6		35.0		23.2		20.5		8.1
11				79.4		36.6		22.3		20.5		7.4
12				81.2		38.2		21.4		20.5		6.7
13				83.0		39.8	2.00	20.5		20.5	1.40	6.0
14				84.7		41.4		19.8		20.5		5.6
15				86.5	2.4	43.0		19.2		20.5		5.2
16				88.3		45.1		18.6	2.00	20.5		4.8
17			3.00	90.0		47.3		18.0		20.0		4.4
18				87.1		49.4		17.4		19.5		3.9
19				84.2		51.6	1.90	16.8		19.0		3.5
20	1.10	2.6		81.3		53.7		16.3		18.4	1.15	3.1
21		7.2		78.4		55.8		15.9		17.9		2.7
22		11.8		75.5	2.60	58.0		15.4		17.3		2.4
23		16.4		72.6		53.9		15.0	1.90	16.8		2.0
24		21.0	2.75	69.7		49.8		14.5		16.5		1.7
25		25.6		61.6		45.7		14.1		16.1		1.4
26	2.20	30.2		53.4		41.5	1.80	13.7		15.7		1.0
27		32.7		45.2		37.4		13.5		15.3	0.90	0.7
28		35.2		37.0	2.25	33.3		13.2		14.9		
29		37.8		28.8		32.4		12.9		14.5		
30		40.3		20.6		31.6		12.6		14.1		
31			1.75	12.4				12.3	1.80	13.7		

MONTHLY DISCHARGE of Paul Creek below Paul Lake, for 1914.

(Drainage area, 65 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
May	90.0	12.4	64.0	0.98	1.1	3,935
June	58.0	14.9	38.1	0.6	.7	2,267
July	30.8	12.3	19.8	0.3	.3	1,217
August	20.5	11.7	17.2	0.26	.3	1,057
September	13.2	0.7	6.3	0.97	1.1	375
October						
November						
December						
The period	90.0	0.7	29.1	0.62	3.4	8,851

NOTE.—Precipitation 10 to 50 inches annually.

Flow artificially controlled by a dam on Paul lake.

The estimated flow for April is 600 zero feet, while during the winter months the run-off is practically nil.

RAFT RIVER (2055).

Location.—Raft river, Water District No. 2.

Records Available.—June 1, 1914, to December 14, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Standard chain gauge on highway bridge, graduated in feet and tenths, having a range from 3.0 to 9.0, and read by J. McLennan, Raft River P.O.

Channel.—Average width of channel 150 feet. Bed of stream composed of rock, sand, and gravel, and permanent as far as can be ascertained.

Discharge Measurements.—Only three discharge measurements were taken on this river during 1914 owing to its being situated in country only just being opened up by this survey, but all results of these measurements point to a high degree of accuracy eventually being obtained.

Winter Flow.—Ice conditions obtain on this river during the latter half of December, throughout January, and during the first half of February.

Accuracy.—The accuracy of returns is doubtful, since stream is not completely rated.

RAFT RIVER.

Raft river, which joins the North Thompson 76 miles above Kamloops and 5 miles above the mouth of the Clearwater river, rises in the hills about 40 miles north of its mouth.

The lowest half-mile of the river has a sluggish flow, its banks are low and liable to overflow in freshet. Above this point is a canyon about 500 feet wide at its widest section; in the canyon are a series of falls, the two highest being about three-quarters of a mile from the stream's mouth, the lower having a natural drop of 15 feet, and the upper one, 25 feet. No information relating to the upper section of the river is at present available.

A station was established at MacLennan's ranch, half a mile from the mouth, by Mr. E. H. Tredercroft on June 2, 1914. Although it was impracticable to thoroughly rate the stream during the year, further meterings will be taken in 1915, and more complete returns made public at the close of that year.

DISCHARGE MEASUREMENTS of Raft River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 2	E. H. Tredercroft	1923	105	493.8	5.47	8.00	2703.0
July 26	do	1923	80	135.4	2.05	4.35	277.5
Aug. 28	E. H. Tredercroft and C. B. Corbould	1923	67	71.7	1.18	3.55	84.7

An effort will be made to completely rate this station during 1915.

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DAILY GAUGE HEIGHT AND DISCHARGE of Raft River, 1 mile above mouth, for 1914.

DAY.	June.	
	Gauge Height	Discharge
	Feet.	Sec.-ft.
1	8 30	2,940
2	7 90	2,620
3	8 20	2,860
4	7 80	2,540
5	7 30	2,145
6	6 80	1,760
7	6 40	1,450
8	6 50	1,525
9	6 70	1,680
10	7 00	1,920
11	7 20	2,070
12	7 30	2,145
13	7 10	2,000
14	7 20	2,070
15	7 20	2,070
16	7 40	2,220
17	7 50	2,300
18	7 60	1,920
19	6 90	1,840
20	6 40	1,450
21	6 40	1,450
22	6 10	1,240
23	6 10	1,240
24	6 30	1,380
25	6 40	1,450
26	6 30	1,380
27	6 20	1,310
28	6 30	1,380
29	6 30	1,380
30	6 10	1,240

DAILY GAUGE HEIGHT AND DISCHARGE of Raft River 1 mile above mouth, for 1914—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5-90	1,100	3-90	155	3-30	50	4-50	330	4-60	370	3-90	155
2	5-70	960	3-80	135	3-20	35	4-40	295	4-50	330	3-90	155
3	5-70	960	3-70	115	3-20	35	4-40	295	4-60	370	3-90	155
4	5-60	895	3-80	135	3-20	35	4-20	235	4-50	330	3-80	135
5	5-50	830	3-70	115	3-10	20	4-10	205	4-40	295	3-80	135
6	5-30	710	3-60	95	3-10	20	4-00	180	4-20	235	3-70	115
7	5-20	655	3-70	115	3-10	20	4-00	180	4-20	235	3-80	135
8	5-10	605	3-80	135	3-20	35	3-90	155	4-20	235	3-80	135
9	5-00	555	3-70	115	3-30	50	3-90	155	4-20	235	3-90	155
10	4-90	505	3-70	115	3-50	80	3-90	155	4-20	235	3-90	155
11	4-70	410	3-70	115	3-70	115	4-00	180	4-10	205	3-90	155
12	4-70	410	3-60	95	3-90	155	4-10	205	4-10	205	4-10	205
13	5-00	555	3-60	95	3-90	155	4-30	265	3-90	155	4-70	410
14	5-40	770	3-50	80	3-80	135	4-40	295	3-90	155	5-20	655
15	6-20	1,310	3-40	65	3-70	115	4-20	235	3-90	155		
16	5-35	740	3-40	65	3-70	115	4-00	180	4-00	180		
17	5-05	580	3-40	65	3-80	135	4-30	265	4-10	205		
18	4-75	432	3-40	65	4-20	235	4-90	505	4-10	205		
19	4-65	390	3-40	65	4-50	330	4-90	505	4-00	180		
20	4-45	312	3-40	65	4-60	370	4-70	410	4-00	180		
21	4-40	295	3-30	50	4-40	295	4-60	370	3-90	155		
22	4-35	280	3-30	50	4-30	265	4-40	295	3-80	135		
23	4-30	265	3-20	35	4-20	235	4-20	235	3-80	135		
24	4-30	265	3-20	35	4-20	235	4-20	235	3-70	115		
25	4-20	235	3-20	35	4-10	205	4-20	235	3-70	115		
26	4-10	205	3-20	35	4-00	180	4-20	235	3-80	135		
27	4-20	235	3-20	35	4-20	235	4-20	235	3-90	155		
28	4-90	505	3-40	65	4-30	265	4-40	295	3-90	155		
29	4-30	265	3-40	65	4-50	330	4-40	295	3-90	155		
30	4-20	235	3-40	65	4-50	330	4-60	370	3-90	155		
31	4-10	205	3-30	50			4-60	370				

MONTHLY DISCHARGE of Raft River at 1 mile above mouth, for 1914.

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches	Total in acre-feet.
					on Drainage area.	
June	2,940	1,240	1,499	12-0	13-39	89,196
July	1,310	205	538	4-3	4-9	33,080
August	155	35	81	0-65	0-75	4,984
September	370	20	160	1-3	1-45	9,520
October	505	155	271	2-2	2-54	16,663
November	370	115	203	1-6	1-78	12,479

NOTE.—Precipitation varies from 20 inches at mouth to 50 inches at source (estimated).
 Drainage area possibly in error.
 Station established, June, 1914.

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SIWASH CREEK (2058).

Location.—Section 12, township 22, range 16, west 6th meridian.*Records Available*.—June 7 to July 28, 1914.*Drainage Area*.—Seven square miles.*Gauge*.—Standard vertical staff gauge installed by Cippoletti weir and read daily by J. S. Wardell.*Channel*.—Straight above weir. Velocity, medium.*Discharge Measurements*.—Three discharge measurements have been taken during 1914 at varying stages.*Winter Flow*.—Stream usually runs dry during August.*Accuracy*.—Accuracy of results compiled from weir discharge table considered very high, probably within 5 per cent.

DISCHARGE MEASUREMENTS of Siwash Creek, above Heffley Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 2.....	C. B. Corbould.....	1915	6	4.0	0.71	.....	2.9
" 8.....	do.....	1915	6	4.7	0.89	2.9	4.2
" 29.....	do.....	1915	6	3.8	0.45	2.8	1.7

Meterings taken to check weir measurements.

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DAILY GAUGE HEIGHT AND DISCHARGE of Siwash Creek, near Hefley Creek,
for 1914.

DAY.	June.		July.	
	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0-19	1-1
2		2-9	0-14	0-7
3			0-14	0-7
4			0-14	0-7
5			0-12	0-6
6			0-12	0-6
7	0-34	2-7	0-14	0-7
8	0-34	2-7	0-04	0-1
9	0-36	2-9	0-04	0-1
10	0-39	3-2	0-04	0-1
11	0-44	3-8	0-04	0-1
12	0-34	2-7	0-04	0-1
13	0-34	2-7	0-04	0-1
14	0-34	2-7	0-04	0-1
15	0-29	2-1	0-14	0-7
16	0-29	2-1	0-09	0-4
17	0-24	1-6	0-09	0-4
18	0-24	1-6	0-04	0-1
19	0-24	1-6	0-04	0-1
20	0-24	1-6	0-04	0-1
21	0-24	1-6	0-04	0-1
22	0-19	1-1	0-04	0-1
23	0-24	1-6	0-04	0-1
24	0-24	1-6	0-04	0-1
25	0-24	1-6	0-04	0-1
26	0-24	1-6	0-04	0-1
27	0-24	1-6	0-04	0-1
28	0-24	1-6	0-04	0-1
29	0-24	1-6		
30	0-19	1-1		
31				

MONTHLY DISCHARGE of Siwash Creek above Hefley Lake, for 1914.

(Drainage area, 7 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June	3-8	1-1	2-1	0-30	0-33	125-0
July	1-1	6-1	0-3	0-04	0-05	18-4

NOTE.—Station was established on June 7. Water stopped coming down the creek on July 30. Cippoletti weir station.

THOMPSON RIVER AT KAMLOOPS (2040).

Location.—Section 7, township 20, range 17, west 6th meridian.*Records Available.*—April 1 to September 30, 1911; March 24 to December 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.*Drainage Area.*—14,400 square miles.

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Gauge.—Standard staff gauge on traffic bridge, read daily by Geo. Claperton.

Channel.—Width of channel varies from 750 to 850 feet at the station, while at high-water depth is from 12 to 17 feet higher than at low stages.

Discharge Measurements.—The curve for this river is well defined, measurements having been taken at various stages.

Winter Flow.—River generally freezes over about 1st January, and remains so until early in March.

On March 5, 1912, a metering was made under ice cover and showed a discharge of 3,980 second-feet.

Accuracy.—The accuracy on the whole is high.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-10	5,300	0-10	5,300	0-20	5,600	0-10	5,300	3-70	18,950	8-10	45,000
2	0-20	5,600	0-10	5,300	0-20	5,600	0-20	5,600	4-10	20,800	8-4	47,300
3	0-20	5,600	0-10	5,300	0-30	5,900	0-20	5,600	4-70	23,800	8-6	48,800
4	0-30	5,900	0-10	5,300	0-20	5,600	0-10	5,300	5-50	28,000	10-0	60,200
5	0-30	5,900	0-0	5,000	0-20	5,600	0-20	5,600	5-90	30,400	10-6	65,200
6	0-20	5,600	0-0	5,000	0-20	5,600	0-20	5,600	5-60	28,600	10-6	65,200
7	0-30	5,900	0-0	5,000	0-20	5,600	0-20	5,600	5-30	26,800	10-2	61,800
8	0-50	6,600	0-0	5,000	0-30	5,900	0-30	5,900	5-50	28,000	10-0	60,200
9	0-50	6,600	0-0	5,000	0-20	5,600	0-50	6,600	5-60	28,600	9-8	58,500
10	0-30	5,900	0-0	5,000	0-20	5,600	0-60	6,950	5-50	28,000	9-5	56,000
11	0-40	6,250	0-0	5,000	0-20	5,600	0-80	7,550	5-80	29,800	9-5	56,000
12	0-30	5,900	0-0	5,000	0-20	5,600	0-90	7,900	6-20	32,100	9-8	58,500
13	0-30	5,900	0-0	5,000	0-30	5,900	1-10	8,500	6-60	34,600	9-8	58,500
14	0-20	5,600	0-0	5,000	0-40	6,250	1-20	8,900	6-80	35,800	10-0	60,200
15	0-20	5,600	0-2	4,500	0-30	5,900	1-60	10,350	7-60	41,400	10-4	63,500
16	0-30	5,900	0-2	4,500	0-20	5,600	1-90	11,500	8-60	48,800	10-9	67,700
17	0-40	6,250	0-2	4,500	0-20	5,600	2-40	13,400	9-20	53,600	11-4	72,000
18	0-30	5,900	0-2	4,500	0-30	5,900	2-50	13,800	9-20	53,600	11-8	75,300
19	0-30	5,900	0-2	4,500	0-20	5,600	2-50	13,800	9-00	52,000	12-0	77,300
20	0-20	5,600	0-2	4,500	0-20	5,600	2-80	15,000	8-70	49,700	12-0	77,300
21	0-20	5,600	0-2	4,500	0-20	5,600	2-80	15,000	8-50	48,050	11-6	73,700
22	0-20	5,600	0-2	4,500	0-20	5,600	2-80	15,000	8-60	48,800	11-2	70,300
23	0-20	5,600	0-2	4,500	0-20	5,600	3-00	15,800	8-90	51,200	11-4	72,000
24	0-20	5,600	0-2	4,500	0-30	5,900	2-90	15,400	9-20	53,600	10-6	65,200
25	0-20	5,600	0-2	4,500	0-20	5,600	2-90	15,400	9-60	56,800	10-1	61,700
26	0-20	5,600	0-1	4,750	0-20	5,600	3-10	16,250	9-80	58,500	9-8	58,500
27	0-10	5,300	0-1	4,750	0-10	5,300	3-30	17,150	9-60	56,800	9-8	58,500
28	0-10	5,300	0-2	5,600	0-10	5,300	3-40	17,600	9-30	54,400	10-0	60,200
29	0-10	5,300	.....	.....	0-20	5,600	3-30	17,150	8-90	51,200	10-0	60,200
30	0-20	5,600	0-0	5,000	3-50	18,050	8-50	48,050	10-1	61,000
31	0-20	5,600	0-0	5,000	8-30	46,500

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DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	10.1	61,000	6.50	34,000	3.50	18,050	4.00	20,300	2.50	13,800	2.20	12,600
2	10.2	61,800	6.30	32,700	3.30	17,150	4.20	21,300	3.00	15,800	2.00	11,800
3	10.5	64,300	6.40	33,400	3.20	16,700	4.10	20,800	3.00	15,800	2.10	12,200
4	10.7	66,000	6.50	34,000	3.00	15,800	4.20	21,300	3.10	16,250	1.80	11,100
5	10.9	67,700	6.50	34,000	3.50	18,050	3.50	18,050	3.20	16,700	1.70	10,700
6	10.9	67,700	6.50	34,000	3.30	17,150	3.20	16,700	3.00	15,800	1.80	11,100
7	10.7	66,000	6.20	32,100	3.40	17,600	3.00	15,800	3.10	16,250	1.60	10,350
8	10.3	62,600	6.00	30,900	3.20	16,700	2.80	15,000	2.80	15,000	1.40	9,650
9	10.1	61,000	6.00	30,900	3.00	15,800	2.70	14,600	2.70	14,600	1.40	9,650
10	9.8	58,500	5.60	28,600	3.00	15,800	2.50	13,800	2.80	15,000	1.30	9,250
11	9.6	56,800	5.30	26,800	3.50	18,050	2.30	13,000	2.60	14,200	1.20	8,900
12	9.60	56,800	5.60	28,600	3.10	16,250	2.20	12,600	2.70	14,600	0.70	7,300
13	9.6	56,800	4.90	24,800	3.20	16,700	2.50	13,800	2.80	15,600	0.40	6,250
14	9.8	58,500	4.80	24,300	3.00	15,800	2.40	13,400	2.60	14,200	0.0	5,000
15	10.0	60,200	4.70	23,800	2.80	15,000	2.30	13,000	2.60	14,200	0.0	5,000
16	10.4	63,500	4.60	23,300	2.50	13,800	2.20	12,600	2.50	13,800	0.0	5,000
17	10.2	61,800	5.00	25,300	2.30	13,000	2.50	13,800	2.50	13,800	0.0	5,000
18	9.6	56,800	4.90	24,800	2.20	12,600	2.30	13,000	2.40	13,400	0.0	5,000
19	9.0	52,000	4.80	24,300	2.10	12,200	2.20	12,600	2.50	13,800	0.0	5,000
20	8.7	49,700	4.50	22,800	2.20	12,600	3.10	16,250	2.30	13,000	0.0	5,000
21	8.6	48,800	4.40	22,300	3.00	15,800	3.10	16,250	2.20	12,600	0.0	5,000
22	8.8	50,500	4.50	22,800	2.80	15,000	3.00	15,800	2.10	12,200	0.0	5,000
23	8.1	45,000	4.50	22,800	3.00	15,800	3.10	16,250	2.00	11,800	0.0	5,000
24	7.7	42,100	4.40	22,300	2.80	15,000	2.80	15,000	2.30	13,000	0.0	5,000
25	7.6	41,400	4.10	20,800	2.70	14,600	2.70	14,600	2.20	12,600	0.0	5,000
26	7.5	40,700	4.00	20,300	2.90	15,400	2.60	14,200	2.00	11,800	0.0	5,000
27	7.4	40,000	4.00	20,300	3.00	15,800	2.50	13,800	2.10	12,200	0.0	5,000
28	7.4	40,000	4.00	20,300	3.50	18,050	2.30	13,000	1.80	11,100	0.0	5,000
29	7.5	40,700	3.80	19,400	4.00	20,300	2.30	13,000	1.80	11,100	0.0	5,000
30	7.1	37,900	3.80	19,400	4.00	20,300	2.50	13,800	1.70	10,700	0.0	5,000
31	6.6	34,600	4.00	20,300			2.40	13,400			0.0	5,000

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Thompson River at Kamloops, for 1914.

(Drainage area, 14,400 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	6,600	5,300	5,755	0.40	0.46	353,860
February.....	5,300	4,500	4,850	0.33	0.34	269,360
March.....	6,250	5,000	5,621	0.39	0.45	345,622
April.....	18,050	5,300	11,051	0.76	0.85	657,580
May.....	58,500	18,950	40,879	2.84	3.27	2,513,519
June.....	77,300	45,000	62,510	4.34	4.84	3,719,600
July.....	67,700	34,600	53,909	3.74	4.31	3,314,752
August.....	34,000	19,400	25,842	1.79	2.06	1,588,962
September.....	20,300	12,200	16,028	1.11	1.24	953,727
October.....	21,300	12,600	15,187	1.05	1.21	933,807
November.....	16,700	10,700	13,803	0.95	1.06	821,377
December.....	12,600	5,000	7,124	0.49	0.56	438,038
The year.....	77,600	4,500	21,879	1.51	20.65	15,910,204

NOTE.—The annual precipitation of the North Thompson river above Kamloops varies from 7 to 12 inches at Kamloop to about 40 inches at the Albreda summit, while on the South Thompson, Shuswap lakes, and tributary streams it varies to a maximum of 40 inches annually.

It is to be noted that the flow recorded at the station "Thompson river at Kamloops" comprises that of both the North and South Thompson, the station being established below their confluence.

TRANQUILLE RIVER (2043).

Location.—Section 36, township 20, range 19, west 6th meridian.

Records Available.—July 4 to October 21, 1911; March 29 to September 7, 1912; May 1 to October 31, 1913; May 3 to November 14, 1914.

Drainage Area.—Two hundred and thirty square miles.

Gauge.—Standard vertical gauge read daily by Eug. Cooney.

Channel.—Straight at the gauge section, about 20 feet wide. Bed of stream composed of stone and boulders and control is good.

Discharge Measurements.—Gauge-height discharge curve is well defined.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High, results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Tranquille River near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec-ft
May 30.	C. B. Corbould	1915	18.5	31.0	4.24	1.35	132.0
Aug. 4	C. B. Corbould	1915	15	14.5	0.59	0.65	8.6

For further meterings and hydrographic data see Water Resources Paper Nos. 1 and 18

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's, Ranch, for 1914.

DAY.	May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-35	90
2			1-35	90
3			1-30	80
4	2-70	377	1-25	71
5	2-20	340	1-20	62
6	2-10	302	1-20	62
7	2-10	302	1-27	74
8	2-10	302	1-30	80
9	2-10	302	1-30	80
10	2-20	340	1-32	84
11	2-30	382	1-37	95
12	2-60	524	1-32	84
13	2-60	524	1-30	80
14	2-60	524	1-30	80
15	2-70	577	1-30	80
16	2-50	473	1-25	71
17	2-40	427	1-25	71
18	2-20	340	1-20	62
19	2-10	302	1-15	53
20	2-00	267	1-12	48
21	1-95	250	1-10	45
22	1-90	234	1-10	45
23	1-85	219	1-12	48
24	1-80	204	1-15	53
25	1-75	189	1-20	62
26	1-60	150	1-17	56
27	1-50	125	1-12	48
28	1-40	101	1-10	45
29	1-35	90	1-07	41
30	1-32	84	1-05	38
31	1-32	84		

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DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's Ranch,
for 1915.

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-02	34	0-70	10	0-44	4	0-59	7	0-69	10
2.....	1-00	31	0-67	9	0-44	4	0-61	7	0-69	10
3.....	0-97	28	0-67	9	0-44	4	0-61	7	0-69	10
4.....	0-92	23	0-65	8	0-44	4	0-59	7	0-71	10
5.....	0-90	21	0-64	8	0-44	4	0-59	7	0-74	12
6.....	0-90	21	0-61	7	0-44	4	0-59	7	0-74	12
7.....	0-87	19	0-64	8	0-44	4	0-59	7	0-71	10
8.....	0-87	19	0-66	9	0-54	6	0-59	7	0-71	10
9.....	0-85	18	0-64	8	0-56	6	0-59	7	0-71	10
10.....	0-82	16	0-64	8	0-56	6	0-59	7	0-71	10
11.....	0-80	15	0-61	7	0-56	6	0-59	7	0-71	10
12.....	0-80	15	0-61	7	0-56	6	0-64	8	0-71	10
13.....	0-77	13	0-59	7	0-56	6	0-61	7	0-71	10
14.....	0-80	15	0-56	6	0-59	7	0-61	7	0-79	14
15.....	0-82	16	0-56	6	0-59	7	0-61	7		
16.....	0-82	16	0-54	6	0-59	7	0-61	7		
17.....	0-80	15	0-54	6	0-59	7	0-61	7		
18.....	0-77	13	0-51	5	0-59	7	0-61	7		
19.....	0-75	12	0-51	5	0-61	7	0-64	8		
20.....	0-72	11	0-49	5	0-59	7	0-64	8		
21.....	0-77	13	0-49	5	0-59	7	0-64	8		
22.....	0-75	12	0-54	6	0-59	7	0-64	8		
23.....	0-72	11	0-51	5	0-59	7	0-64	8		
24.....	0-80	15	0-49	5	0-59	7	0-64	8		
25.....	0-75	12	0-49	5	0-61	7	0-64	8		
26.....	0-70	10	0-49	5	0-61	7	0-64	8		
27.....	0-70	10	0-46	4	0-59	7	0-64	8		
28.....	0-70	10	0-46	4	0-59	7	0-64	8		
29.....	0-70	10	0-46	4	0-59	7	0-64	8		
30.....	0-70	10	0-44	4	0-59	7	0-64	8		
31.....	0-70	10	0-44	4			0-64	8		

MONTHLY DISCHARGE of Tranquille River, near Cooney's Ranch, for 1914.

(Drainage area, 230 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May.....	577-0	84-0	314-0	1-36	1-57	19,307
June.....	95-0	38-0	60-0	0-29	0-32	3,927
July.....	34-0	10-0	16-0	0-07	0-08	984
August.....	10-0	4-0	6-3	0-03	0-04	357
September.....	7-0	4-0	6-1	0-03	0-04	363
October.....	8-0	7-0	7-4	0-03	0-03	455
The period.....	577-0	4-0	69-3	0-30	2-06	25,423

NOTE.—Precipitation over the drainage area probably varies from 8 to 10 inches annually, but it is probable that there are large evaporation losses in Dubois, Pust, and Tranquille lakes.

KAMLOOPS DIVISION.

ADAMS RIVER (2005).

Location.—Section 6, township 23, range 12, west 6th meridian.

Records Available—July 1 to August 31, 1911; January 1 to December 31, 1912; January 1st to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand six hundred square miles.

Gauge.—Standard vertical staff gauge read by Mrs. Sturgill, Chase, B.C., up to October 17, 1914.

On October 17, a Gurley automatic water stage recorder No. 630 was put into operation, at a point 50 feet below the old staff gauge. A series of readings on both gauges at the same instant gives a definite relationship between old and new gauge readings.

Channel.—The channel varies in width from 300 to 500 feet above the dam where meterings are made. The velocities are uniform, the mean never exceeding 3.0 feet per second at the measuring section. The run-off is artificially controlled by a dam near the outlet of Adams lake.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well distributed meterings.

Winter Flow.—Partial ice conditions exist during winter months, but the river is seldom frozen over at the gauge sufficiently to have material effect on the accuracy of returns.

Accuracy.—The accuracy of returns on the whole is fairly high, the only possibility of error being in the gauge heights, sudden changes in which, owing to the opening and closing of the Adams River Lumber Company's dam may have escaped the observer's notice. This error will be entirely overcome in 1915.



Adams Lake.

Photograph by Eyre M. Dann.

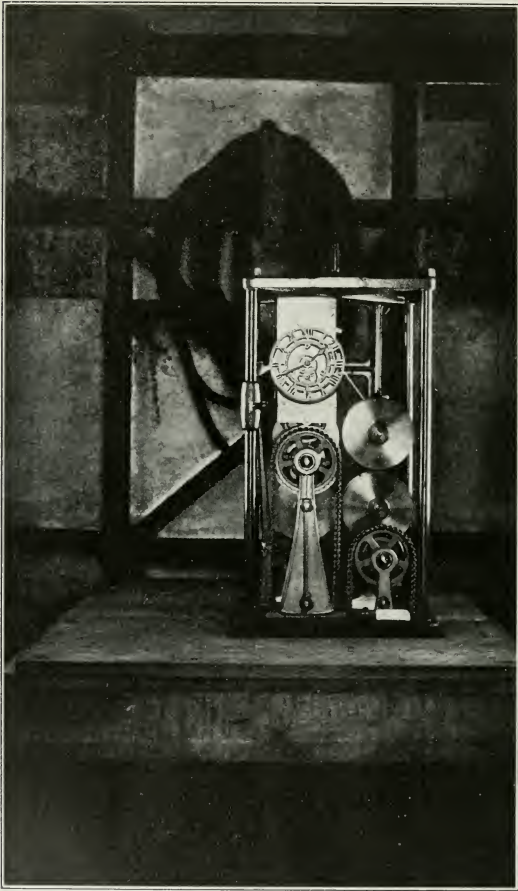
Looking north from the south end of Adams lake, which forms a splendid natural reservoir site for a possible power development on Adams river. Adams lake empties into Adams river, falling 190 feet in its six-mile course to Shuswap lake.



Adams River—Automatic Gauge House.

Photograph by Eyré M. Dann.

The gauge house is of timber construction and is covered by galvanized iron sheeting for fire protection. The well lining is an Ingot iron culvert (24 inch diameter) in which the float and weights operate. The culvert stands in the middle of a timber and rock-fill cribbing upon which the house is built. A 2½ inch cast iron feed pipe to the bottom of the river, keeps the water in the well constantly at the same elevation as the river. Although zero weather occurred during the winter, the temperatures in the well was never low enough to cause the water to freeze.



Adams River—Automatic Water Stage Register.

Photograph by Eyre M. Dann.

The Gurley Automatic Gauge shown in this photograph is so well known to engineers as to require little explanation. A float suspended from a copper ribbon passes over a drum which indicates the height of water surface. The clock and paper winding apparatus are actuated by weights, and the time and gauge height (to hundredths of feet) are printed every fifteen minutes. The gauge and clock will run without attention for thirty days.

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DISCHARGE MEASUREMENTS of Adams River near Adams Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 3.....	E. H. Tredroft.....	1,923	443.0	2,354.0	2.41	4.7	5,650.0

Station rated 1911 and 1912. Gauge height in terms of newly installed automatic gauge, 5-41.

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams River Lumber Co's. Dam, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-25	1,060	2-55	1,282	2-66	1,368	4-30	3,370	4-20	3,175	5-01	5,139
2.....	2-25	1,060	2-55	1,282	2-66	1,368	4-30	3,370	4-20	3,175	5-11	5,430
3.....	2-25	1,060	2-55	1,282	2-55	1,282	4-30	3,370	4-30	3,370	5-11	5,430
4.....	2-25	1,060	2-55	1,282	2-55	1,282	4-40	3,575	4-30	3,370	5-11	5,430
5.....	2-25	1,060	2-45	1,207	2-55	1,282	4-40	3,575	4-30	3,370	5-11	5,430
6.....	2-25	1,060	2-45	1,207	2-55	1,282	4-40	3,575	4-40	3,575	5-11	5,430
7.....	2-15	990	2-45	1,207	2-55	1,282	4-40	3,575	4-40	3,575	5-21	5,730
8.....	2-15	990	2-45	1,207	2-55	1,282	4-50	3,810	4-40	3,575	5-21	5,730
9.....	2-15	990	2-45	1,207	2-55	1,282	4-50	3,810	4-40	3,575	5-21	5,730
10.....	2-15	990	2-45	1,207	2-55	1,282	4-50	3,810	4-50	3,810	5-21	5,730
11.....	2-15	990	2-45	1,207	2-55	1,282	4-50	3,810	4-50	3,810	5-21	5,730
12.....	2-15	990	2-45	1,207	2-55	1,282	4-50	3,810	4-50	3,810	5-21	5,730
13.....	2-15	990	2-45	1,207	2-55	1,282	1-84	786	4-60	4,050	5-21	5,730
14.....	2-15	990	2-45	1,207	2-55	1,282	1-84	786	4-60	4,050	5-21	5,730
15.....	3-07	1,704	2-45	1,207	2-55	1,282	1-84	786	4-60	4,050	5-31	6,030
16.....	3-07	1,704	2-45	1,207	0-15	105	1-84	786	4-60	4,050	5-31	6,030
17.....	3-07	1,704	2-66	1,368	0-15	105	1-95	857	4-70	4,300	5-31	6,030
18.....	3-07	1,704	2-66	1,368	0-15	105	1-95	857	4-81	4,587	5-31	6,030
19.....	2-96	1,611	2-66	1,368	0-15	105	1-95	857	4-81	4,587	5-31	6,030
20.....	2-96	1,611	2-66	1,368	0-25	125	2-05	922	4-91	4,858	5-31	6,030
21.....	2-96	1,611	2-66	1,368	0-25	125	4-30	3,370	4-91	4,858	5-31	6,030
22.....	2-86	1,528	2-66	1,368	0-25	125	4-30	3,370	5-01	5,139	5-31	6,030
23.....	2-86	1,528	2-66	1,368	0-25	125	4-30	3,370	5-01	5,139	5-41	6,330
24.....	2-86	1,528	2-66	1,368	0-25	125	4-20	3,175	5-11	5,430	5-41	6,330
25.....	2-86	1,528	2-66	1,368	0-25	125	4-20	3,175	5-11	5,430	5-41	6,330
26.....	2-86	1,528	2-66	1,368	0-25	125	4-20	3,175	5-11	5,430	5-41	6,330
27.....	2-86	1,528	2-66	1,368	0-25	125	4-20	3,175	5-31	6,030	5-41	6,330
28.....	2-65	1,360	2-66	1,368	0-35	145	4-10	3,000	5-31	6,030	5-41	6,330
29.....	2-65	1,360	.....	.....	0-35	145	4-10	3,000	5-21	5,730	5-41	6,330
30.....	2-65	1,360	.....	.....	0-35	145	4-20	3,175	5-11	5,430	5-41	6,330
31.....	2-65	1,360	.....	.....	0-35	145	.....	.....	5-01	5,139	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams River Lumber Co's. Dam, for 1914.

DAY.	July.		August.		September.		October.		November.		December.		
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	
1	5-41	6,330	3-59	2,248	.....	4,830	.....	962	4-19	3,157	2-71	1,408
2	5-41	6,330	3-59	2,248	.....	4,830	.....	962	4-16	3,105	2-70	1,400
3	5-31	6,030	3-59	2,248	.....	4,830	.....	1,025	3-53	2,176	2-69	1,392
4	5-31	6,030	3-59	2,248	.....	4,830	.....	1,025	3-69	2,373	2-69	1,392
5	5-31	6,030	3-59	2,249	4,830	2-30	1,095	3-81	2,539	2-67	1,376
6	4-91	4,858	3-59	2,248	.....	5,110	2-35	1,132	4-23	3,233	2-66	1,368
7	4-91	4,858	3-59	2,248	.....	5,110	3-07	1,704	4-51	3,834	2-64	1,352
8	4-91	4,858	3-59	2,248	.....	5,110	3-76	2,469	3-89	2,656	2-62	1,336
9	4-91	4,858	3-59	2,248	.....	5,110	2-35	1,132	4-20	3,175	2-60	1,320
10	5-01	5,139	.....	.....	.....	5,110	2-3	1,095	3-92	2,702	2-57	1,297
11	5-01	5,139	.....	.....	.....	5,110	1-44	570	3-91	2,686	2-55	1,282
12	5-01	5,139	.....	.....	.....	5,110	4-50	3,810	3-86	2,612	2-52	1,260
13	5-01	5,139	.....	.....	5-01	5,139	4-30	3,370	3-83	2,568	2-51	1,252
14	5-01	5,139	.....	.....	.....	2,176	4-30	3,370	3-83	1,940	2-49	1,237
15	5-01	5,139	.....	.....	2-12	969	3-90	2,670	2-93	1,585	2-47	1,222
16	5-01	5,139	.....	.....	.....	.....	3-80	2,525	2-92	1,577	2-45	1,207
17	5-01	5,139	.....	.....	.....	.....	3-84	2,583	2-90	1,560	2-43	1,192
18	5-01	5,139	.....	.....	.....	.....	3-84	2,583	2-46	1,215	2-41	1,177
19	5-01	5,139	.....	.....	.....	.....	3-83	2,568	2-85	1,520	2-39	1,162
20	5-01	5,139	.....	.....	.....	.....	3-81	2,539	2-84	1,512	2-37	1,147
21	3-48	2,116	.....	.....	.....	.....	3-81	2,539	2-84	1,512	2-35	1,132
22	3-48	2,116	.....	.....	.....	.....	3-78	2,497	2-82	1,496	2-33	1,117
23	3-48	2,116	.....	.....	.....	.....	3-77	2,483	2-80	1,480	2-31	1,102
24	3-48	2,116	.....	.....	.....	.....	3-59	2,248	2-78	1,464	2-29	1,088
25	3-48	2,116	4-70	4,300	.....	.....	.....	2,260	2-76	1,448	2-27	1,074
26	3-48	2,116	.....	4,560	.....	.....	.....	2,260	2-77	1,456	2-25	1,060
27	3-48	2,116	.....	4,560	.....	.....	3-65	2,322	2-76	1,448	2-23	1,046
28	3-48	2,116	.....	4,560	.....	.....	4-11	3,017	2-74	1,432	2-20	1,025
29	3-48	2,116	.....	4,560	.....	.....	3-54	2,188	2-73	1,424	2-15	990
30	3-48	2,116	.....	4,560	.....	.....	4-32	3,410	2-72	1,416	2-13	976
31	3-59	2,248	.....	4,560	.....	.....	4-23	3,232	.....	.....	.....	.....

MONTHLY DISCHARGE of Adams River near Adams Lake, for 1914.

(Drainage area, 1,600 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	1,704-0	990-0	1,307-0	0-81	0-94	80,402-0
February.....	1,368-0	1,207-0	1,287-0	0-80	0-83	71,458-0
March.....	1,368-0	105-0	690-0	0-43	0-50	42,451-0
April.....	3,810-0	786-0	2,736-0	1-71	1-90	162,804-0
May.....	6,030-0	3,175-0	4,403-0	2-75	3-17	270,700-0
June.....	6,330-0	5,139-0	5,900-0	3-68	4-11	351,074-0
July.....	6,330-0	2,116-0	4,197-0	2-62	3-02	258,062-0
October.....	3,810-0	570-0	2,182-0	1-36	1-57	134,164-0
November.....	3,834-0	1,215-0	2,077-0	1-29	1-44	123,590-0
December.....	1,408-0	976-0	1,213-0	0-75	0-87	74,580-0
The period.....	6,330-0	105-0	2,599-2	1-62	18-35	1,569,285-0

NOTE.—Summary is for a ten-month period, omitting August and September, for which time it was impossible to procure a gauge reader.

Precipitation over the Adams river drainage area probably varies from 20 to 40 inches per annum, while large evaporation losses occur on Adams lake.

SESSIONAL PAPER No. 25e

ASHNOLA RIVER, NEAR KEREMEOS (2065).

Location.—Near Ashnola, Water District No. 4.

Records Available.—June 27 to December 19, 1914.

Drainage Area.—Four hundred and eighty square miles.

Gauge.—Standard chain gauge read daily by H. Atherton.

Channel.—The channel is straight for about 100 yards above and below measuring section. Velocity is fairly high. The bed of the stream is composed of rocks and gravel. Only one channel at all stages. Average depth at high water, 5 feet.

Discharge Measurements.—Are made by wading at low water and by cable carrier at high water.

Winter Flow.—No records have been kept during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of returns is low, only three measurements having been obtained and these at low water.

ASHNOLA RIVER.

Ashnola river is the largest tributary of the Similkameen below Princeton. It rises in the high mountains of the Cascade range south of the boundary, and joins the Similkameen at Ashnola half-way between Hedley and Keremeos, and has a total length of about 40 miles. It has a number of small tributaries from the surrounding mountains, the largest of which is the East Fork from the south, which joins it 5 miles from the mouth. The other tributaries, six in number, are small unnamed creeks.

The drainage area from the 1912 map of the Department of Lands of British Columbia is 480 square miles.

The river and its tributaries flow through deep narrow valleys with steep slopes on both sides, like all streams in this district. Little is known of the headwaters of this river, as the upper part of its course is difficult of access.

The precipitation at the mouth is about 10 inches per annum. Water is taken from Ashnola river by the South Keremeos Land Company for use on the ranches in the neighbourhood of Keremeos, 10 miles away on the north side of the Similkameen river. The water runs in an earth ditch most of the way. It crosses the Similkameen at Ashnola in a 40-inch wood stave pipe supported on the highway bridge at this point. Ashnola river at low stages carries more than this system can carry. Discharge records of the river taken by this survey in 1914 show a minimum flow of 65 c.f.s. on August 25. The maximum flow is over 1000 c.f.s. With storage there is sufficient water in the river to irrigate large areas of land in the Similkameen valley below Keremeos.

DISCHARGE MEASUREMENTS of Ashnola river near Ashnola, 1914.

Date.	Hydrographer.	Meter No.	Width.	Aren of Section.	Mean Velocity	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft per sec	Feet	Sec-ft
July 28.	K. G. Chisholm	1,913	57.0	111.0	1.73	-0.10	102.0
Aug. 1.	"	1,913	41.0	46.0	1.54	-0.61	71.0
Dec. 1.	"	1,673	40.0	50.0	1.36	-0.53	68.0

An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

DAY.	June.	
	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.
1.....		
2.....		
3.....		
4.....		
5.....		
6.....		
7.....		
8.....		
9.....		
10.....		
11.....		
12.....		
13.....		
14.....		
15.....		
16.....		
17.....		
18.....		
19.....		
20.....		
21.....		
22.....		
23.....		
24.....		
25.....		
26.....		
27.....	1-50	876
28.....		
29.....		
30.....	1-60	925
31.....		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			-0.35	119	-0.7	49	-0.2	160			-0.6	65
2	1.50	876			-0.7	49	-0.27	140	-0.32	127	-0.55	74
3												
4	1.40	828	-0.35	119								
5					-0.7	49			-0.30	132	-0.40	107
6			-0.35	119			-0.25	146				
7	1.25	757							-0.30	132		
8			-0.35	119	-0.5	84	-0.25	146			-0.30	132
9	09.5	620										
10					-0.4	107	-0.30	132	-0.35	119	-0.25	146
11	0.85	576	-0.40	107					-0.40	107	-0.15	176
12					-0.45	95						
13			-0.45	95			-0.20	160				
14	1.05	665							-0.45	95		
15			-0.40	107	-0.45	95	-0.12	156			-0.10	263
16	0.90	598										
17					-0.45	95	-0.15	176	-0.45	95	+0.20	301
18	0.55	446	-0.35	119								
19			-0.45	95	-0.05	84			-0.45	95	+0.30	340
20							-0.25	146				
21	0.35	361							-0.30	132		
22			-0.50	84	-0.12	156	-0.30	132				
23	0.22	308										
24					-0.20	160	-0.30	132	-0.40	107		
25	0.15	282	-0.60	65								
26					-0.30	132			-0.40	107		
27			-0.65	57			-0.25	146				
28	0.05	244							-0.45	95		
29			-0.60	65	-0.15	176	-0.25	146				
30	0	226										
31							-0.30	132				

MONTHLY DISCHARGE of Ashnola River near Keremeos, for 1914.

(Drainage area, 480 square miles.)

Month	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage-area	Total in acre-feet
June	925	876	for period	June 27 to	June 30	
July	876	226	522	1.1	1.3	62,067
August	119	57	97.7	0.2	0.2	6,082
September	186	49	104.3	0.2	0.2	6,206
October	186	132	148.6	3.3	0.3	9,117
November	142	95	111.9	0.2	0.2	6,868
December	340	35	for period	Dec 1 to	Dec 19	
The period	876	49	196.9	0.4	2.2	60,085

NOTE.—Station established in latter end of June, 1914

BOUNDARY CREEK (2048).

Location.—At Greenwood, Water District No. 4.

Records Available.—January 1 to December 7, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Vertical staff gauge graduated in feet and tenths, situated on upstream side of traffic bridge, read daily by P. H. McCarrach.

Channel.—Channel is straight for about 300 feet above and below measuring section. Bed of stream is rocky and permanent.

Discharge Measurements.—Four discharge measurements have been obtained during 1914 at varying stages.

Winter Flow.—No records have been kept on this stream during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of results is considered good, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Boundary Creek at Greenwood, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20.....	C. E. Richardson and C. Varcoe.....	1527	41.5	99.8	3.8	2.9	379
June 8.....	E. M. Dann and K. Chisholm	1913	39.0	84.0	3.2	2.5	269
July 20.....	" " "	1913	39.6	41.0	1.28	1.21	52.6
Aug. 26.....	" " "	1913	17.0	15.6	0.77	0.77	12.0

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Boundary Creek near Greenwood,
for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	0-90	20	0-90	20	0-90	20	1-20	45	2-90	380	2-80	352
2.....	0-90	20	.....	.....	0-90	20	1-20	45	3-35	504	2-90	380
3.....	0-90	20	.....	.....	0-90	20	1-30	55	3-50	546	3-30	491
4.....	0-90	20	.....	.....	0-90	20	1-40	66	3-30	491	3-00	407
5.....	0-90	20	.....	.....	0-90	20	1-50	78	3-20	463	3-00	407
6.....	0-90	20	.....	.....	0-90	20	1-60	90	3-00	407	2-80	352
7.....	1-00	28	.....	.....	0-90	20	1-80	117	2-90	380	2-70	325
8.....	1-00	28	.....	.....	0-90	20	2-00	150	2-90	380	2-60	297
9.....	1-00	28	.....	.....	0-90	20	2-10	170	3-00	407	2-60	297
10.....	1-00	28	.....	.....	0-90	20	2-25	204	3-00	407	2-50	270
11.....	0-95	24	.....	.....	0-90	20	2-60	297	3-00	407	2-50	270
12.....	0-90	20	0-90	20	0-90	20	2-80	352	3-10	435	2-40	243
13.....	0-90	20	0-90	20	0-90	20	2-90	380	3-15	449	2-40	243
14.....	0-90	20	0-90	20	0-95	24	3-00	407	3-20	463	2-50	270
15.....	0-90	20	0-90	20	0-95	24	3-40	518	3-40	518	2-60	297
16.....	0-90	20	0-90	20	1-00	28	3-45	532	3-55	559	2-70	325
17.....	0-90	20	0-90	20	1-00	28	3-55	562	3-20	463	2-80	352
18.....	0-90	20	0-90	20	1-00	28	3-40	518	3-00	407	2-80	352
19.....	0-90	20	0-90	20	1-00	28	3-40	518	3-00	407	2-70	325
20.....	0-90	20	0-90	20	1-10	36	3-50	546	3-00	407	2-50	270
21.....	0-90	20	0-90	20	1-10	36	3-30	491	3-00	407	2-40	243
22.....	0-90	20	0-90	20	1-10	36	3-20	463	3-00	407	2-30	217
23.....	0-90	20	0-90	20	1-10	36	3-20	463	3-30	491	2-10	170
24.....	1-00	28	0-90	20	1-20	45	3-30	491	3-30	491	2-10	170
25.....	0-90	20	0-90	20	1-20	45	3-20	463	3-30	491	2-10	170
26.....	0-90	20	0-90	20	1-15	40	3-10	435	2-95	394	2-00	150
27.....	0-90	20	0-90	20	1-20	45	3-10	435	2-90	380	2-00	150
28.....	0-90	20	0-90	20	1-20	45	3-00	407	2-80	352	1-90	133
29.....	0-90	20	1-20	45	2-90	380	2-70	325	1-90	133
30.....	0-90	20	1-20	45	2-90	380	2-70	325	1-90	133
31.....	0-90	20	1-20	45	2-70	325

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DAILY GAUGE HEIGHT AND DISCHARGE OF Boundary Creek near Greenwood, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	⁴ Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-90	133	1-00	28	0-40	2	0-90	20	1-15	40	1-10	36
2	1-80	117	1-00	28	0-40	2	0-85	17	1-15	40	1-10	36
3	1-90	133	1-00	28	0-40	2	0-85	17	1-20	45	1-01	36
4	1-80	117	0-90	20	0-40	2	0-85	17	1-20	45	1-10	36
5	1-70	103	0-90	20	0-40	2	0-85	17	1-20	45	1-05	32
6	1-70	103	0-90	20	0-40	2	0-80	14	1-20	45	1-05	32
7	1-60	90	0-90	20	0-40	2	0-80	14	1-20	45	1-05	32
8	1-60	90	0-90	20	0-60	5	0-80	14	1-20	45		
9	1-50	78	0-90	20	0-60	5	0-80	14	1-20	45		
10	1-50	78	0-90	20	0-60	5	0-80	14	1-15	40		
11	1-40	66	0-80	14	0-60	5	0-90	20	1-10	36		
12	1-40	66	0-80	14	0-50	3	0-90	20	1-10	36		
13	1-40	66	0-80	14	0-50	3	0-90	20	1-20	45		
14	1-46	66	0-80	14	0-55	4	0-90	20	1-20	45		
15	1-40	66	0-80	14	0-70	9	0-90	20	1-20	45		
16	1-30	55	0-80	14	0-70	9	0-90	20	1-15	40		
17	1-30	55	0-80	14	0-70	9	0-95	24	1-15	40		
18	1-25	50	0-70	9	0-70	9	1-00	28	1-15	40		
19	1-20	45	0-70	9	0-75	11	1-00	28	1-20	45		
20	1-20	45	0-70	9	0-80	14	1-00	28	1-20	45		
21	1-20	45	0-70	9	0-80	14	1-00	28	1-20	45		
22	1-20	45	0-70	9	0-80	14	1-00	28	1-20	45		
23	1-20	45	0-60	5	0-80	14	1-00	28	1-20	45		
24	1-20	45	0-60	5	0-80	14	1-00	28	1-15	40		
25	1-20	45	0-60	5	0-70	9	1-00	28	1-15	40		
26	1-16	36	0-60	5	0-70	9	1-00	28	1-15	40		
27	1-10	36	0-50	3	0-90	20	1-00	28	1-15	40		
28	1-10	36	0-50	3	1-00	28	1-05	32	1-15	40		
29	1-00	28	0-50	3	0-95	24	1-05	32	1-15	40		
30	1-00	28	0-50	3	0-90	20	1-10	36	1-15	40		
31	1-00	28	0-50	3			1-15	40				

MONTHLY DISCHARGE OF Boundary Creek near Greenwood, for 1914.

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	28	20	21.4	0.17	0.19	1,316
February	20	20	20.0	0.16	0.17	1,111
March	45	20	29.7	0.24	0.28	1,826
April	560	45	335.2	2.68	2.99	19,946
May	559	325	428	3.4	3.9	26,317
June	491	133	273	2.18	2.43	16,245
July	133	28	66	0.53	0.61	4,058
August	28	3	13	0.10	0.11	799
September	28	2	9	0.07	0.08	535
October	40	14	23	0.18	0.21	1,414
November	45	36	42	0.33	0.37	2,499
December	36	32	(For period Dec. 1 to Dec. 7.)			
The year	560	2	107	0.84 (estimated)	11.6	78,000 (estimated)

NOTE.—Winter conditions obtained after December 7.

From October 1, 1912, to September 30, 1913, precipitation at Greenwood was 14.7 inches. This is probably somewhat lower than the mean annual precipitation over the whole drainage area.

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CELESTE CREEK (2050).

Location.—Near Albas, Water District No. 2.*Drainage Area.*—Eighty square miles.*Records Available.*—March 1 to December 31, 1914.*Gauge.*—Standard vertical staff gauge, graduated in feet and tenths. Read by H. C. Harris three times per week.*Channel.*—Average width 25 feet. Bed of stream very rocky.*Discharge Measurements.*—Two meterings only have been obtained.*Winter Flow.*—Creek generally freezes over during winter months.*Accuracy.*—The results as shown are very approximate, since it has been impossible to rate the station completely during 1914.

DISCHARGE MEASUREMENTS OF CELESTE Creek near Albas, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Aug. 13.....	E. H. Trederoft & K. Chisholm	1923	32	37.0	1.47	0.58	54.7
Aug. 29.....	E. M. Dann	1913	19	15.4	1.5	0.35	23.4

Measurements made at stream's mouth, regular section not suitable for low water.
 An effort will be made to completely rate this station during 1915.

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DAILY GAUGE HEIGHT AND DISCHARGE of Celeste Creek, near Shuswap Lake,
for 1914.

Day.	February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0.65	66					1.95	335
2					0.70	75	1.75	289		
3			0.65	66					2.15	382
4					0.75	83	1.85	312		
5			0.65	66					2.15	382
6					0.75	83	1.95	335		
7			0.65	66					2.05	359
8					0.80	92	1.95	335		
9										
10			0.65	66					2.10	370
11					0.85	101	2.00	347		
12			0.65	66					2.05	359
13							2.25	405		
14			0.65	66	0.95	120				
15							2.35	429	2.05	359
16			0.65	66	1.00	130				
17										
18					1.15	160	2.35	429	2.10	370
19			0.65	66						
20					1.25	181	2.35	429	2.00	347
21			0.65	66						
22	0.65	66			1.30	191				
23			0.65	66			2.25	405	1.90	324
24					1.80	300				
25	0.65	66					2.25	405		
26			0.65	66					1.80	300
27					1.65	267				
28	0.65	66	0.65	66			2.15	382		
29										
30					1.65	267	2.15	382	1.80	300
31			0.70	75						

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DAILY GAUGE HEIGHT AND DISCHARGE OF Celeste Creek, near Shuswap Lake, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1					0-30	18	0-50	43	1-00	120	0-85	101
2												
3	1-70	278	0-70	75								
4					0-27	15			1-10	150	0-85	101
5			0-70	75			0-50	43				
6	1-55	245			0-25	13			1-05	140		
7			0-65	66			0-50	43			0-85	101
8					0-30	18			1-05	140		
9	1-35	202	0-65	66			0-50	43			0-85	101
10									1-00	130		
11	1-25	181			0-22	10	0-60	58			0-80	92
12			0-65	66					1-00	130		
13	1-15	160					0-70	75			0-75	83
14			0-65	66	0-20	9			1-00	130		
15	1-30	191					0-90	110			0-70	75
16			0-55	50					0-95	120		
17					0-20	9	1-00	130			0-70	75
18	1-20	170	0-50	43					0-90	110		
19					0-25	12	1-10	150			0-65	66
20									0-85	101		
21	1-10	150	0-50	43	0-30	18	1-05	140				
22									0-80	92	0-65	66
23	1-00	130			0-35	23	1-00	130				
24			0-45	36					0-75	83	0-60	58
25	0-95	120										
26					0-40	29	1-00	130	0-75	83	0-60	58
27	0-90	110	0-35	23								
28					0-45	36	0-95	120	0-70	75	0-60	58
29			0-35	23								
30	0-80	92			0-45	36	0-90	110	0-80	92	0-60	58
31			0-30	18								

MONTHLY DISCHARGE OF Celeste Creek near Shuswap Lake, for 1914.

(Drainage area, 80 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre feet
March	75	66	66-6	0-8	0-9	4,095
April	300	75	157-7	1-9	2-1	2,384
May	420	289	375-7	4-7	5-4	23,100
June	382	300	340-5	4-3	4-8	20,767
July	278	92	169-0	2-1	2-4	19,891
August	75	18	50-0	0-6	0-7	3,074
September	36	9	19-0	0-2	0-2	1,130
October	150	43	94-6	1-2	1-4	5,817
November	150	75	113-7	1-4	1-6	6,703
December	101	58	78-0	1-0	1-1	4,796
The period	420	0	147-3	1-8	20-6	89,117

NOTE.—Mean annual precipitation probably varies from 30 to 50 inches. Probably there are large evaporation losses from Hum-a-milt lake.

CRAZY CREEK (2051).

Location.—Section 28, township 23, range 5, west of the 6th meridian.

Drainage Area.—Forty-five square miles.

Records Available.—March 8, to December 13, 1914.

Gauge.—Standard vertical staff gauge situated on C.P.R. siding bridge.

Channel.—The channel averages about 75 feet in width. Bed of stream is rocky, and velocities are high.

Winter Flow.—Ice conditions exist on this stream during November, December, January and February.

Accuracy.—The accuracy of returns is considered on the whole to be fairly high. Four discharge measurements have been obtained at varying stages, and the curve is well defined.

Miscellaneous.—The British Columbia Forest Mills Co., Ltd., hold records on this stream for 9 cubic feet per second. The water is used to run a small hydro-electric plant comprising : One Pelton bucket wheel and one Can. Gen. Electric dynamo (2,000 volts, 50 amps), replaced during winter months by steam plant for purpose of operating saw-mill.

DISCHARGE MEASUREMENTS of Crazy Creek at Taft, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Oct. 25.....	E. M. Dann and K. G. Chisholm.....	1055	46	57.8	2.05	1.60	118.3
1914.							
Mar. 3.....	K. G. Chisholm.....	1505	33	21.8	1.11	0.72	24.3
May 18.....	E. H. Trederoft.....	1055	77	124.7	3.0	2.30	370.7
July 15.....	E. H. Trederoft.....	1923	78.5	151.2	4.09	2.80	619.5

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DAILY GAUGE HEIGHT AND DISCHARGE of Crazy Creek near Taft, B.C., for 1914.

DAY.	March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-00	35	2-00	242	2-30	371
2			0-90	29	2-40	417	2-60	517
3			1-00	35	2-50	467	3-00	722
4			1-10	43	2-25	348	2-60	517
5			1-40	82	2-00	242	2-35	394
6			1-60	118	1-90	205	2-30	371
7			1-75	158	1-90	205	2-00	242
8	0-60	24	1-80	173	1-90	205	2-00	242
9	0-75	25	1-80	173	2-10	282	2-10	282
10	0-60	24	1-80	173	2-25	348	2-20	325
11	0-70	25	1-85	189	2-20	325	2-40	417
12	0-80	26	1-90	205	2-30	371	2-35	394
13	0-85	28	2-00	242	2-40	417	2-50	467
14	0-80	26	2-05	262	2-65	542	2-60	517
15	0-85	28	2-15	303	2-60	517	2-65	542
16	0-85	28	2-20	325	2-65	542	2-70	567
17	0-80	26	2-00	242	2-60	517	2-75	593
18	0-95	32	1-90	205	2-30	371	2-70	567
19	0-90	29	2-00	242	2-25	348	2-50	467
20	0-95	32	2-10	282	2-20	325	2-35	394
21	1-00	35	2-00	242	2-30	371	2-15	303
22	1-10	43	1-90	205	2-40	417	2-10	282
23	1-10	43	1-80	173	2-55	492	2-10	282
24	1-20	53	1-90	205	2-65	542	2-15	303
25	1-10	43	1-80	173	2-50	467	2-20	325
26	0-60	24	1-80	173	2-35	394	2-50	467
27	0-65	24	1-80	173	2-10	282	2-35	394
28	0-70	25	1-80	173	2-00	242	2-25	348
29	0-90	29	1-75	158	1-90	205	2-30	371
30	1-00	35	1-80	173	1-80	173	2-30	371
31	1-10	43			1-95	223		

DAILY GAUGE HEIGHT AND DISCHARGE of Crazy Creek near Taft, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-35	394	1-40	82	0-80	26	1-60	118	1-45	90	1-30	67
2	2-45	442	1-30	67	0-80	26	1-55	108	1-85	189	1-25	60
3	2-40	417	1-30	67	0-80	26	1-40	82	1-65	131	1-20	53
4	2-45	442	1-30	67	0-80	26	1-40	82	1-55	108	1-20	53
5	2-30	371	1-25	60	0-80	26	1-30	67	1-50	98	1-15	48
6	2-20	325	1-20	53	0-75	25	1-25	60	1-50	98	1-15	48
7	2-10	282	1-20	53	0-75	25	1-20	53	1-45	90	1-10	43
8	2-00	242	1-30	67	0-90	29	1-10	43	1-40	82	1-10	43
9	2-00	242	1-20	53	1-30	67	1-10	43	1-40	82	1-10	43
10	2-00	242	1-15	48	1-00	35	1-10	43	1-40	82	1-10	43
11	2-05	262	1-10	43	0-95	32	1-10	43	1-50	98	1-00	35
12	2-10	282	1-10	43	1-00	35	1-10	43	1-50	98	1-00	35
13	2-10	282	1-10	43	1-05	39	1-10	43	1-45	90	1-00	35
14	2-57	502	1-05	39	1-10	43	1-10	43	1-40	82		
15	2-80	619	1-05	39	1-00	35	1-05	39	1-30	67		
16	2-20	325	1-05	39	0-90	29	1-00	35	1-25	60		
17	1-95	223	1-10	43	0-90	29	1-40	82	1-20	53		
18	1-90	205	1-05	39	0-90	29	1-45	90	1-20	53		
19	1-80	173	1-00	35	1-40	82	1-45	90	1-20	53		
20	1-80	173	1-00	35	1-30	67	1-40	82	1-15	48		
21	1-75	158	1-00	35	1-20	53	1-40	82	1-10	43		
22	1-60	118	1-00	35	1-10	43	1-40	82	1-10	43		
23	1-50	98	1-00	35	0-95	32	1-35	74	1-10	43		
24	1-50	98	1-00	35	0-95	32	1-35	74	1-20	53		
25	1-50	98	0-90	29	0-90	29	1-30	67	1-20	53		
26	1-50	98	0-90	29	0-90	29	1-25	60	1-20	53		
27	1-50	98	0-90	29	1-85	189	1-25	60	1-20	53		
28	1-45	90	0-85	28	1-60	118	1-20	53	1-40	82		
29	1-40	82	0-80	26	1-50	98	1-10	43	1-40	82		
30	1-40	82	0-80	26	1-50	98	1-10	43	1-35	74		
31	1-40	82	0-80	26			1-40	82				

MONTHLY DISCHARGE of Crazy Creek at Taft, B.C., for 1914.

(Drainage area, 45 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
March	53	24	31-7	0-7	0-8	1,949
April	325	29	178-8	3-97	4-43	10,640
May	542	173	356-2	7-90	9-10	21,902
June	722	242	411-8	9-10	10-10	25,504
July	619	82	243-4	5-40	6-20	14,966
August	82	26	43-0	0-95	1-09	2,644
September	189	25	48-4	1-07	1-19	2,880
October	118	43	65-0	1-40	1-60	3,997
November	189	43	78-0	1-70	1-90	4,641
December	67	35	(for period	December	1 to Decem	ber 13.)
The period	722	24	161-8	3-57	36-41	89,123

NOTE.—Winter conditions obtained after December 13.

The mean annual precipitation at Revelstoke is given as 42-99 inches (Meteorological Service, Department of Marine and Fisheries) which is probably slightly less than the precipitation over the Crazy creek drainage area.

The gauge reader, Mr. J. Lidstone, states that from his observation of the amount of snow on hills during the winter of 1913-14 that the total run-off of the stream during 1914 is about 33 per cent less than in average years.

SESSIONAL PAPER No. 25e

EAGLE RIVER, AT MALAKWA, (2010).

Location.—Section 9, township 23, range 6, west 6th meridian.

Records Available.—May 14 to December 31, 1913; January 8, to December 12, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard chain gauge situated on highway bridge and read daily by P. C. Col'l.

Channel.—The channel is uniform and straight for 100 yards above and below the gauge.

Discharge Measurements.—Are made from upstream side of highway bridge. Velocities are uniform and not too high.

Winter Flow.—Partial ice conditions exist on the river during January and February.

Accuracy.—The accuracy of results is considered to be very high, nine measurements have been obtained at varying stages, but during March, April, and May, 1914, gauge readings were not considered to be very reliable.

DISCHARGE MEASUREMENTS of Eagle River at Malakwa, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 7.....	E. M. Dann & K. G. Chisholm	1,505	111.0	454.0	1.36	2.61	620.0
1914.							
Mar. 3.....	K. G. Chisholm.....	1,505	125.0	206.5	1.24	1.80	257.0
May 18.....	E. H. Trederoft.....	1,055	111.0	717.7	3.98	4.90	2,860.0
July 16.....	".....	1,923	119.5	718.7	4.14	5.05	2,972.0

See measurements of Eagle river in Water Resources Paper Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height	Dis-charge.	Gauge Height	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		320	2-00	320	1-80	256	2-25	422	4-50	2,285	6-60	6,500
2.		320	1-95	302	1-80	256	2-20	400	5-20	3,280	6-30	5,655
3.		320	1-95	302	1-80	256	2-25	422	5-20	3,280	6-20	5,400
4.		355	1-95	302	1-80	256	2-35	470	5-10	3,125	5-30	3,460
5.		355	1-85	270	1-80	256	2-80	725	4-70	2,550	5-05	3,047
6.		355		270	1-80	256	3-05	904	4-45	2,225	5-00	2,970
7.		400		270	1-80	256	3-35	1,127	4-30	2,050	4-90	2,825
8.	2-20	400		270	1-70	225	3-55	1,292	4-45	2,225	4-55	2,350
9.	2-25	422		256	1-75	240	3-65	1,380	4-65	2,482	4-65	2,482
10.	2-20	400		256	1-75	240	3-70	1,425	5-00	2,970	5-30	3,460
11.	2-20	400		256	1-80	256	3-75	1,472			5-40	3,645
12.	2-20	400		256	1-80	256	3-85	1,570			5-45	3,737
13.	2-15	377		256	1-90	285	4-20	1,935			5-90	4,655
14.	2-10	355		256	1-90	285	4-20	1,935			6-10	5,145
15.	2-10	355		256	1-95	302	4-50	2,285			6-65	6,650
16.	2-10	355		256	1-95	302	4-50	2,285			6-25	5,527
17.	2-10	355		256	1-95	302	4-30	2,050	5-60	4,025	6-40	5,925
18.	2-10	355		256	2-05	337	4-15	1,880		4,025	6-70	6,800
19.	2-15	377		270	2-05	337	4-35	2,107	5-00	2,970	6-00	4,900
20.	2-20	400		270	2-10	355	4-45	2,225	4-95	2,897	5-00	4,025
21.	2-10	355		270	2-20	400	4-30	2,050	5-15	3,202	5-15	3,202
22.	2-10	355	1-85	270	2-25	422	4-20	1,935	5-30	3,460	5-00	2,970
23.	2-10	355	1-80	256	2-30	445	3-95	1,670	5-35	3,552	4-90	2,825
24.	2-10	355	1-80	256	2-30	445	4-00	1,720	5-40	3,645	4-85	2,755
25.	2-10	355	1-85	270	2-20	400	4-00	1,720	5-55	3,927	5-10	3,125
26.		337	1-80	256	2-25	422	3-95	1,670			5-55	3,927
27.	2-05	337	1-80	256	2-30	445	3-90	1,620			5-35	3,552
28.	2-00	320	1-80	256	2-20	400	4-20	1,935	4-40	2,165	5-30	3,460
29.	2-10	355			2-20	400	4-30	2,050			5-20	3,280
30.	2-10	355			2-20	400	4-35	2,107			5-40	3,645
31.	2-15	377			2-25	422						

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DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5-55	3,927	3-50	1,250	2-60	605	3-30	1,090	3-20	1,015	2-60	605
2	5-85	4,542	3-50	1,250	2-60	605	3-25	1,052	3-90	1,620	2-55	577
3	5-80	4,430	3-55	1,292	2-65	632	3-10	940	3-60	1,335	2-60	605
4	5-70	4,225	3-50	1,250	2-65	632	2-90	795	3-45	1,207	2-45	522
5	5-40	3,645	3-30	1,090	2-60	605	2-95	830	3-40	1,165	2-30	445
6	5-20	3,280	3-40	1,165	2-40	495	2-80	725	3-35	1,127	2-40	495
7	5-05	3,047	3-30	1,090	2-60	605	2-80	725	3-20	1,015	2-30	445
8	4-95	2,897	3-30	1,090	2-90	795	2-70	660	3-30	1,090	2-20	400
9	4-85	2,755	3-20	1,015	2-90	795	2-70	660	3-15	977	2-30	445
10	4-90	2,825	3-00	865	2-60	605	2-60	605	3-05	902	2-10	355
11	5-00	2,970	2-90	795	2-75	692	2-60	605	3-10	940	2-20	400
12	5-10	3,125	3-10	940	2-65	632	2-60	605	3-00	865	2-10	355
13	5-00	2,970	2-90	795	2-55	577	2-60	605	2-80	725		
14	5-50	3,830	3-00	865	2-60	605	2-55	577	2-70	660		
15	6-65	6,650	3-05	902	2-40	495	2-50	550	2-60	605		
16	5-10	3,125	3-00	865	2-30	445	2-65	632	2-50	550		
17	4-50	2,285	2-90	795	2-35	470	3-90	1,620	2-50	550		
18	4-40	2,165	2-95	830	2-70	660	3-70	1,425	2-55	577		
19	4-40	2,165	2-95	830	3-40	1,165	3-65	1,380	2-40	495		
20	4-60	2,415	3-00	865	3-00	865	3-50	1,250	2-40	495		
21	4-00	1,720	3-00	865	2-85	760	3-25	1,052	2-35	470		
22	3-75	1,472	2-90	795	2-80	725	3-10	940	2-30	445		
23	3-60	1,335	2-90	795	2-80	725	3-00	865	2-25	422		
24	3-60	1,335	2-70	660	2-90	795	2-90	795	2-30	445		
25	3-60	1,335	2-80	725	2-90	795	2-80	725	2-50	550		
26	3-50	1,250	2-70	660	2-95	830	2-80	725	2-60	605		
27	3-40	1,165	2-80	725	4-30	2,050	2-75	692	2-60	605		
28	3-30	1,090	2-80	725	3-45	1,207	2-70	660	2-80	725		
29	3-30	1,090	2-75	692	3-35	1,127	2-70	660	2-80	725		
30	3-40	1,165	2-70	660	3-30	1,090	2-90	795	2-70	660		
31	3-65	1,380	2-65	632			3-30	1,090				

MONTHLY DISCHARGE of Eagle River near Malakwa, for 1914.

(Drainage area, 420 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	422	320	362	0-9	1-0	22,277
February	320	256	268	0-6	0-7	14,844
March	445	225	326	0-8	0-9	20,063
April	2,285	400	1,559	3-7	4-1	92,806
May	4,025	2,050	(For period of 20 days)			
June	6,800	2,350	4,063	9-7	10-8	250,000
July	6,650	1,090	2,632	6-3	7-3	161,871
August	1,292	632	896	2-1	2-4	55,093
September	2,050	445	769	1-8	2-0	45,783
October	1,620	550	849	2-0	2-3	52,200
November	1,620	35	422	1-9	2-1	46,700
December	605	355	(for period Dec. 1st to Dec. 12th)			
The year	6,800	225	1,332 (Estimated).	3-15	42-7	975,300 (Estimated)

Note.—During part of January and part of February the river was affected to a slight extent by ice. Consequently the records for these two months are less reliable than for the remainder of the year.

Owing to the unreliability of gauge readings for a portion of May, it was thought best to leave that part of the month blank, gauge readings and discharges being filled in only in those cases where reasonable reliance can be placed thereon.

GRANITE CREEK (2064).

Location.—Near Coalmont, Water District No. 4.

Records Available.—June 19 to December 31, 1914.

Drainage Area.—Forty square miles.

Gauge.—Standard vertical staff gauge graduated in feet and tenths, situated on footbridge. Read daily by Miss Emily Cook.

Channel.—Channel is straight for 100 feet above and 500 feet below measuring section. Velocity high. Bed of stream is composed of gravel and rock, considered permanent.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded flow 300 cubic feet per second.

Winter Flow.—No records have been obtained during winter months on this stream, but ice conditions are expected to prevail throughout January and February.

Accuracy.—The accuracy of returns will eventually be high, but several more measurements are required to define curve satisfactorily.

DISCHARGE MEASUREMENTS of Granite Creek near Coalmont, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 18.....	K. G. Chisholm.....	1,913	68.0	92.0	3.26	2.22	300.0
July 25.....	".....	1,913	27.0	44.0	0.70	1.32	31.0
Sept. 3.....	".....	1,913	26.0	20.1	0.61	1.05	12.2
Nov. 26.....	".....	1,913	37.0	36.0	0.86	1.4	31.0

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DAILY GAUGE HEIGHT AND DISCHARGE of Granite Creek near mouth, for 1914.

DAY.	June.		July.		August.		September.		October.		November.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1-90	129	1-20	21	1-05	12	1-15	18	1-35	34
2.....			1-90	129	1-20	21	1-05	12	1-20	21	1-50	50
3.....			1-85	115	1-20	21	1-05	12	1-20	21	1-40	39
4.....			1-75	90	1-15	18	1-05	12	1-20	21	1-40	39
5.....			1-70	79	1-15	18	1-05	12	1-20	21	1-45	45
6.....			1-70	79	1-15	18	1-05	12	1-20	21	1-35	34
7.....			1-70	79	1-20	21	1-05	12	1-20	21	1-30	29
8.....			1-65	71	1-25	25	1-10	15	1-20	21	1-30	29
9.....			1-60	63	1-25	25	1-20	21	1-25	25	1-35	34
10.....			1-60	63	1-20	21	1-15	18	1-25	25	1-30	29
11.....			1-55	56	1-15	18	1-15	18	1-20	21	1-50	50
12.....			1-55	56	1-15	18	1-15	18	1-20	21	1-35	34
13.....			1-50	50	1-15	18	1-10	15	1-20	21	1-30	29
14.....			1-50	50	1-10	15	1-10	15	1-20	21	1-30	29
15.....			1-50	50	1-10	15	1-20	21	1-15	18		
16.....			1-45	45	1-10	15	1-20	21	1-15	18		
17.....			1-45	45	1-10	15	1-20	21	1-15	18		
18.....			1-40	39	1-10	15	1-25	25	1-20	21		
19.....	2-20	280	1-40	39	1-10	15	1-30	29	1-30	29		
20.....	2-10	215	1-40	39	1-10	15	1-20	21	1-25	25		
21.....	2-05	191	1-40	39	1-15	18	1-20	21	1-25	25		
22.....	2-00	168	1-40	39	1-10	15	1-15	18	1-20	21		
23.....	2-00	168	1-35	34	1-10	15	1-15	18	1-20	21		
24.....	2-00	168	1-35	34	1-10	15	1-15	18	1-20	21	1-20	21
25.....	2-05	191	1-30	29	1-10	15	1-10	15	1-20	21		
26.....	2-00	168	1-30	29	1-10	15	1-10	15	1-20	21	1-40	39
27.....	2-00	168	1-30	29	1-10	15	1-15	18	1-20	21	1-40	39
28.....	1-95	148	1-30	29	1-05	12	1-25	25	1-20	21	1-40	39
29.....	1-90	129	1-30	29	1-00	10	1-20	21	1-20	21	1-30	29
30.....	1-95	148	1-25	25	1-00	10	1-15	18	1-20	21	1-30	29
31.....			1-25	25	1-00	10			1-30	29		

MONTHLY DISCHARGE of Granite Creek at mouth, for 1914.

(Drainage area, 40 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	280	129	178	4.4	4.9	10,592
July.....	129	25	55	1.4	1.6	3,381
August.....	25	10	16.7	0.4	0.5	1,027
September.....	29	12	17.6	0.4	0.4	1,047
October.....	29	18	21.6	0.5	0.6	1,328
November.....	50	21	(From 1st to 14th, 24th, 26th to the 30th)			

NOTE.—The average annual precipitation over this drainage area is probably 20 inches at the stream's mouth, to 40 inches at its source.

The station was not established until the freshet for 1914 was almost over.

Ice conditions existed during December and part of November

KETTLE RIVER, NORTH FORK (2052).

Location.—At Grand Forks, Water District No. 5.

Records Available.—June 1 to December 31, 1914.

Drainage Area.—Six hundred and forty square miles.

Gauge.—Standard vertical staff gauge situated on foot bridge, graduated in feet and tenths, and read daily by Geo. O'Keefe.

Channel.—Channel is straight for 100 yards above and below measuring section. Velocity high.

Discharge Measurements.—Five discharge measurements have been obtained in 1914. Meterings are made by cable suspension from foot bridge.

Winter Flow.—No records have been obtained on this river during winter months.

Accuracy.—The accuracy will eventually be high. The present results should fall well within 15 per cent. Results for June may be inaccurate since slag from the Granby Smelter is sometimes carried downstream to the gauging section prior to the freshet, not being carried out until the spring floods are at their height.

DISCHARGE MEASUREMENTS of Kettle River, North Fork, at Grand Forks, 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge He.ght.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 19.....	C. E. Richardson.....	1527	130	1,100	4.59	5.08	5,050
June 9.....	K. G. Chisholm.....	1913	132	847	2.77	4.00	2,348
July 22.....	".....	1913	123	474	0.90	1.48	426
Aug. 22.....	".....	1913	255	0.35	0.52	88
" 24.....	".....	1913	244	0.35	0.50	86

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

DAY.	June.	
	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.
1.....	5-10	5,100
2.....	5-65	7,360
3.....	7-00	13,400
4.....	7-05	13,625
5.....	6-00	8,900
6.....	5-10	5,100
7.....	4-70	3,890
8.....	4-30	2,850
9.....	4-05	2,420
10.....	3-93	2,205
11.....	4-00	2,350
12.....	4-00	2,350
13.....	4-35	2,950
14.....	5-10	5,100
15.....	5-20	5,480
16.....	5-35	6,090
17.....	5-60	7,150
18.....	5-75	7,785
19.....	5-30	5,880
20.....	4-70	3,800
21.....	4-40	3,050
22.....	4-00	2,350
23.....	3-75	2,030
24.....	3-60	1,875
25.....	3-70	1,975
26.....	3-70	1,975
27.....	3-70	1,975
28.....	3-60	1,875
29.....	3-50	1,780
30.....	3-65	1,925

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	3-60	1,875	1-00	220	0-45	78	1-30	340	2-00	695	1-50	435
2.	3-50	1,780	1-00	220	0-45	77	1-25	320	2-15	780	1-50	435
3.	3-50	1,780	1-00	220	0-45	78	1-25	320	2-35	900	1-50	435
4.	3-35	1,640	0-90	180	0-40	70	1-20	300	2-50	995	1-50	435
5.	3-30	1,595	0-90	180	0-40	70	1-20	300	2-50	995	1-50	435
6.	3-10	1,430	0-80	150	0-40	70	1-20	300	2-50	995	1-40	385
7.	2-85	1,235	0-70	120	0-40	70	1-15	280	2-50	995	1-40	385
8.	2-70	1,130	0-40	70	0-45	77	1-15	280	2-40	930	1-30	340
9.	2-55	1,025	0-40	70	0-45	78	1-10	260	2-30	870	1-20	300
10.	2-40	930	0-50	85	0-50	85	1-10	260	2-30	870	1-10	260
11.	2-30	870	0-50	85	0-50	85	1-10	260	2-20	810	1-00	220
12.	2-20	810	0-60	100	0-55	93	1-10	260	2-20	810	0-90	180
13.	2-10	750	0-60	100	0-55	92	1-10	260	2-10	750	0-90	180
14.	2-10	750	0-60	100	0-55	93	1-15	280	2-10	750	0-90	180
15.	2-00	695	0-60	100	0-60	100	1-15	280	2-20	810	0-90	180
16.	2-00	695	0-60	100	0-60	100	1-20	300	2-20	810	0-90	180
17.	1-90	640	0-60	100	0-70	120	1-35	362	1-90	640	0-90	180
18.	1-80	585	0-60	100	0-70	120	1-55	460	1-80	585	0-90	180
19.	1-70	535	0-60	100	0-70	120	1-90	640	1-80	585	0-90	180
20.	1-60	485	0-60	100	0-85	165	2-10	750	1-80	585	0-90	180
21.	1-50	435	0-60	100	1-05	240	2-10	750	1-80	585	0-90	180
22.	1-40	385	0-60	100	1-15	280	2-00	695	1-80	585	0-90	180
23.	1-40	385	0-55	92	1-10	260	1-85	613	1-80	585	0-90	180
24.	1-30	340	0-55	92	1-10	260	1-80	585	1-80	585	0-90	180
25.	1-30	340	0-55	93	1-10	260	1-80	585	1-70	535	0-90	180
26.	1-30	340	0-50	85	1-10	260	1-80	585	1-70	535	0-90	180
27.	1-20	300	0-50	85	1-20	300	1-70	535	1-60	485	1-00	220
28.	1-20	300	0-50	85	1-20	300	1-70	535	1-60	485	1-00	220
29.	1-10	260	0-50	85	1-30	340	1-70	535	1-60	485	1-00	220
30.	1-10	260	0-50	85	1-30	340	1-70	535	1-60	485	1-00	220
31.	1-00	220	0-50	85			1-85	613			1-00	220

MONTHLY DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

(Drainage area, 640 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	13,625	1,780	4,483	7-0	7-8	266,757
July.....	1,875	220	800	1-2	1-4	49,190
August.....	220	70	112-5	0-2	0-2	6,917
September.....	340	70	156-0	0-24	0-27	9,283
October.....	750	260	431-5	0-7	0-8	26,532
November.....	995	485	717-0	1-1	1-2	42,664
December.....	435	180	254	0-4	0-5	15,620
The period.....	13,625	70	993-4	1-55	12-17	416,963

NOTE.—No precipitation records available.

Mr. George O'Keefe, gauge reader, states that only in very severe winters does the north fork of the Kettle river freeze at this point. He states that it has not been frozen over once during the period of his residence at Grand Forks—fourteen years.

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KETTLE RIVER, WEST FORK (2045).

Location.—Near Westbridge, Water District No. 5.*Records Available.*—February 23 to September 30, 1914.*Drainage Area.*—Six hundred and ninety square miles.*Gauge.*—Standard vertical staff gauge, graduated in feet and tenths, read daily by R. Demazes.*Channel.*—Channel is straight for 500 feet above and below measuring section. Bed composed of gravel and boulders. Velocity varies with stage of water. Highest recorded mean velocity 4 feet per second. Highest recorded discharge 1,235 cubic feet per second.*Discharge Measurements.*—Are obtained from bridge. Three measurements were procured during 1914 at varying stages.*Winter Flow.*—No records have been taken on this river during winter months. Partial ice conditions prevail during January and February.*Accuracy.*—Accuracy of returns is considered to be fairly high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Kettle River, West Fork, at Westbridge, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 7.....	E. M. Dann and K. G. Chisholm.....	1,913	97.5	304.0	4.05	1.78	1,235.0
July 20.....	K. G. Chisholm.....	1,913	97.0	122.0	1.43	-0.69	174.0
Aug. 27.....	".....	1,913	41.0	35.0	1.20	-0.71	42.0 ¹

¹Low-water section.

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

DAY.	February.		March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				150	0-50	360	3-00	2,560	3-20	2,770
2				160	0-50	360	3-70	3,305	3-05	2,610
3				170	0-55	380	4-05	3,670	4-00	3,615
4				180	0-60	400	3-80	3,415	3-35	2,932
5				190	0-70	445	3-40	2,985	2-90	2,445
6			0-0	200	0-75	470	3-35	2,932	2-45	1,965
7			0-0	200	1-00	610	3-35	2,932	2-40	1,910
8			0-0	200	1-50	975	3-25	2,825	2-20	1,695
9			0-0	200	1-60	1,065	2-90	2,445	2-10	1,590
10			0-0	200	1-85	1,317	2-95	2,502	2-10	1,590
11			0-0	200	1-95	1,425	2-75	2,287	2-05	1,535
12			0-05	215	2-15	1,642	2-75	2,287	2-05	1,535
13			0-05	215	2-55	2,072	2-90	2,445	2-20	1,695
14			0-05	215	2-75	2,287	3-40	2,985	2-20	1,695
15			0-10	230	3-05	2,610	4-45	4,115	2-25	1,747
16			0-10	230	2-95	2,502	4-15	3,782	2-40	1,910
17			0-15	245	2-50	2,020	3-85	3,467	2-30	1,800
18			0-20	260	2-55	2,072	3-45	3,040	2-15	1,642
19			0-45	346	2-70	2,235	3-15	2,715	1-85	1,317
20			0-60	400	2-80	2,340	2-40	1,910	1-90	1,370
21			0-70	445	2-80	2,340	2-40	1,910	1-75	1,212
22			0-65	422	2-95	2,502	2-55	2,072	1-65	1,112
23			0-60	400	2-85	2,392	2-80	2,340	1-60	1,065
24	2-30	1,800	0-50	360	2-80	2,340	2-80	2,340	1-55	1,020
25	2-25	1,747	0-50	360	2-70	2,235	2-95	2,502	1-55	1,020
26	2-22	1,715	0-50	360	2-60	2,125	3-25	2,825	1-50	975
27	2-15	1,642	0-60	400	2-50	2,020	3-25	2,825	1-55	1,020
28	2-10	1,590	0-65	422	2-40	1,910	3-45	3,040	1-50	975
29			0-60	400	2-60	2,125	3-15	2,715	1-45	932
30			0-50	360	2-70	2,235	3-05	2,160	1-25	775
31			0-50	360			2-80	2,340		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

DAY.	July.		August.		September.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.15	705	-0.30	120	-0.80	30
2	0.95	580	-0.35	110	-0.80	30
3	0.90	550	-0.40	100	-0.80	30
4	0.85	522	-0.50	80	-0.70	43
5	0.90	550	-0.50	80	-0.70	43
6	0.80	495	-0.55	70	-0.70	43
7	0.70	445	-0.70	43	-0.60	60
8	0.70	445	-0.70	43	-0.60	60
9	0.70	445	-0.80	30	-0.60	60
10	0.60	400	-0.80	30	-0.60	60
11	0.55	380	-0.80	30	-0.50	80
12	0.50	360	-0.90	15	-0.50	80
13	0.40	325	-0.90	15	-0.40	100
14	0.30	290	-0.90	15	-0.40	100
15	0.40	325	-0.90	15	-0.50	80
16	0.35	307	-0.85	23	-0.50	80
17	0.35	307	-0.80	30	-0.40	100
18	0.40	325	-0.80	30	-0.30	120
19	0.30	290	-0.75	37	-0.30	120
20	0.30	290	-0.70	43	-0.30	120
21	0.30	290	-0.65	52	-0.35	110
22	0.35	307	-0.65	52	-0.30	120
23	0.30	290	-0.70	43	-0.20	145
24	0.20	260	-0.65	52	-0.20	145
25	0.10	230	-0.70	43	-0.25	133
26	0.05	215	-0.70	43	-0.30	120
27	0.00	200	-0.70	43	-0.30	120
28	0.00	200	-0.70	43	-0.25	133
29	-0.10	170	-0.75	37	-0.20	145
30	-0.15	158	-0.80	30	-0.25	133
31	-0.15	158	-0.80	30		

MONTHLY DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

(Drainage area, 690.0 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN OFF.	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet
January						
February	1,800	1,500	For the period	Feb. 23	Feb. 28.	17,347
March	445	150	280.5	0.4	0.5	
April	2,610	360	1,660.3	2.4	2.7	98,797
May	4,115	1,910	2,778	4.0	4.6	170,816
June	3,615	775	1,619	2.4	2.7	98,121
July	705	158	340	0.5	0.6	21,459
August	120	15	46	0.07	0.08	2,828
September	145	30	91.4	0.13	0.14	5,409
The period	4,115	15	970.0	1.41	11.32	414,767

NOTE.—Precipitation is probably from 20 to 30 inches annually

Returns for October, November and December are withheld from publication owing to unreliability of gauge readings.

KETTLE RIVER NEAR NICHOLSON'S BRIDGE (2046).

Location.—Near Kettle Valley, Water District No. 5.

Records Available.—March 1 to December 11, 1914.

Drainage Area.—Two thousand, one hundred and eighty square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, situated on pier of highway bridge, and read daily by F. Whiting (rancher).

Channel.—The channel is straight for about 500 feet above and below measuring section. Average width, 150 feet. Bed of river is composed of gravel and sand, and considered permanent. Velocity high and control is good.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded discharge 6,215 feet per second.

Winter Flow.—Ice conditions exist during January and February.

Accuracy.—Considered to be very high, and results should be within 5 per cent, except at extreme high water.

DISCHARGE MEASUREMENTS of Kettle River at Nicholson's Bridge, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20.....	C. E. Richardson & C. Varcoe.	1,527	178-0	1,063-0	5-75	5-00	6,104-0
June 7.....	E. M. Dann & K. G. Chisholm	1,913	162-0	869-0	4-86	3-79	4,225-0
July 19.....	" "	1,913	154-0	329-0	2-93	0-36	668-0
Aug. 27.....	" "	1,913	137-0	184-0	0-78	-0-80	144-0

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge,
Rock Creek, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....					-0.6	200	0.5	735	4.1	4,675	4.40	5,140
2.....					-0.6	200	0.5	735	4.7	5,610	4.90	5,930
3.....					-0.6	200	0.5	735	5.5	6,910	6.40	8,410
4.....					-0.6	200	0.5	735	5.1	6,250	6.55	8,655
5.....					-0.5	230	0.55	765	4.55	5,370	5.35	6,660
6.....					-0.4	265	0.8	930	4.35	5,060	4.35	5,060
7.....					-0.4	265	1.35	1,320	4.00	4,520	3.90	4,520
8.....					-0.4	265	1.75	1,645	3.95	4,445	3.60	3,920
9.....					-0.4	265	2.05	1,920	4.05	4,595	3.55	3,845
10.....					-0.4	265	2.25	2,125	4.20	4,830	3.45	3,700
11.....	-0.3	300			-0.4	265	2.55	2,460	4.60	5,450	3.50	3,775
12.....	-0.3	300			-0.4	265	2.80	2,780	4.85	5,850	3.55	3,845
13.....	-0.3	300			-0.4	265	3.10	3,195	5.05	6,175	3.85	4,295
14.....	-0.25	320			-0.3	300	3.45	3,700	5.60	7,075	4.35	5,060
15.....	-0.25	320			-0.2	340	3.70	4,070	6.45	8,490	4.45	5,215
16.....	-0.25	320			-0.1	390	4.00	4,520	6.85	9,150	4.35	5,060
17.....	-0.25	320			0.0	440	4.00	4,520	6.10	7,915	4.40	5,140
18.....	-0.3	300			0.0	440	3.90	4,370	5.60	7,075	4.05	4,595
19.....	-0.3	300			0.0	440	3.50	3,775	5.30	6,580	3.60	3,920
20.....	-0.3	300			0.0	440	4.15	4,750	5.00	6,095	3.35	3,555
21.....	-0.3	300			0.1	495	4.10	4,675	5.00	6,095	3.10	3,195
22.....	-0.3	300			0.15	525	3.80	4,220	4.95	6,010	2.90	2,410
23.....					0.3	610	3.60	3,920	5.20	6,415	2.45	2,345
24.....					0.4	670	3.90	4,370	5.25	6,495	2.40	2,290
25.....					0.45	700	3.80	4,220	5.05	6,175	2.40	2,290
26.....					0.5	735	3.60	3,920	4.75	5,690	2.40	2,290
27.....					0.5	735	3.50	3,775	4.10	4,675	2.35	2,235
28.....					0.5	735	3.50	3,775	3.95	4,445	2.30	2,180
29.....					0.5	735	3.40	3,630	3.55	3,845	2.27	2,145
30.....					0.5	735	3.60	3,920	3.40	3,630	2.20	2,092
31.....					0.5	735			3.80	4,220		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge, Rock Creek, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	2-00	1,870	-0-4	265	-0-85	130	0-15	520	0-5	735	-0-1	390
2.	1-80	1,690	-0-4	265	-0-90	120	0-02	451	0-55	765	-0-1	390
3.	1-80	1,690	-0-4	265	-0-90	120	0-0	440	0-7	865	-0-2	340
4.	1-70	1,600	-0-45	250	-0-90	120	0-0	440	0-6	800	-0-2	340
5.	1-60	1,520	-0-50	230	-0-90	120	0-0	440	0-68	852	-0-2	340
6.	1-45	1,400	-0-50	230	-0-90	120	-0-02	430	0-77	910	-0-2	340
7.	1-30	1,280	-0-50	230	-0-90	120	-0-10	390	0-69	845	-0-2	340
8.	1-15	1,175	-0-55	215	-0-85	130	-0-15	365	0-55	765	-0-2	340
9.	1-05	1,105	-0-55	215	-0-80	140	-0-20	340	0-50	735	-0-2	340
10.	0-85	965	-0-55	215	-0-80	140	-0-22	330	0-42	683	-0-2	340
11.	0-70	865	-0-55	215	-0-75	155	-0-25	320	-0-37	652	-0-22	332
12.	0-65	830	-0-55	215	-0-75	155	-0-25	320	0-30	610		
13.	0-50	735	-0-60	200	-0-70	170	-0-20	340	0-25	580		
14.	0-60	800	-0-60	200	-0-65	185	-0-15	365	0-20	550		
15.	0-70	865	-0-60	200	-0-60	200	-0-05	415	0-20	550		
16.	0-45	700	-0-60	200	-0-60	200	-0-05	415	0-20	550		
17.	0-40	670	-0-60	200	-0-50	230	0-02	451	0-20	550		
18.	0-40	670	-0-65	185	-0-40	265	0-38	658	0-15	520		
19.	0-40	670	-0-65	185	-0-20	340	0-65	832	0-10	495		
20.	0-40	670	-0-65	185	-0-10	390	0-60	800	0-10	495		
21.	0-40	670	-0-65	185	0-0	440	0-50	734	0-0	440		
22.	0-30	610	-0-70	170	0-0	440	0-40	670	0-0	440		
23.	0-30	610	-0-70	170	-0-5	415	0-32	622	0-0	440		
24.	0-25	580	-0-80	140	-0-15	365	0-27	592	-0-05	415		
25.	0-20	550	-0-80	140	-0-25	320	0-25	580	-0-05	415		
26.	0-15	520	-0-80	140	-0-15	365	0-20	550	-0-10	390		
27.	0-05	465	-0-80	140	-0-15	365	0-20	550	-0-10	390		
28.	-0-10	390	-0-80	140	0-0	440	0-17	533	-0-10	390		
29.	-0-20	340	-0-85	130	0-15	520	0-15	522	-0-10	390		
30.	-0-30	300	-0-85	130	0-20	550	0-20	550	-0-10	390		
31.	-0-40	265	-0-85	130			0-27	592				

MONTHLY DISCHARGE of Kettle River at Nicholson's Bridge, Rock Creek, for 1914.

(Drainage area, 2,180 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
March.	735	200	430	0-2	0-2	26,476
April.	4,750	735	3,007	1-4	1-6	178,930
May.	9,150	3,630	5,800	2-7	3-1	356,660
June.	8,655	2,092	4,142	1-9	2-1	246,492
July.	1,870	265	873	0-4	0-5	53,679
August.	265	130	193	0-1	0-1	11,876
September.	550	120	259	0-1	0-1	15,412
October.	832	320	502	0-2	0-2	30,867
November.	916	390	587	0-3	0-3	34,929
December.	390	332	(for the period Dec. 1 to Dec. 11)			
The year.	9,150	120	1,395 (estimated)	0-8	8-7 (estimated)	1,008,000 (estimated)

NOTE.—Precipitation records are not available, but it probably varies from 20 to 30 inches per annum in average years. This station gives the flow of the Kettle river above Midway before it joins Boundary creek. Winter conditions existed subsequent to December 11.

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KETTLE RIVER AT CARSON (2049).

Location.—At Carson, Water District No. 5.

Records Available.—September 5 to December 31, 1913; January 1 to 22, February 25 to December 9, 1914.

Drainage Area.—Three thousand and ten square miles.

Gauge.—Gauge is a movable staff gauge situated on downstream side of highway bridge, 4 miles from Grand Forks.

Channel.—Straight at measuring section; bed of stream, gravel and sand; control good.

Discharge Measurements.—Measurements are made from highway bridge. Four meterings were obtained during 1914. Highest recorded discharge 7,840 second-feet.

Winter Flow.—Partial ice conditions prevail during December, January, and February.

Accuracy.—Accuracy is considered good, and results should fall within 10 per cent.

KETTLE RIVER.

The Kettle river has its source in the southern portion of the Gold range, and drains the district between the Okanagan and Arrow lakes. It discharges into the Columbia at Marcus, in the state of Washington. From its source it follows a southerly course to Westbridge, a distance of 75 miles, where it is joined by the West Fork entering from the northeast. From Midway to Rock creek the course is southerly. The river here takes a turn to the southeast and crosses into United States territory at Midway, 10 miles below. After a wide semi-circular loop it crosses the boundary into Canadian territory at Danville, below Grand Forks. At Grand Forks the North Fork joins it. From Grand Forks it flows due east in a line about a mile north of boundary to Cascade. It turns south here across the boundary towards its confluence with the Columbia.

The North Fork and the West Fork are the chief tributaries. Boundary creek and Rock creek are next in size. Boundary creek joins at Midway from the north, Rock creek comes in at the village of Rock Creek from the west. Christina creek discharges into the Kettle near Cascade, draining Christina lake.

The total drainage area in British Columbia is about 3,160 square miles. The drainage area of the North Fork is 640 square miles; of Boundary creek, 125 square miles; of the West Fork, 690 square miles; and of the main river above the West Fork, 1,175 square miles.

The water is used for irrigation in the vicinity of Grand Forks, Cascade, and Rock creek. These are the principal agricultural areas in the district, the most important being that around Grand Forks, where some 2,000 acres are planted in fruit trees. With exception of the localities mentioned there is little agricultural land in the district. The tributary valleys and the major portion of the main valley being narrow and the slopes steep. The plateaus are above the altitude limit for agriculture.

From Grand Forks to Cascade, a distance of 12 miles, the valley of the Kettle river is wide and flat and suitable for irrigation by pumping. Several pumping plants are in operation. The transmission lines from the Cascade Power and Light Company's plant and from the Bomington Falls plant runs through the valley. Power may be had at 3 cents per kilowatt hour.

There are three hydro-electric developments in the district. The Cascade Power and Light Company's plant at Cascade develops 5,000 horse-power under a head of 155 feet. This is auxiliary to the Bomington Falls plant on the

Kootenay below Nelson. Power from these plants is used at Grand Forks, Phoenix, and Greenwood for town lighting and for use at the smelters and mines. The Granby Company develop about 700 horse-power under a 30-foot head from the North Forks near Grand Forks for use in its smelter. The city of Greenwood is lighted from a plant of 250 horse-power capacity under 130-foot head at Boundary falls.

Very little data as to climatic conditions are available, precipitation and temperatures vary greatly over the district owing to the irregular formation. The mean annual precipitation in the vicinity of Grand Forks is probably about 15 inches. In the higher altitudes it is greater.

The northern portion of the district is well timbered with cedar, hemlock, and pine. Considerable logging is carried on, the total drive of the Kettle river and its tributaries being over twenty million feet in 1913.

Regular gauging stations have been established at the following places:— At Carson, above the North Fork, on the North Fork near its mouth; on Boundary creek at Greenwood; on the Kettle below Rock creek; and on the West Fork at Westbridge.

DISCHARGE MEASUREMENTS of Kettle River at Carson, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 19.....	C. E. Richardson and C. Varcoe.....	1527	169	1,460	5.37	7.15	7,840
June 9.....	K. G. Chisholm.....	1913	158	1,161	3.62	8.95	4,200
July 23.....	".....	1913	153	693	0.99	12.09	684
Aug. 24.....	".....	1913	120	569	0.39	12.09	221

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River at Carson, for 1913.

DAY.	September.		October.		November.		December.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			12-3	555	12-1	685	12-3	555
2			12-3	555	12-2	620	12-3	555
3			12-4	490	12-2	620	12-3	555
4			12-4	490	12-2	620	12-3	555
5	11-6	1,070	12-4	490	12-1	685	12-4	490
6	11-6	1,070	12-4	490	12-0	760	12-5	430
7	11-8	910	12-4	490	12-1	685	12-5	430
8	12-0	760	12-4	490	12-1	685	12-4	490
9	12-1	685	12-4	490	12-2	620	12-1	685
10	12-1	685	12-5	430	12-1	685	12-2	620
11	12-2	620	12-4	490	12-1	685	12-2	620
12	12-3	555	12-4	490	12-2	620	12-3	555
13	12-3	555	12-4	490	12-2	620	12-4	490
14	12-3	555	12-3	555	12-25	587	12-4	490
15	12-3	555	12-0	760	12-4	490	12-4	490
16	12-3	555	12-0	760	12-2	620	12-4	490
17	12-4	490	12-3	555	12-2	620	12-5	430
18	12-4	490	12-0	760	12-1	685	12-4	490
19	12-4	490	12-3	620	12-2	620	12-4	490
20	12-4	490	12-3	555	12-2	620	12-4	490
21	12-4	490	12-3	555	12-25	588	12-3	555
22	12-4	490	12-2	620	12-5	430	12-3	555
23	12-45	460	12-2	620	12-4	490	12-1	685
24	12-4	490	12-2	620	12-4	490	12-0	760
25	12-4	490	11-8	910	12-4	490	12-0	760
26	12-4	490	11-6	1,070	12-45	460	12-0	760
27	12-5	430	11-8	910	12-25	587	12-1	685
28	12-5	430	11-8	910	12-25	588	12-2	620
29	12-5	430	12-0	760	12-2	620	12-3	555
30	12-4	490	12-0	760	12-3	555	12-3	555
31			12-1	685			12-4	490

MONTHLY DISCHARGE of Kettle River, at Carson, for 1913.

(Drainage area, 3,010 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
September	1,070	430	585.5	0.2	0.22	34,839
October	1,070	430	626.6	0.2	0.23	38,528
November	760	430	604.3	0.2	0.22	35,958
December	760	430	560.6	0.18	0.21	34,470

NOTE.—These data were compiled from gauge readings taken under the direction of Mr. Clifford Varese, Provincial Water Rights Engineer, at Grand Forks, to whom due acknowledgment is made.

For remarks relating to precipitation, etc., see Kettle River for 1914

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 191 .

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	12-4	490			12-5	430	12-0	760	8-90	4,275	8-30	5,380
2	12-5	430			12-5	430	12-0	760	8-50	5,000	8-00	5,985
3	12-5	430			12-5	430	12-05	722	7-50	7,065	7-50	7,065
4	12-5	430			12-6	375	11-9	835	6-90	8,400	7-70	6,625
5	12-5	430			12-6	375	11-9	835	7-65	6,735	7-90	6,195
6	12-5	430			12-6	375	11-6	1,070	7-90	6,195	8-20	5,575
7	12-4	490			12-6	375	11-2	1,435	8-20	5,575	8-60	4,810
8	12-3	555			12-7	320	10-7	1,930	8-50	5,000	8-70	4,630
9	12-3	555			12-7	320	10-4	2,235	8-20	5,575	8-90	4,275
10	12-4	490			12-7	320	10-2	2,450	7-90	6,195	9-00	4,105
11	12-5	430			12-7	320	9-9	2,800	7-65	6,735	9-00	4,105
12	12-55	402			12-6	375	9-75	2,995	7-70	6,625	9-00	4,105
13	12-6	375			12-6	375	9-35	3,555	7-40	7,285	8-90	4,275
14	12-4	490			12-6	375	9-10	3,945	7-20	7,730	8-50	5,000
15	12-45	460			12-5	430	9-00	4,105	6-25	9,920	8-30	5,380
16	12-4	490			12-5	430	8-90	4,275	5-20	13,470	8-35	5,285
17	12-4	490			12-5	430	8-30	5,380	5-90	10,760	8-40	5,190
18	12-4	490			12-5	430	8-50	5,000	7-00	8,175	8-60	4,810
19	12-5	430			12-5	430	8-70	4,630	7-15	7,840	8-90	4,275
20	12-5	430			12-4	490	8-20	5,575	7-30	7,510	9-11	3,945
21	12-6	375			12-4	490	8-20	5,575	7-50	7,065	9-30	3,630
22	12-6	375			12-3	555	8-50	5,000	7-40	7,285	9-50	3,540
23					12-25	587	8-60	4,810	7-50	7,065	9-60	3,200
24					12-0	760	8-60	4,810	7-40	7,285	9-70	3,060
25			12-5	430	11-9	835	8-40	5,190	7-30	7,510	9-70	3,060
26			12-55	402	11-9	835	8-70	4,630	7-20	7,730	9-70	3,060
27			12-5	430	12-0	760	8-60	4,810	7-70	6,625	9-90	2,800
28			12-5	430	12-0	760	8-70	4,630	8-20	5,575	10-0	2,680
29					12-0	760	8-80	4,450	8-50	5,000	10-1	2,560
30					12-0	760	8-90	4,275	8-70	4,630	10-1	2,560
31					12-0	760			8-40	5,190		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	10.2	2,450	12.4	490	12.9	221	12.0	760	11.8	910	12.1	685
2	10.3	2,340	12.4	490	13.0	180	12.0	760	11.7	990	12.1	685
3	10.5	2,130	12.4	490	13.0	180	12.1	685	11.7	990	12.2	620
4	10.5	2,130	12.5	430	13.0	180	12.2	620	11.8	910	12.2	620
5	10.7	1,930	12.5	430	13.0	180	12.2	620	11.6	1,070	12.3	555
6	10.8	1,830	12.5	430	13.0	180	12.3	555	11.55	1,112	12.3	555
7	10.9	1,730	12.6	375	12.9	221	12.3	555	11.55	1,113	12.3	555
8	11.0	1,630	12.6	375	12.9	221	12.3	555	11.6	1,070	12.3	555
9	11.1	1,530	12.6	375	12.9	221	12.3	555	11.7	990	12.3	555
10	11.3	1,340	12.6	375	12.9	221	12.3	555	11.75	950		
11	11.4	1,245	12.6	375	12.9	221	12.4	490	11.8	910		
12	11.5	1,155	12.4	490	12.9	221	12.4	490	11.8	910		
13	11.6	1,070	12.5	430	12.9	221	12.3	555	11.8	910		
14	11.4	1,245	12.5	430	12.9	221	12.3	555	11.9	835		
15	11.4	1,245	12.5	430	12.8	270	12.3	555	11.9	835		
16	11.4	1,245	12.5	430	12.7	320	12.3	555	12.1	685		
17	11.4	1,245	12.6	375	12.7	320	12.3	555	12.1	685		
18	11.5	1,155	12.6	375	12.6	375	12.0	760	12.1	685		
19	11.7	990	12.6	375	12.6	375	11.5	1,155	12.0	760		
20	11.7	990	12.6	375	12.6	375	11.6	1,070	12.1	685		
21	11.8	910	12.6	375	12.5	430	11.6	1,070	12.1	685		
22	11.9	835	12.6	375	12.4	490	11.7	990	12.0	760		
23	11.9	835	12.6	375	12.3	555	11.8	910	12.1	685		
24	12.0	760	12.7	320	12.3	555	11.9	835	12.1	685		
25	12.0	760	12.7	320	12.4	490	11.9	835	12.1	685		
26	12.1	685	12.7	320	12.4	490	11.9	835	12.1	685		
27	12.2	620	12.8	270	12.4	490	12.0	760	12.1	685		
28	12.3	555	12.8	270	12.3	555	12.0	760	12.1	685		
29	12.3	555	12.8	270	12.3	555	12.0	760	12.1	685		
30	12.4	490	12.8	270	12.0	760	12.0	760	12.1	685		
31	12.4	490	12.9	221			12.0	760				

MONTHLY DISCHARGE of Kettle River, at Carson, for 1914.

(Drainage area, 3,010 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	
January		555	375	453	0.15	0.17	27,854
February							
March		835	320	506	0.17	0.20	31,113
April		5,575	722	3,449	1.10	1.20	305,230
May		13,470	4,275	7,001	2.50	2.60	430,475
June		7,065	2,560	4,365	1.40	1.60	259,764
July		2,450	490	1,230	0.40	0.50	76,511
August		490	221	378	0.12	0.14	23,267
September		760	180	343	0.11	0.12	20,410
October		1,155	490	717	0.34	0.28	44,099
November		1,113	685	831	0.27	0.30	49,448
December		685	555				
The year		13,470	180	1,700 (estimated)	0.54	8.41 (estimated)	1,315,000 (estimated)

NOTE.—Precipitation varies from 20 to 30 inches per annum in normal years

Ice conditions obtained at this station, subsequent to December 9, and also practically throughout the whole month of February

This station gives the discharge of the Kettle river as it flows north, across the international boundary before joining the North Fork of the Kettle river at Grand Forks

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DAILY GAUGE HEIGHT AND DISCHARGE of Niskonlith Creek at mouth, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1							0.42	0.6			0.32	0.1
2	1.05	17.5										
3			0.57	2.6	0.50	1.4			0.40	0.4		
4											0.40	0.40
5							0.42	0.6				
6	1.0	15.0	0.57	2.6					0.40	0.4		
7												
8					0.47	1.0					0.60	3.0
9	0.45	0.9					0.42	0.6	0.40	0.4		
10			0.85	9.8								
11					0.45	0.9					0.40	0.4
12							0.45	0.9				
13	0.45	0.9	0.85	9.8					0.40	0.4		
14												
15					0.42	0.6						
16							0.42	0.6			0.40	
17	0.45	0.9	0.55	2.2					0.37	0.3		
18					0.40	0.4					0.40	
19							0.40	0.4				
20												
21	0.45	0.9	0.55	2.2	0.37	0.3			0.30	0.1		
22												
23							0.40	0.4			0.37	
24	0.40	0.4	0.52	1.8					0.35	0.2		
25					0.32	0.2						
26											0.35	
27												
28	0.40	0.4	0.52	1.8	0.40	0.4	0.40	0.4	0.35	0.2		
29												
30							0.40	0.4				
31	0.57	2.6	0.52	1.8								

Under too.

MONTHLY DISCHARGE of Niskonlith Creek at mouth, for 1914.

(Drainage area, 50 square miles.)

Month.	DISCHARGE IN SECOND-FEET				Run-Off.	
	Maximum	Minimum	Mean	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	26.5	3.0	9.4	0.19	0.21	559
May	66.0	35.6	51.4	1.03	1.19	3,160
June	57.0	17.5	38.5	0.77	0.86	2,291
July	17.5	0.4	4.4	0.09	0.10	270
August	9.8	1.8	3.8	0.08	0.09	234
September	1.4	0.2	0.65	0.01	0.01	39
October	0.9	0.4	0.54	0.01	0.01	33
November	0.4	0.1	0.30	0.01	0.01	18
December						
The period	66.0	0.1	13.62	0.27	2.48	6,604

NOTE.—Precipitation varies from 10 to 20 inches.

Dam on Niskonlith lake controls the stream's regimen

OKANAGAN RIVER (2052).

Location.—Near Fairview, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Three thousand square miles.

Gauge.—Standard 6-foot vertical staff gauge, read four times a week by A. S. Hatfield.

Channel.—Average width of channel at measuring section is seventy-five feet. Channel above the station curves gently from the southwest. Below the station the channel is straight for 50 feet, then curves to the southeast.

Bed of stream is composed of gravel and sand, and constant shifting of channel at the station has resulted.

Discharge Measurements.—Meterings have been obtained at all stages of flow, and were well distributed throughout at the season, thus making it possible to make adjustments for the change in area due to scouring.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—In spite of the adverse conditions, results are thought to be fairly high. It will be necessary to establish a new station in 1915.

OKANAGAN RIVER.

The Okanagan river rises in Okanagan lake, a large body of water, 65 miles long and from 2 to 4 miles wide and, flowing southerly for 100 miles, joins the Columbia in the state of Washington. From Penticton, where the river leaves Okanagan lake, to the international boundary is 35 miles. Through the greater part of this distance it is a sluggish stream, expanding into three lakes. Dog lake, Masseaux lake, and Osoyoos lake. The international boundary cuts across the lower part of the last. From the falls at the foot of Dog lake to Vaseaux lake, a distance of 5 miles, the stream is swift.

The drainage basin in Canada has an area of 3,000 square miles. It is a long narrow valley, lying north-and-south in the eastern portion of the dry belt, and includes one of the best fruit-growing districts in British Columbia. Irrigation is of course necessary, the precipitation varying from 15 inches in the northern parts to 8 inches in the south. The mountains on both sides of the valley are steep in most places, timbered on the upper slopes. The lower slopes are partly covered with light timber, but for the most part are open and covered with bunch grass. In places they give way to rolling hills and benches. The soil is fine and very fertile when it can be watered. On the whole the land is difficult of irrigation, chiefly because of its topography, and also because there are no large tributaries north of the border. The inflowing streams are small, flowing in deep gulleys from the mountains. In the spring they are rushing torrents. In the summer they become nearly dry, and in most cases there are no storage possibilities. From Penticton south to the boundary there are large tracts of land which only need a water supply to become exceedingly productive.

The one large tributary of the Okanagan is the Similkameen. It flows in from the west, and though it joins the Okanagan at Oroville, in Washington, by far the major part of its course is through Canadian territory. It is a larger stream than the Okanagan above the junction, but lacks the steadying influence of any lakes and is therefore subject to much greater fluctuations. In 1914 the minimum flow of the Okanagan was 485 second-feet, and of the Similkameen 160 second-feet. The maximum flow, however, was 1,500 second-feet for the Okanagan and 15,500 for the Similkameen.

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There is one good power site on the Okanagan. This is at Okanagan falls, at the foot of Dog lake. The river here is narrowly confined between two rock bluffs, and drops some 15 feet almost vertically. Dog lake and Okanagan lake act as natural reservoirs. A cheap development is possible at this point, and it is probable that here is a solution of the irrigation problem for large areas at present barren.

A gauge was installed on the Okanagan near Fairview by the Hydrographic Survey in April, 1914. Daily flow records are available from that date.

DISCHARGE MEASUREMENTS of Okanagan River near Fairview, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 7.....	E. M. Dann.....	1505	75	276	1.90	0.71	524
May 11.....	K. Chisholm.....	1505	75	456	2.63	2.43	1,199
June 5.....	".....	1913	76	520	2.76	3.28	1,436
July 17.....	".....	1913	76	454	2.51	2.27	1,138
Aug. 14.....	E. M. Dann.....	1913	75	354	2.20	1.31	796
" 28.....	K. G. Chisholm.....	1913	76	320	2.20	1.08	704
Nov. 21.....	".....	1673	74	309	1.85	0.84	575

Shifting condition of channel existed during freshet season.

DAILY GAUGE HEIGHT AND DISCHARGE of Okanagan River near Fairview, for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1.80	945		
2.....					3.10	1,385
3.....					3.20	1,415
4.....					3.25	1,425
5.....			2.10	1,065	3.30	1,440
6.....			2.10	1,065	3.30	1,440
7.....			2.05	1,045		
8.....	0.80	560	2.10	1,065		
9.....	0.85	575			3.30	1,440
10.....	0.90	595			3.20	1,415
11.....					3.20	1,415
12.....			2.50	1,210	3.20	1,415
13.....			2.60	1,240		
14.....	1.20	710	2.90	1,325		
15.....	1.30	750	3.30	1,440		
16.....	1.35	765			3.50	1,500
17.....	1.35	765			3.50	1,500
18.....					3.40	1,470
19.....			3.20	1,415	3.30	1,440
20.....			3.10	1,385		
21.....	1.45	805	3.20	1,415		
22.....	1.45	805	3.20	1,415		
23.....	1.50	825			3.20	1,415
24.....	1.60	865			3.20	1,415
25.....					3.10	1,385
26.....			3.00	1,355	3.00	1,355
27.....			3.00	1,355		
28.....	1.65	885	2.90	1,325		
29.....	1.60	865	2.90	1,325		
30.....	1.65	885			2.85	1,310

DAILY GAUGE HEIGHT AND DISCHARGE of Okanagan River near Fairview, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-80	1,295			1-07	685	0-90	610			0-82	575
2	2-75	1,280			1-05	673			0-90	610	0-85	583
3	2-70	1,270			1-02	665			0-90	610	0-87	595
4			1-60	890					0-90	610		
5			1-57	890			0-85	585	0-90	610		
6	2-50	1,210	1-55	880			0-84	585				
7	2-45	1,195			0-92	620	0-82	575			0-85	585
8	2-40	1,180			0-90	610	0-82	575			0-85	585
9	2-35	1,165			0-87	595			0-90	610	0-82	575
10			1-45	840	0-85	585			0-90	610	0-82	575
11			1-42	830					0-90	610		
12			1-40	820	0-79	565	0-85	585	0-90	610		
13	2-30	1,155	1-37	810	0-80	565	0-85	585				
14	2-30	1,155			0-82	575	0-85	585			0-80	565
15	2-27	1,145			0-82	575	0-85	585			0-80	565
16	2-25	1,140							0-90	610	0-77	550
17			1-30	785					0-87	595	0-77	550
18			1-27	775					0-87	595		
19			1-25	765			0-95	630	0-87	595		
20	2-12	1,085	1-22	755			0-94	630				
21	2-10	1,075			0-80	565	0-92	620			0-72	530
22	2-07	1,065			0-80	565	0-92	620			0-67	505
23	2-05	1,055			0-80	565			0-85	585	0-65	495
24	2-00	1,040	1-12	720	0-80	565			0-82	575	0-65	495
25			1-10	715					0-80	565		
26			1-07	705			0-88	600	0-80	565		
27	1-90	1,000	1-05	695			0-88	600				
28	1-85	980			0-92	620	0-88	600			0-62	485
29	1-80	965			0-92	620	0-88	600			0-62	485
30	1-77	955			0-90	610			0-82	575	0-62	485
31			1-10	700							0-62	485

MONTHLY DISCHARGE of Okanagan River near Fairview, for 1914.

(Drainage area, 3,000 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	885	560	761	0-25	0-28	45,282
May	1,440	945	1,258	0-42	0-48	77,350
June	1,500	1,310	1,421	0-47	0-52	84,559
July	1,295	955	1,120	0-37	0-43	68,870
August	900	695	792	0-26	0-30	48,698
September	685	565	601	0-20	0-22	35,762
October	630	575	598-2	0-20	0-23	36,782
November	610	565	596-5	0-20	0-22	35,494
December	595	485	540-5	0-15	0-17	33,234
The period	1,500	485	854-2	0-28	2-85	466,031

NOTE.—This station was established in April, 1914, having for the period a maximum flow of 1,500 sec.-feet in June and a minimum of 485 sec.-feet in December.

The flow is regulated by Okanagan and Dog lakes, from which there is a large evaporation loss. The precipitation is low, varying from 10 to 30 inches annually.

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SIMILKAMEEN RIVER (2054).

Location.—Near Ashnola, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Two thousand three hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read by Harry Atherton of Keremeos.

Channel.—Average width of channel at measuring section is about 210 feet. Channel is straight at the station. Bed of stream is very rocky and water turbulent even at low stages.

Discharge Measurements.—The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream. Partial ice conditions are believed to exist during January and February.

Accuracy.—Very high. Results compiled from a well-rated curve.

SIMILKAMEEN RIVER.

Two main streams unite at Princeton to form the Similkameen, the South Similkameen and the Tulameen rivers. The South Similkameen has its source in the Hogameen mountains of the Cascade range, some 15 miles south of the International boundary, and flows north for a distance of 50 miles to its confluence. The Tulameen heads in the Hope mountains of the Cascade range, and starting in a northerly direction, follows a curved line, finally joining in a southeast direction. Very few elevations are established in this district. The peaks of the Cascades at the international boundary obtain an altitude of 8,000 feet above sea-level. The highest points in the Hope range are not over 7,600 feet. At the confluence of the two main tributaries at Princeton the elevation of the river is about 2,100 feet. From this point the Similkameen flows in a southeasterly direction for 75 miles, joining the Okanagan at Oroville. The last 20 miles are in the state of Washington.

From the right going upstream, the main tributaries are: Keremeos creek at Keremeos, Twenty-mile creek at Hedley, and Five-mile and One-mile creeks at 5 and 1 miles, respectively, downstream from Princeton. From the left, Ashnola river at Ashnola, half-way between Keremeos and Hedley, is the chief tributary.

The Similkameen river is fairly swift. In the 25 miles between Princeton and Hedley the drop is 440 feet, giving an average grade of 19 feet to the mile. Approximately the same grade obtains for the 20 miles from Hedley to Keremeos. Below this point to the boundary the current is sluggish.

At Hedley the Daly Reduction Company, owners of the Nickle Plate mine, have taken advantage of the steep grade of the river for power purposes. By means of a dam and 3 miles of flume, a maximum head of 67 feet is obtained and a plant installed with a capacity of 1,800 horse-power. This new plant takes the place of a combination plant using water from twenty-mile creek and auxiliary steam engine. The plant was completed in 1914, and can deliver 2,000 horse-power. The drainage basin above the international boundary has an area of about 2,500 square miles. The river cuts right across the southern part of the Okanagan range in a V-shaped glacial valley, the mountains on each side rising steeply to an altitude of 5,000 or 6,000 feet. The southern slopes of the hills are open and grassy in many places, and afford excellent pasturage and, where timbered, the trees do not grow close together. The northern slopes are more thickly wooded. Precipitation varies with the altitudes. The average of four years at Hedley gives 10.8 inches for the annual precipitation. At the Nickel Plate mine, 3 miles away and 4,000 feet higher up, figures for the same four years show 21.8 inches.

6 GEORGE V, A. 1915

The only agricultural land in the district is the bottom of the valley. Above Keremeos this is very narrow, but below that point it widens out and there are a number of fine fruit ranches.

A regular gauging station was established at Ashnola, below Ashnola creek, on April 8, 1914.

DISCHARGE MEASUREMENTS of Similkameen River at Ashnola, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Feet.	Ft. per sec.	Sec.-ft.
April 8.....	E. M. Dann.....	1505	162	552	3-41	1-35	1,881
May 10.....	K. G. Chisholm.....	1505	202	1,097	6-69	3-92	7,326
June 10.....	".....	1913	195	913	5-14	3-10	4,697
" 24.....	".....	1913	194	856	4-51	2-75	3,870
July 29.....	".....	1913	171	382.5	2-24	0-30	858
Aug. 30.....	".....	1913	125	261	1-38	-0-47	360
Nov. 23.....	".....	1673	132	375	2-04	0-20	764

DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			2-75	3,870	4-50	9,450
2.....			3-50	5,880	5-20	12,020
3.....			4-35	8,895	5-45	12,945
4.....			3-95	7,440	4-60	9,815
5.....			3-55	6,045	4-00	7,620
6.....			3-30	5,270	3-65	6,380
7.....			3-25	5,125	3-45	5,725
8.....	1-35	1,880	3-15	4,840	3-25	5,125
9.....	1-65	2,240	3-35	5,420	3-20	4,980
10.....	1-85	2,480	3-80	6,900	3-15	4,840
11.....			2-15	2,870	4-05	7,800
12.....			2-15	2,870	4-30	8,710
13.....			2-35	3,165	4-60	9,815
14.....			2-65	3,675	5-50	13,130
15.....			2-90	4,185	6-15	15,525
16.....			2-85	4,075	5-90	14,600
17.....			2-65	3,675	5-35	12,575
18.....			2-40	3,240	5-25	12,205
19.....			2-40	3,240	4-85	10,735
20.....			2-95	4,305	4-75	10,365
21.....			2-55	3,490	4-90	10,920
22.....			2-35	3,165	4-90	10,920
23.....			2-35	3,165	5-25	12,205
24.....			2-20	2,940	5-35	12,575
25.....			2-10	2,800	5-10	11,655
26.....			2-10	2,800	4-50	9,450
27.....			2-15	2,870	4-05	7,800
28.....			2-10	2,800	3-80	6,900
29.....			1-95	2,605	3-60	6,210
30.....			2-10	2,800	3-65	6,380
31.....					4-00	7,620

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DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height-	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2.90	4,185	0.20	795	-0.53	338	-0.15	543	0.1	720	0.00	645
2	2.80	3,970	0.15	755	-0.58	318	-0.18	523	0.12	735	0.05	680
3	2.65	3,675	0.15	755	-0.55	330	-0.20	510	0.0	645	0.17	755
4	2.70	3,770	0.10	710	-0.55	330	-0.18	523	0.02	660	0.02	645
5	2.45	3,320	0.05	680	-0.55	330	-0.19	516	0.1	720	-0.07	610
6	2.15	2,870	0.05	680	-0.55	330	-0.22	498	0.15	757	0.00	645
7	2.00	2,670	0.05	680	-0.50	350	-0.20	516	0.12	735	-0.05	610
8	1.90	2,545	0.00	645	-0.45	375	-0.24	486	0.20	795	0.15	547
9	2.00	2,670	0.00	645	-0.40	400	-0.28	462	0.25	832	-0.37	425
10	1.75	2,360	0.00	645	0.30	450	-0.22	498	0.27	847	-0.55	330
11	1.60	2,180	0.00	645	-0.30	450	-0.12	562	0.27	847	-0.77	250
12	1.40	1,940	-0.10	575	-0.30	450	-0.04	617	0.47	1,009	-0.90	190
13	1.50	2,060	-0.10	575	-0.30	450	-0.04	617	0.37	926	-0.95	175
14	1.70	2,300	-0.10	575	-0.30	450	-0.06	603	0.17	772	-1.00	160
15	1.50	2,060	-0.20	510	-0.33	435	-0.12	562	0.15	757	-0.85	210
16	1.30	1,820	-0.20	510	-0.33	435	-0.20	510	0.02	660	-0.67	290
17	1.15	1,655	-0.20	510	-0.28	462	-0.19	516	-0.03	624	-0.60	310
18	1.10	1,605	-0.15	545	-0.28	462	-0.07	596	-0.00	645	-0.52	350
19	1.00	1,500	-0.15	545	-0.13	556	-0.04	617	-0.00	645	-0.40	400
20	0.90	1,400	-0.20	510	0.05	680	-0.00	645	0.01	652	-0.32	450
21	0.85	1,350	-0.20	510	-0.03	624	-0.00	645	0.25	832	-0.32	450
22	0.75	1,255	-0.20	510	-0.13	556	-0.03	624	0.27	847	-0.32	450
23	0.60	1,120	-0.30	450	-0.19	516	-0.10	575	0.20	795	-0.30	450
24	0.55	1,075	-0.40	400	-0.20	510	-0.08	589	0.15	757	-0.30	450
25	0.50	1,035	-0.45	375	-0.28	462	-0.00	645	0.15	757	-0.27	480
26	0.50	1,035	-0.50	350	-0.23	492	-0.00	645	0.37	926	-0.25	480
27	0.40	950	-0.50	350	-0.04	617	-0.08	589	0.47	1,009	-0.27	480
28	0.35	910	-0.55	330	0.10	720	-0.00	645	0.42	967	-0.27	480
29	0.30	870	-0.55	330	-0.03	624	-0.03	624	0.37	926	-0.27	480
30	0.25	830	-0.45	375	-0.13	556	0.01	720	0.20	795	-0.25	480
31	0.20	795	-0.53	338			0.01	720			-0.22	510

MONTHLY DISCHARGE of Similkameen River at Ashnola, for 1914.

(Drainage area, 2,320 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April	4,305	1,880	3,101.5	1.33	1.5	184,550
May	15,525	3,870	8,960.6	3.86	4.45	550,966
June	12,945	3,770	6,839.5	2.95	3.20	406,980
July	4,185	795	1,993.0	0.86	0.09	122,543
August	795	330	542.5	0.23	0.26	33,357
September	720	318	468.6	0.02	0.2	27,884
October	720	462	578.5	0.25	0.29	35,570
November	1,009	624	786.5	0.33	0.37	46,804
December	755	160	447.3	0.19	0.22	27,503
The period	15,525	160	2,635.3	1.13	11.57	1,436,152

NOTE.—Precipitation over this drainage area varies from a minimum of 10 inches to a maximum of 50 inches at higher altitudes.

During 1914 the greatest flow recorded was 15,525 cubic feet per second, in May, and the lowest 163 cubic feet per second in December.

SHUSWAP RIVER AT ENDERBY (2034).

Location.—Section 26, township 18, range 9, west of the 6th meridian.

Records Available.—August 25 to November 10, 1911; March 1 to December 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand six hundred and fifty square miles.

Gauge.—A standard vertical staff gauge situated on highway bridge, and read daily by D. Mowat.

Channel.—The channel is straight for 100 yards at section. The rise and fall of the river each year is about 10 feet. Control is good.

Winter Conditions.—Ice conditions prevail some years during January and February. During 1914 river remained open throughout.

Discharge Measurements.—Eleven well-distributed measurements have been obtained during 1911, 1912, and 1913. Measurements were made from boat except during high water, when they were made from bridge.

Accuracy.—The returns are considered to be accurate, and are within 10 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Fect.	Sec.-ft.	Fect.	Sec.-ft.	Fect.	Sec.-ft.	Fect.	Sec.-ft.	Fect.	Sec.-ft.	Fect.	Sec.-ft.
1	2-60	965	2-60	965	2-25	775	2-70	1,020	4-540	9-05	8,695	
2	2-60	965	2-55	937	2-25	775	2-70	1,020	4-820	9-10	8,770	
3	2-60	965	2-60	965	2-25	775	2-75	1,050	6-60	5,100	9-70	9,720
4	2-60	965	3-05	1,242	2-25	775	2-85	1,110	6-80	5,380	10-0	10,200
5	2-60	965	3-20	1,340	2-25	775	3-00	1,210	6-85	5,450	10-2	10,500
6	2-70	1,020	3-30	1,410	2-20	749	3-30	1,410	6-90	5,520	10-35	10,800
7	2-85	1,110	3-30	1,410	2-20	749	3-55	1,600	7-00	5,660	10-35	10,800
8	2-85	1,110	3-35	1,445	2-20	749	3-70	1,720	7-10	5,800	10-2	10,500
9	2-85	1,110	3-35	1,445	2-20	749	3-85	1,845	7-30	6,080	10-0	10,200
10	2-85	1,110	3-35	1,445	2-20	749	3-90	1,890	7-60	6,520	9-9	10,000
11	2-80	1,080	3-35	1,445	2-20	749	3-95	1,935	7-70	6,660	9-8	9,880
12	2-80	1,080	3-35	1,445	2-20	749	4-10	2,080	7-80	6,800	9-8	9,880
13	2-80	1,080	3-35	1,445	2-15	724	4-25	2,230	8-00	7,100	9-8	9,880
14	2-80	1,080	3-35	1,445	2-15	724	4-50	2,480	8-30	7,540	9-9	10,000
15	2-80	1,080	3-00	1,210	2-25	775	4-60	2,590	8-70	8,140	10-1	10,300
16	2-75	1,050	3-00	1,210	2-30	801	5-05	3,100	9-10	8,770	10-3	10,700
17	2-75	1,050	2-90	1,140	2-30	801	5-10	3,160	9-40	9,240	10-6	11,300
18	2-70	1,020	2-75	1,050	2-35	828	5-20	3,280	9-60	9,560	10-75	11,500
19	2-70	1,020	2-75	1,050	2-45	882	5-45	3,580	9-70	9,720	10-9	11,700
20	2-70	1,020	2-70	1,020	2-45	882	5-65	3,825	9-80	9,880	11-1	12,000
21	2-70	1,020	2-50	910	2-50	910	5-80	4,020	9-80	9,880	11-0	11,900
22	2-70	1,020	2-25	775	2-50	910	5-80	4,020	9-75	9,800	10-9	11,700
23	2-70	1,020	2-25	775	2-55	937	5-90	4,150	9-80	9,880	10-7	11,400
24	2-65	992	2-30	801	2-65	992	6-00	4,280	9-80	9,880	10-5	11,110
25	2-65	992	2-30	801	2-70	1,020	6-05	4,345	9-90	10,000	10-3	10,700
26	2-65	992	2-25	775	2-65	992	6-05	4,345	9-90	10,000	10-2	10,500
27	2-60	965	2-25	775	2-60	965	6-05	4,345	9-80	9,880	10-0	10,200
28	2-55	937	2-25	775	2-60	965	6-05	4,345	9-70	9,720	9-9	10,000
29	3-10	1,270	2-60	965	6-05	4,345	9-50	9,400	9-8	9,880
30	3-25	1,375	2-60	965	6-05	4,345	9-30	9,080	9-8	9,880
31	3-10	1,270	2-65	992	9-05	8,695

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DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914—(Concluded).

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	9-80	9,880	5-20	3,280	3-30	1,410	3-45	1,520	4-65	2,030	3-60	1,800
2	9-80	9,880	5-10	3,160	3-20	1,340	3-50	1,560	4-30	2,280	3-75	1,760
3	9-80	9,880	5-00	3,040	3-20	1,340	3-55	1,600	4-30	2,280	3-75	1,760
4	9-80	9,880	4-90	2,920	3-15	1,303	3-55	1,600	4-30	2,280	3-70	1,720
5	9-70	9,720	4-80	2,810	3-10	1,270	3-55	1,600	4-30	2,280	3-65	1,680
6	9-70	9,720	4-70	2,700	3-05	1,242	3-55	1,600	4-40	2,380	3-60	1,640
7	9-65	9,640	4-70	2,700	3-05	1,242	3-55	1,600	4-40	2,380	3-60	1,640
8	9-50	9,400	4-60	2,590	3-05	1,242	3-55	1,600	4-40	2,380	3-55	1,600
9	9-30	9,080	4-50	2,480	3-05	1,242	3-55	1,600	4-45	2,430	3-50	1,560
10	9-05	8,695	4-40	2,380	3-05	1,242	3-55	1,600	4-45	2,430	3-40	1,480
11	8-90	8,460	4-40	2,380	3-05	1,242	3-60	1,640	4-50	2,480	3-35	1,445
12	8-70	8,140	4-25	2,230	3-05	1,242	3-65	1,680	4-50	2,480	3-30	1,410
13	8-45	7,765	4-20	2,180	3-05	1,242	3-70	1,720	4-45	2,430	3-30	1,410
14	8-30	7,540	4-15	2,130	3-05	1,242	3-70	1,720	4-40	2,380	3-20	1,340
15	8-30	7,540	4-05	2,030	3-00	1,210	3-70	1,720	4-40	2,380	3-10	1,270
16	8-30	7,540	4-00	1,980	3-00	1,210	3-70	1,720	4-30	2,280	3-05	1,242
17	8-10	7,250	4-00	1,980	3-00	1,210	4-15	2,130	4-30	2,280	3-00	1,210
18	7-95	7,025	3-95	1,935	3-00	1,210	4-10	2,080	4-20	2,180	2-90	1,140
19	7-75	6,730	3-90	1,890	3-10	1,270	4-10	2,080	4-20	2,180	2-90	1,140
20	7-70	6,660	3-85	1,800	3-10	1,270	4-10	2,080	4-20	2,180	2-90	1,140
21	7-30	6,080	3-80	1,800	3-10	1,270	4-10	2,080	4-10	2,080	2-90	1,140
22	7-20	5,940	3-70	1,720	3-05	1,242	4-10	2,080	4-00	1,980	2-80	1,080
23	7-00	5,660	3-65	1,680	3-05	1,242	4-10	2,080	4-00	1,980	2-80	1,080
24	6-80	5,380	3-60	1,640	3-05	1,242	4-10	2,080	3-95	1,935	2-75	1,030
25	6-60	5,100	3-60	1,640	3-05	1,242	4-10	2,080	3-95	1,935	2-75	1,030
26	6-30	4,680	3-60	1,640	3-05	1,242	4-10	2,080	3-90	1,890	2-75	1,030
27	6-10	4,410	3-50	1,560	3-20	1,340	4-05	2,030	3-90	1,890	2-80	1,080
28	5-90	4,150	3-40	1,480	3-50	1,560	4-05	2,030	3-85	1,845	2-75	1,030
29	5-70	3,890	3-40	1,480	3-40	1,480	4-00	1,980	3-85	1,845	2-75	1,030
30	5-50	3,640	3-40	1,480	3-40	1,480	4-00	1,980	3-85	1,845	2-70	1,020
31	5-40	3,520	3-30	1,410	.....	.....	4-05	2,030	.....	.....	2-70	1,020

For meterings and further hydrographic data see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of Shuswap River at Enderby, for 1914.

(Drainage area, 1,650 square miles)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		RAINFALL.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	Inches.
January.....	1,375	937	1,055	0.6	0.7	64,870	2.52
February.....	1,445	775	1,123	0.7	0.7	62,368	1.60
March.....	1,020	724	843	0.5	0.6	51,834	0.82
April.....	4,345	1,020	2,822	1.7	1.9	167,920	1.02
May.....	10,000	4,540	7,887	4.8	5.5	484,954	1.12
June.....	12,000	8,695	10,486	6.3	7.0	623,960	1.68
July.....	9,880	3,520	7,189	4.3	5.0	442,038	0.88
August.....	3,280	1,410	2,133	1.3	1.5	131,153	0.27
September.....	1,560	1,210	1,285	0.8	0.9	76,365	2.49
October.....	2,130	1,520	1,838	1.1	1.3	113,016	1.23
November.....	2,480	1,845	2,187	1.3	1.4	130,133	1.89
December.....	1,800	1,020	1,324	0.8	0.9	81,408	.....
The year.....	12,000	724	3,348	22.0	27.4	2,430,019	.....

NOTE.—Rainfall data are from Monthly Weather Review of the Meteorological Service of the Department of Marine and Fisheries, and show the monthly precipitation at Enderby. The mean precipitation over the whole drainage area is probably considerably higher than the precipitation at Enderby.

The total mean annual precipitation at Enderby for a period of eight years is given as 20.71 inches.

SOUTH SIMILKAMEEN RIVER (2063).

Location.—At Princeton, Water District No. 4.

Records Available.—May 14 to December 19, 1914.

Drainage Area.—Four hundred and forty square miles.

Gauge.—Standard chain gauge situated on the highway bridge, read by J. J. Priest of Princeton.

Channel.—Average width of channel at measuring section is about 170 feet. Above section channel is curved for about 200 feet and straight for about 100 feet below station. Bed of stream is of gravel, with a few boulders, and not liable to shift.

Discharge Measurements.—Made with cable and 30-pound weight. The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—High results compiled from a well-rated curve.

SOUTH SIMILKAMEEN.

Two branches, Pasayten river and Roche river, unite to form the South Similkameen river. The Pasayten is about 25 miles long. It heads among the high mountains of the Cascade range, south of the border, and flows due north to the junction. It is a rapid stream flowing through a narrow deep valley. The Roche river heads in six branches in the Hogameen range, which joins the divide between the Skagit and the South Similkameen rivers. It pursues a northeasterly course to the junction through a wide flat valley, whose sides slope easily back to a height of 2,000 feet above the river. From the junction the South Similkameen flows due north for 25 miles to its confluence with the Tulameen at Princeton to form the Similkameen river. In this distance it is joined by Copper creek and Whipsaw creek from the west, and several small unnamed creeks.

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From the junction of the Roche and the Pasayten to the confluence of Whipsaw creek, a distance of 18 miles, the South Similkameen flows through a deep narrow canyon on a grade of over 40 feet to the mile. Good power sites are numerous. Below Whipsaw creek to the mouth the grade is flatter and the valley wider.

The area of the drainage basin above the mouth is 440 miles, covering a rough mountainous country of rugged scenic beauty. The new motor road connecting Princeton with the coast follows the valley of the South Similkameen and Roche river across the headwaters of the Skagit and down Silver creek to the Fraser near Hope. It is at present under construction.

Large deposits of copper occur on Copper mountain, 10 miles south of Princeton. The British Columbia Copper Company has large holdings here and is doing some development work.

A gauging station was established on the South Similkameen near the mouth on May 14, 1914. Six discharge measurements and daily gauging were taken during the season.

DISCHARGE MEASUREMENTS of South Similkameen River at Princeton, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 13.....	K. G. Chisholm.....	1505	192	476	7.33	3.88	3,490
June 15.....	"	1913	191	511	6.25	4.00	3,194
" 22.....	"	1913	191	380	4.74	3.31	1,799
July 27.....	"	1913	106	117	3.58	1.88	419
Sept. 2.....	"	1913	112	145	1.02	1.23	149
Nov. 28.....	"	1673	125	121	3.19	1.85	386

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

Day.	May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			4-05	3,665
2.....			4-67	6,037
3.....			4-62	5,832
4.....			3-97	3,407
5.....			3-71	2,661
6.....			3-51	2,187
7.....			3-31	1,803
8.....			3-25	1,705
9.....			3-22	1,657
10.....			3-20	1,625
11.....			3-14	1,541
12.....			3-31	1,803
13.....			3-69	2,610
14.....	4-46	5,178	3-80	2,900
15.....	4-75	6,365	4-00	3,500
16.....	4-60	5,750	4-23	4,291
17.....	4-40	4,935	4-19	4,145
18.....	4-25	4,365	4-00	3,500
19.....	3-98	3,438	3-95	3,345
20.....	4-07	3,731	3-70	2,635
21.....	3-97	3,407	3-42	2,005
22.....	3-98	3,438	3-27	1,737
23.....	4-08	3,764	3-03	1,397
24.....	4-37	4,820	2-98	1,337
25.....	4-10	3,830	3-03	1-397
26.....	3-82	2,958	3-07	1,447
27.....	3-69	2,610	3-17	1,583
28.....	3-46	2,085	3-12	1,513
29.....	3-24	1,689	3-11	1,499
30.....	3-38	1,929	3-16	1,569
31.....	3-38	1,929		

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DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-33	1,839	1-73	335	1-23	144	1-40	200	1-64	293	1-47	224
2	3-30	1,785	1-70	320	1-23	144	1-38	193	1-75	345	1-42	207
3	3-25	1,705	1-68	311	1-23	144	1-38	193	1-82	381	1-50	235
4	3-12	1,513	1-61	280	1-22	141	1-35	182	1-84	392	1-55	255
5	3-00	1,360	1-61	280	1-20	135	1-32	172	1-95	455	1-50	235
6	2-91	1,256	1-62	284	1-20	135	1-30	165	1-82	381	1-45	217
7	2-86	1,201	1-61	280	1-30	165	1-32	172	1-67	306	1-45	217
8	2-73	1,065	1-61	280	1-45	217	1-30	165	1-60	275	1-40	200
9	2-68	1,017	1-61	280	1-48	228	1-35	182	1-60	275	1-22	141
10	2-68	1,017	1-60	275	1-40	200	1-42	207	1-62	284	1-20	135
11	2-65	990	1-59	271	1-40	200	1-50	235	1-65	298	1-20	135
12	2-65	990	1-57	263	1-38	193	1-50	235	1-72	330	1-20	135
13	2-67	1,008	1-54	251	1-35	182	1-45	217	1-72	330	1-20	135
14	2-66	999	1-54	251	1-35	182	1-42	207	1-68	311	1-25	580
15	2-51	864	1-52	243	1-38	193	1-35	182	1-50	235	2-15	580
16	2-42	787	1-48	228	1-35	182	1-32	172	1-54	251	2-20	615
17	2-35	730	1-48	228	1-35	182	1-32	172	1-60	275	2-20	615
18	2-32	706	1-47	224	1-40	200	1-34	179	1-52	243	2-20	615
19	2-30	690	1-47	224	1-50	235	1-51	263	1-45	217	2-20	615
20	2-20	615	1-46	221	1-58	267	1-52	243	1-45	217	.....	.....
21	2-14	573	1-52	243	1-50	235	1-47	224	1-50	235	.....	.....
22	2-10	545	1-45	217	1-45	217	1-45	217	1-56	259	.....	.....
23	2-05	515	1-41	203	1-40	200	1-42	207	1-65	298	.....	.....
24	2-00	485	1-39	197	1-38	193	1-42	207	1-70	320	.....	.....
25	1-82	381	1-35	182	1-40	200	1-40	200	1-78	360	.....	.....
26	1-95	455	1-32	172	1-42	207	1-40	200	1-90	425	.....	.....
27	1-90	425	1-30	165	1-50	235	1-36	186	1-90	425	.....	.....
28	1-87	408	1-27	156	1-58	267	1-35	182	1-85	397	.....	.....
29	1-75	345	1-25	150	1-52	243	1-35	182	1-70	320	.....	.....
30	1-78	360	1-24	147	1-40	200	1-45	217	1-50	235	.....	.....
31	1-78	360	1-23	144	.....	.....	1-60	275	.....	.....	.....	.....

MONTHLY DISCHARGE of South Similkameen River at Princeton, for 1914.

(Drainage area, 440 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	6,037	1,337	2,544.4	5.5	6.1	151,404
July.....	1,839	345	870.6	1.9	2.2	53,531
August.....	335	144	235.0	0.5	0.6	14,450
September.....	267	135	195.5	0.44	0.40	11,633
October.....	275	165	201.0	0.46	0.5	12,359
November.....	455	217	312.2	0.71	0.79	18,577
The period..	6,037	135	726.4	1.58	10.68	261,954

NOTE.—Mean annual precipitation probably varies from 15 inches near the stream's confluence with the Tulameen river, to 50 inches at its source on the Skagit River divide.
Ice conditions existed subsequent to December 19.

TULAMEEN RIVER (2062).

Location.—At Coalmont, Water District No. 4.

Records Available.—May 15 to October 3, 1914.

Drainage Area.—Four hundred square miles.

Gauge.—Chain gauge. Brass jack chain and 3-pound sash weight on downstream side of bridge at measuring station, read by J. J. Currie.

Channel.—Straight for about 700 feet at measuring section. Bed of stream of clean gravel and permanent. Average width about 100 feet.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well-distributed meterings.

Winter Flow.—No winter records have been made. Ice conditions prevail on this river during the latter part of December, January and February.

Accuracy.—Fairly high, results compiled from a well-rated curve.

TULAMEEN RIVER.

The Tulameen river is one of the largest tributaries of the Similkameen. It rises in many small branches in the eastern slopes of the Hope Range, whose summits are over 7,000 feet in altitude, and joins the Similkameen at Princeton at an elevation of 2,100 feet, after a course of 45 miles.

The tributaries entering from the right going upstream are China creek, Cook creek, Otter creek, Bear creek, Eagle creek, and Siwash creek. Otter creek is the largest tributary. It flows in from the north through a broad deep valley, joining at the village of Tulameen, 16 miles from Princeton. From the left going upstream are Granite creek, Cedar creek, Slate creek, and Champion creek. The largest and most important of these, because of the gold and platinum deposits found in its bed, is Granite creek, which flows in at the village of Granite Creek, 10 miles up the Tulameen valley from Princeton. In 1885, on the discovery of gold in Granite creek, the Granite Creek rush took place. In 1886 the village of Granite Creek had a population of over 2,000, and in that year \$193,000 worth of gold and platinum were washed out of the gravel of the creek. Since 1888 placer mining has been on the decline, and at present the population of Granite Creek consists of five or six families.

There are valuable deposits of coal, copper, and gold in the district. Two coal mines are at present working on a small scale, at Princeton and at Coalmont. The Kettle Valley and Great Northern railroads connecting this country with Vancouver, which are now near completion, should give rise to an era of development and progress. The amount of arable land is practically negligible. The valleys of the river and its tributaries, with the exception of the Tulameen for 3 miles between Slate creek and Otter creek, are very narrow. They are, in fact, little better than deep narrow canyons. The valley of the Otter and the portion of the Tulameen mentioned above, which are much wider, contain some good land. It is nearly all homesteaded. The altitude is over 2,700 feet, and although this is below the limit of cultivation in other parts of the Interior Plateau region, yet wheat cannot be successfully grown.

The climate over the drainage basin of the Tulameen and its tributaries is variable, depending on the locality. At Princeton the mean annual precipitation is 13 inches. At Coalmont and Tulameen and in the Otter valley it is probably not much greater than this. In the higher altitudes and on the eastern slopes of the Hope mountains at the sources of the Tulameen it varies from 20 to 40 inches per annum. Temperatures are not extreme, and are as a rule lower than the Okanagan country. The yearly average is about 45° F. In Bulletin 27 of the Bureau of Provincial Information, the maximum is shown as being 101° in 1897 and 1904, and the minimum as 45° in 1907.

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The current of the Tulameen is swift except in the three miles between Slate and Otter creek, where it meanders through a valley about one-half mile wide, at grade of 29 feet to the mile. Otter creek has a peculiarly sluggish current for a mountain stream. For a distance of 8 miles north from the mouth it has an average grade of 12 feet to the mile. About 4 miles of this distance is occupied by lakes. Above Slate creek the Tulameen has a grade of about 100 feet to the mile, and rushes through a narrow steep-sided canyon. Its tributaries, excepting the Otter, are very swift and occupy deep V-shaped valleys. The country is heavily wooded on the upper slopes. On the lower slopes the trees grow in more open order. Fir, yellow pine, lodgepole pine, and poplar predominate.

A regular gauging station was established at Coalmont on May 14, 1914. Records are available from that date.

DISCHARGE MEASUREMENTS of Tulameen River at Coalmont, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 16.....	E. M. Dann & K. G. Chisholm	1,505	136	228	3.76	—	846 ¹
1914.							
May 14.....	K. G. Chisholm.....	1,505	143	601.0	8.82	4.03	5,300
June 14.....	".....	1,913	118	387.0	4.60	2.50	1,778
" 19.....	".....	1,913	118	333.0	3.84	2.10	1,277
July 26.....	".....	1,913	80	130.0	1.05	0.13	137
Sept. 4.....	".....	1,913	80	95.5	0.41	-0.30	39 ²
Nov. 25.....	".....	1,673	102	181.0	1.73	0.63	314

¹Measurement made at Princeton before regular station was established.

²Not at regular section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

DAY.	May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3-00	2,660
2			3-10	2,870
3			3-00	2,660
4			2-75	2,185
5			2-35	1,575
6			2-20	1,390
7			2-05	1,230
8			2-00	1,180
9			1-95	1,135
10			2-00	1,180
11			2-10	1,280
12			2-50	1,780
13			2-55	1,855
14			2-65	2,015
15	3-80	4,640	2-75	2,185
16	3-80	4,640	2-95	2,560
17	3-35	3,450	2-65	2,015
18	3-35	3,450	2-35	1,575
19	3-35	3,450	2-05	1,230
20	3-30	3,325	1-80	1,005
21	3-30	3,325	1-60	850
22	3-25	3,205	1-60	850
23	3-55	3,960	1-50	780
24	3-70	4,365	1-60	850
25	3-30	3,325	1-75	965
26	2-70	2,100	1-55	815
27	2-60	1,935	1-65	885
28	2-55	1,850	1-40	715
29	2-10	1,280	1-50	780
30	2-30	1,510	1-60	850
31	2-70	2,100		

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DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

DAY.	July.		August.		September.		October.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.45	745	-0.05	90			0.10	125
2	1.35	685	-0.15	70			-0.10	80
3	1.54	745	-0.15	70				0
4	1.30	655	-0.15	70	-0.30	40		0
5	1.15	565	-0.15	70	-0.30	40		0
6	0.95	455	-0.15	70	-0.30	40		0
7	0.95	455	-0.15	70	-0.30	40		0
8	0.95	455	-0.05	90	-0.30	40		0
9	0.85	405	-0.05	90	-0.20	60		0
10	0.90	430	-0.15	70	0.10	125		0
11	0.90	430	-0.15	70	0.10	125		0
12			-0.15	70	-0.10	80	0.10	125
13	0.50	250	-0.15	70	0.10	125	0.10	125
14	0.50	250	-0.15	70	0.20	150		0
15	0.60	290	-0.15	70	0	100		0
16	0.50	250	-0.15	70	-0.10	80		0
17	0.40	215			-0.10	80		0
18	0.40	215			0.10	125	0.10	125
19	0.40	215			0.10	125	0.20	150
20	0.40	215			0.10	125	0.20	150
21	0.25	165			0.10	125	0.10	125
22	0.25	165			0.10	125	0.20	150
23	0.15	135			-0.20	60		0
24	0.15	135			-0.20	60	-0.20	60
25	0.15	135			-0.10	80	-0.10	80
26	0.10	125			0.10	125		0
27	0.10	125			0	100		0
28	0.10	125			0.10	125	0.10	125
29	0.00	100			-0.10	80	0.20	150
30	-0.10	80			0	100	0.10	125
31	-0.10	80					0.30	180

MONTHLY DISCHARGE of Tulameen River near Coalmont, for 1914.

(Drainage area, 400 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	4,640	1,280	3,053.5	7.63	8.80	187,753
June	2,870	780	1,463.5	3.66	4.08	87,086
July	745	80	309.8	0.77	0.89	19,050
August	90	70	73.7	0.18	0.21	4,531
September	125	40	91.8	0.23	0.26	5,462
October	180	60	112.1	0.28	0.32	6,893
The period.	4,640	40	850.7	2.12	14.56	310,775

NOTE.—Mean annual precipitation at the stream's confluence with the South Similkameen river is probably 15 inches; at the head waters of Granite creek and Tulameen river proper it is probably 50 inches, while at the head of Otter creek it is probably 20 to 30 inches per annum.

Ice conditions existed during part of November and December.

THOMPSON RIVER AT CHASE, B.C. (2042).

Location.—Section 35, township 21, range 13, west 6th meridian.

Records Available.—April 22 to July 31, 1911; April 10 to December 31, 1912; April 12 to December 31, 1913; January 1 to 27, March 24 to December 31, 1914.

Drainage Area.—Seven thousand square miles.

Gauge.—A vertical staff gauge is used and read daily by Mr. F. J. Gook of the Adams River Lumber Company, Chase, B.C.

Channel.—Above the measuring section river broadens out into Little Shuswap lake. Below section river is straight for 200 yards.

Discharge Measurements.—Eleven well-distributed measurements have been made during 1911, 1912, and 1913. Measurements are made from cable and boat.

Winter Conditions.—The Thompson, at Chase, remains partially open throughout the year except during severe winters.

Accuracy.—The accuracy of returns is considered to be high, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Thompson River, at Chase, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 31.....	E. M. Dann & K. G. Chisholm.....	1505	358	3,610	0.77	2.58	2,794

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River, near Chase, B.C.,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.		
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft	
1.	2-95	3,390				2,940	2-50	2,720	5-20	9,160	8-85	24,225	
2.	2-95	3,390				2,940	2-50	2,720	5-35	9,670	8-85	24,225	
3.	2-95	3,390				2,940	2-60	2,840	5-60	10,540	8-95	24,675	
4.	2-95	3,390				2,940	2-60	2,840	5-58	11,445	9-15	25,575	
5.	2-95	3,390				2,830	2-60	2,840	6-00	12,000	9-25	26,035	
6.	2-95	3,390				2,830	2-60	2,840	6-15	12,600	9-30	26,250	
7.	2-95	3,390				2,830	2-60	2,840	6-25	13,000	9-30	26,250	
8.	2-95	3,390				2,830	2-60	2,840	6-35	13,400	9-35	26,475	
9.	2-95	3,390				2,830	2-65	2,910	6-40	13,600	9-40	26,700	
10.	2-95	3,390				2,830	2-75	3,050	6-50	14,000	9-40	26,700	
11.	2-95	3,390				2,830	2-85	3,210	6-60	14,400	9-40	26,700	
12.	3-05	3,570				2,830	3-05	3,570	6-75	15,000	9-50	27,150	
13.	3-05	3,570				2,830	3-20	3,840	6-55	15,400	9-55	27,375	
14.	3-05	3,570				2,730	3-35	4,120	7-05	16,200	9-60	27,600	
15.	3-05	3,570				2,730	3-40	4,220	7-25	17,025	9-75	28,275	
16.	3-05	3,570				2,730	3-55	4,565	7-55	18,375	9-85	28,725	
17.	3-05	3,570				2,730	3-65	4,795	7-65	18,825	10-00	29,450	
18.	3-05	3,570				2,730	3-85	5,275	7-75	19,275	10-05	29,700	
19.	3-05	3,570				2,730	4-00	5,650	7-90	19,950	10-10	29,950	
20.	3-05	3,570				2,730	4-05	5,775	8-05	20,625	10-20	30,450	
21.	3-05	3,570				2,730	4-15	6,025	8-15	21,075	10-20	30,450	
22.	3-05	3,570				2,730	4-30	6,430	8-25	21,525	10-20	30,450	
23.	3-05	3,570				2,730	4-40	6,710	8-35	21,975	10-15	30,200	
24.	3-05	3,570				2-50	2,720	4-40	6,710	8-55	22,875	10-10	29,950
25.	3-05	3,570				2-50	2,720	4-50	7,000		23,550	10-10	29,950
26.	3-05	3,570				2-50	2,720	4-65	7,450	8-80	24,000	10-10	29,950
27.	2-95	3,390				2-50	2,720	4-80	7,910	8-80	24,000	10-10	29,950
28.			2-75	3,050		2-50	2,720	4-90	8,220	8-90	24,450	10-10	29,950
29.						2-50	2,720	5-05	8,685	8-90	24,450	10-10	29,950
30.						2-50	2,720	5-15	9,000	8-90	24,450	10-10	29,950
31.						2-50	2,720			8-90	24,450		

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River, near Chase, B.C.,
for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
1.	10-10	29,950	7-05	16,200	4-60	7,300	4-00	5,650	4-50	7,000	4-45	6,855
2.	10-10	29,950	7-00	16,000	4-60	7,300	4-00	5,650	4-60	7,300	4-40	6,710
3.	10-10	29,950	6-85	15,400	4-60	7,300	4-00	5,650	4-60	7,300	4-40	6,710
4.	10-10	29,950	6-75	15,000	4-50	7,000	4-00	5,650	4-65	7,450	4-35	6,570
5.	10-10	29,950	6-55	14,200	4-50	7,000	4-00	5,650	4-70	7,600	4-30	6,430
6.	10-10	29,950	6-45	13,800	4-50	7,000	3-90	5,400	4-75	7,755	4-30	6,430
7.	10-10	29,450	6-30	13,200	4-50	7,000	3-90	5,400	4-80	7,910	4-30	6,430
8.	9-90	28,950	6-25	13,000	4-40	6,710	3-90	5,400	4-80	7,910	4-30	6,430
9.	9-80	28,500	6-20	12,800	4-40	6,710	3-90	5,400	4-80	7,910	4-20	6,150
10.	9-65	27,825	6-10	12,400	4-40	6,710	3-90	5,400	4-90	8,220	4-20	6,150
11.	9-50	27,150	5-95	11,815	4-40	6,710	3-90	5,400	4-90	8,220	4-10	5,900
12.	9-45	26,925	5-85	11,445	4-40	6,710	3-90	5,400	4-90	8,220	4-10	5,900
13.	9-40	26,700	5-75	11,075	4-30	6,430	3-90	5,400	4-90	8,220	4-00	5,900
14.	9-30	26,250	5-70	10,890	4-25	6,290	4-00	5,650	4-90	8,220	4-00	6,650
15.	9-30	26,250	5-65	10,715	4-20	6,150	4-00	5,650	4-90	8,220	4-00	5,650
16.	9-30	26,250	5-60	10,540	4-20	6,150	4-00	5,650	4-90	8,220	4-00	5,650
17.	9-25	26,025	5-50	10,190	4-10	5,900	4-00	5,650	4-80	7,910	3-90	5,400
18.	9-15	25,575	5-40	9,840	4-10	5,900	4-10	5,900	4-80	7,910	3-90	5,400
19.	9-05	25,125	5-30	9,500	4-00	5,650	4-15	6,025	4-80	7,910	3-80	5,150
20.	8-90	24,450	5-20	9,160	4-00	5,650	4-20	6,150	4-80	7,910	3-75	5,030
21.	8-75	23,775	5-20	9,160	4-00	5,650	4-30	6,430	4-75	7,755	3-70	4,910
22.	8-70	23,550	5-15	9,000	4-00	5,650	4-30	6,430	4-70	7,600	3-70	4,910
23.	8-60	23,100	5-10	8,840	3-95	5,525	4-30	6,430	4-70	7,600	3-70	4,910
24.	8-45	22,425	5-00	8,530	3-90	5,400	4-35	6,570	4-65	7,450	3-60	4,810
25.	8-25	21,525	4-90	8,220	3-90	5,400	4-40	6,710	4-60	7,300	3-60	4,680
26.	8-05	20,625	4-85	8,065	3-90	5,400	4-40	6,710	4-60	7,300	3-55	4,565
27.	7-85	19,725	4-80	7,910	3-90	5,400	4-40	6,710	4-50	7,000	3-50	4,450
28.	7-65	18,825	4-70	7,600	3-90	5,400	4-40	6,710	4-50	7,000	3-50	4,450
29.	7-45	17,925	4-65	7,450	4-00	5,650	4-40	6,710	4-50	7,000	3-50	4,450
30.	7-25	17,025	4-60	7,300	4-00	5,650	4-40	6,710	4-50	7,000	3-50	4,450
31.	7-20	16,800	4-60	7,300	4-00	5,650	4-45	6,855	4-50	7,000	3-50	4,450

MONTHLY DISCHARGE of Thompson River, at Chase, B.C.,
for 1914.

(Drainage area, 7,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	3,570	3,390	3,490	0.5	0.6	214,590
February	3,000	2,720	2,860	0.4	0.4	166,600
March	2,940	2,720	2,783	0.4	0.4	171,123
April	9,000	2,720	4,920	0.7	0.8	292,760
May	24,450	9,160	17,783	2.5	2.9	1,093,363
June	30,450	24,225	28,107	4.0	4.5	1,672,540
July	29,950	16,800	25,175	3.6	4.1	1,547,950
August	16,200	7,300	10,856	1.5	1.7	667,516
September	7,300	5,400	6,223	0.9	1.0	370,300
October	6,855	5,400	5,971	0.8	0.9	367,142
November	8,220	7,000	7,677	1.1	1.2	456,813
December	6,855	4,450	5,521	0.8	0.9	339,472
The year	30,450	2,720	10,125	1.4	19.4	7,360,169

NOTE.—Flow for February estimated. River under entire or partial ice conditions.

Precipitation probably varies from 20 inches per annum at Chase to 50 inches at the headwaters of streams tributary to Shuswap lake.

SESSIONAL PAPER No. 25e

BARNES CREEK (2001).

Location.—Section 23, township 20, range 24, west 6th meridian.

Records Available.—April 26 to September 14, 1912; May 1 to December 14, 1913; April 1 to December 8, 1914.

Drainage Area.—Thirty-eight square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, and read daily by C. Crossley.

Channel.—Channel straight at measuring section. Velocity medium. Bed of stream permanent.

Discharge Measurements.—Discharge measurements made by wading at all stages, except very high water.

Winter Flow.—Ice conditions prevail on this stream during January, February, and March.

Accuracy.—The accuracy of results is considered to be very high, the curve being well defined, and returns should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Barnes Creek above Barnes Lake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 6.....	C. B. Corbould.....	1915	8	4	0.75	0.35	3.0

Station rated during 1911 and 1912. Hydrographer notes that on July 6 no water was running into Barnes lake, it was all going down the gulch to the Tiffin ranch, and other lands just east of Ashcroft. He estimates that about .5 sec.-feet is flowing out of Barnes lake and joining Barnes creek one-quarter mile below.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, Barnes Lake, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-30	2-0	0-70	19-0	0-80	27-0
2	0-32	2-4	0-85	31-0	0-80	27-0
3	0-37	3-4	0-90	35-0	0-80	27-0
4	0-42	4-6	0-80	27-0	0-80	27-0
5	0-47	6-1	0-80	27-0	0-80	27-0
6	0-50	7-0	0-80	27-0	0-70	19-0
7	0-50	7-0	0-80	27-0	0-80	27-0
8	0-50	7-0	0-82	28-6	0-80	27-0
9	0-50	7-0	0-95	39-5	0-80	27-0
10	0-50	7-0	1-20	63-0	0-80	27-0
11	0-50	7-0	1-40	83-0	0-80	27-0
12	0-50	7-0	1-40	83-0	0-80	27-0
13	0-52	8-0	1-40	83-0	0-80	27-0
14	0-62	13-4	1-45	88-0	0-80	27-0
15	0-62	13-4	1-50	93-0	0-70	19-0
16	0-60	12-0	1-40	83-0	0-70	19-0
17	0-60	12-0	1-32	75-0	0-60	12-0
18	0-60	12-0	1-30	73-0	0-50	7-0
19	0-60	12-0	1-15	58-5	0-50	7-0
20	0-60	12-0	1-10	54-0	0-50	7-0
21	0-50	7-0	1-00	44-0	0-50	7-0
22	0-50	7-0	1-00	44-0	0-60	12-0
23	0-55	7-0	1-00	44-0	0-60	12-0
24	0-50	7-0	1-10	54-0	0-60	12-0
25	0-50	7-0	1-00	44-0	0-55	9-5
26	0-50	7-0	1-00	44-0	0-50	7-0
27	0-50	7-0	1-00	44-0	0-50	7-0
28	0-55	9-5	0-90	35-0	0-50	7-0
29	0-60	12-0	0-80	27-0	0-50	7-0
30	0-65	15-5	0-80	27-0	0-50	7-0
31			0-80	27-0		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, near Barnes Lake, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-50	7-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
2	0-50	7-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
3	0-40	4-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
4	0-40	4-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
5	0-40	4-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
6	0-40	4-0	0-30	2-0	0-20	0-7	0-40	4-0	0-40	4-0	0-45	5-5
7	0-40	4-0	0-30	2-0	0-22	1-0	0-40	4-0	0-40	4-0	0-50	7-0
8	0-45	5-5	0-30	2-0	0-30	2-0	0-40	4-0	0-40	4-0	0-50	7-0
9	0-50	7-0	0-30	2-0	0-35	3-0	0-40	4-0	0-40	4-0		
10	0-50	7-0	0-30	2-0	0-35	3-0	0-40	4-0	0-40	4-0		
11	0-50	7-0	0-30	2-0	0-35	3-0	0-40	4-0	0-40	4-0		
12	0-50	7-0	0-30	2-0	0-35	3-0	0-40	4-0	0-40	4-0		
13	0-50	7-0	0-30	2-0	0-32	2-4	0-40	4-0	0-40	4-0		
14	0-50	7-0	0-30	2-0	0-30	2-0	0-40	4-0	0-42	4-6		
15	0-50	7-0	0-30	2-0	0-30	2-0	0-45	5-5	0-45	5-5		
16	0-50	7-0	0-30	2-0	0-30	2-0	0-45	5-5	0-47	6-1		
17	0-50	7-0	0-30	2-0	0-32	2-4	0-45	5-5	0-50	7-0		
18	0-40	4-0	0-30	2-0	0-37	3-4	0-50	7-0	0-50	7-0		
19	0-40	4-0	0-30	2-0	0-40	4-0	0-50	7-0	0-50	7-0		
20	0-40	4-0	0-30	2-0	0-40	4-0	0-50	7-0	0-50	7-0		
21	0-40	4-0	0-25	1-4	0-40	4-0	0-50	7-0	0-50	7-0		
22	0-40	4-0	0-25	1-4	0-40	4-0	0-50	7-0	0-50	7-0		
23	0-40	4-0	0-25	1-4	0-40	4-0	0-50	7-0	0-50	7-0		
24	0-40	4-0	0-22	1-0	0-40	4-0	0-50	7-0	0-50	7-0		
25	0-40	4-0	0-20	0-7	0-40	4-0	0-45	5-5	0-50	7-0		
26	0-40	4-0	0-20	0-7	0-40	4-0	0-45	5-5	0-50	7-0		
27	0-40	4-0	0-20	0-7	0-35	3-0	0-40	4-0	0-50	7-0		
28	0-40	4-0	0-20	0-7	0-35	3-0	0-40	4-0	0-50	7-0		
29	0-40	4-0	0-20	0-7	0-40	4-0	0-40	4-0	0-50	7-0		
30	0-35	3-0	0-20	0-7	0-40	4-0	0-40	4-0	0-50	7-0		
31	0-35	3-0	0-20	0-7			0-40	4-0				

MONTHLY DISCHARGE of Barnes Creek, near Barnes Lake, for 1914.

(Drainage area, 38 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				Run-Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	15-5	2-0	8-3	0-2	0-2	402
May	93-0	19-0	49-4	1-3	1-5	3,038
June	27-0	7-0	17-6	0-5	0-5	1,048
July	7-0	3-0	5-0	0-1	0-2	310
August	2-0	0-7	1-6	0-04	0-05	98
September	4-0	0-7	2-6	0-1	0-1	154
October	7-0	4-0	4-9	0-1	0-2	301
November	7-0	4-0	5-5	0-1	0-2	327
December	7-0	5-5	(for period	Dec. 1 to Dec. 8.)		
The period	93-0	0-7	11-8	0-30	2-95	5,768

NOTE.—Winter conditions prevail after December 8.

BONAPARTE RIVER (2003).

Location.—Section 18, township 21, range 24, west 6th meridian.

Records Available.—June 10 to November 6, 1911; March 25 to December 22, 1912; March 30 to December 31, 1913; January 1 to December 9, 1914.

Drainage Area.—Two thousand square miles.

Gauge.—Standard vertical staff gauge read daily by J. G. Collins.

Channel.—Channel straight at measuring section, average width 50 feet. Velocity high.

Discharge Measurements.—Discharge measurements are made by wading, except at high water, when cable carrier is used.

Winter Flow.—Ice conditions prevail on this stream during January and February.

Accuracy.—The accuracy of returns is considered very high, the curve being well defined, and results should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Bonaparte River, near mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 22.....	C. B. Corbould.....	1673	54	160	6.28	3.23	1,005 ¹
July 9.....	"	1915	48	107	3.3	1.98	359 ²

¹ Actual gauge height 3.30, gauge sunk 0.07 foot during the winter, thus making actual readings 0.07 too high.

² Actual gauge height 2.05.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHTS AND DISCHARGE of Bonaparte River, near Collins Ranch, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	1-03	70	1-03	70	1-03	70	1-38	164-5	3-08	841	2-83	651
2.	0-98	56	0-98	56	1-03	70	1-33	150-5	3-13	889	2-83	651
3.	0-98	56	0-98	56	1-03	70	1-33	150-5	2-93	717-5	2-78	622
4.	1-03	70	0-98	56	1-08	83	1-38	164-5	3-03	795	2-78	622
5.	1-08	83	0-98	56	1-08	83	1-38	164-5	3-13	889	2-78	622
6.	1-08	83	0-98	56	1-08	83	1-63	232-5	3-23	993-5	2-78	622
7.	1-13	96	0-98	56	1-08	83	1-68	246-5	3-33	1,109	2-78	622
8.	1-13	96	0-98	56	1-08	83	1-73	260-0	3-33	1,109	2-78	622
9.	1-08	83	0-98	56	1-13	96	1-78	273-5	3-43	1,232-5	2-73	597
10.	1-03	70	0-98	56	1-13	96	1-88	302	3-53	1,354	2-78	622
11.	1-13	96	0-98	56	1-18	110	1-93	317	3-63	1,482-5	2-83	651
12.	1-13	96	0-98	56	1-18	110	2-03	347	3-68	1,553-5	2-88	683
13.	1-13	96	0-98	56	1-18	110	2-13	377	3-73	1,625	2-93	717-5
14.	1-13	96	0-93	42-5	1-23	123	2-23	408	3-73	1,625	2-93	717-5
15.	1-08	83	0-93	42-5	1-28	137	2-43	475-5	3-83	1,768-5	2-98	753-5
16.	1-08	83	0-93	42-5	1-28	137	2-58	532	3-83	1,768-5	2-98	753-5
17.	1-18	110	0-93	42-5	1-33	130-5	2-68	573-5	3-73	1,625	2-83	651-0
18.	1-23	123	0-93	42-5	1-38	164-5	2-83	651	3-63	1,482-5	2-73	597
19.	1-13	96	0-93	42-5	1-38	164-5	2-83	651	3-53	1,354	2-63	552-5
20.	1-08	83	0-93	42-5	1-48	191-5	3-03	795	3-43	1,232-5	2-58	532
21.	1-08	83	0-93	42-5	1-53	205	2-83	651	3-23	993-5	2-53	512
22.	1-08	83	0-93	42-5	1-53	205	2-78	622	3-28	1,049-5	2-43	475-5
23.	1-08	83	0-93	42-5	1-48	191-5	2-78	622	3-28	1,049-5	2-43	475-5
24.	1-08	83	0-93	42-5	1-43	178-0	2-73	597	3-33	1,109	2-43	475-5
25.	1-08	83	0-98	56-0	1-33	150-5	2-73	597	3-28	1,049-5	2-48	493
26.	1-03	70	0-98	56-0	1-23	123	2-73	597	3-23	993-5	2-48	493
27.	1-03	70	0-98	56-0	1-33	150-5	2-73	597	3-18	940	2-48	493
28.	1-03	70	1-03	70	1-33	150-5	2-78	622	3-13	889	2-43	475-5
29.	1-03	70			1-38	164-5	2-83	651	3-03	795	2-43	475-5
30.	1-03	70			1-43	178	2-93	717-5	2-88	683	2-43	475-5
31.	1-03	70			1-43	178			2-83	651		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Bonaparte River, at Collins Ranch,
for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-38	458	1-53	205	0-98	56	1-13	96	1-03	70	1-13	96
2.....	2-33	440-5	1-48	191-5	0-98	56	1-08	83	1-03	70	1-13	96
3.....	2-28	423-5	1-43	178	0-93	42-5	1-08	83	1-03	70	1-13	96
4.....	2-23	408	1-38	164-5	0-93	42-5	1-08	83	1-03	70	1-13	96
5.....	2-18	392	1-33	150-5	0-93	42-5	1-08	83	1-08	83	1-13	96
6.....	2-13	377	1-33	150-5	0-93	42-5	1-08	83	1-08	83	1-13	96
7.....	2-08	362	1-28	137	0-93	42-5	1-08	83	1-08	83	1-13	96
8.....	2-03	347	1-28	137	0-98	56-0	1-08	83	1-08	83	1-23	103
9.....	1-98	332	1-23	123	0-98	56-0	1-08	83	1-08	83	1-28	137
10.....	1-93	317	1-23	123	0-93	42-5	1-13	96	1-03	70		
11.....	1-88	302	1-23	123	1-13	96	1-13	96	1-03	70		
12.....	1-83	288	1-23	123	1-08	83	1-13	96	1-03	70		
13.....	1-83	288	1-23	123	1-13	96	1-08	83	1-08	83		
14.....	1-78	273-5	1-18	110	1-13	96	1-08	83	1-08	83		
15.....	1-83	288	1-18	110	1-13	96	1-08	83	1-08	83		
16.....	1-78	273-5	1-18	110	1-18	110	1-03	70	1-08	83		
17.....	1-78	273-5	1-18	110	1-18	110	1-03	70	1-13	96		
18.....	1-73	260	1-18	110	1-23	123	1-03	70	1-13	96		
19.....	1-68	246-5	1-18	110	1-23	123	1-03	70	1-13	96		
20.....	1-73	260	1-13	96	1-28	137	1-03	70	1-13	96		
21.....	1-68	246-5	1-13	96	1-28	137	1-03	70	1-18	110		
22.....	1-68	246-5	1-13	96	1-23	123	1-03	70	1-18	110		
23.....	1-63	232-5	1-13	96	1-23	123	1-03	70	1-23	123		
24.....	1-63	232-5	1-08	83	1-18	110	1-03	70	1-23	123		
25.....	1-63	232-5	1-08	83	1-18	110	1-03	70	1-18	110		
26.....	1-68	246-5	1-08	83	1-13	96	1-03	70	1-18	110		
27.....	1-63	232-5	1-03	70	1-13	96	1-03	70	1-18	110		
28.....	1-63	232-5	1-03	70	1-13	96	1-03	70	1-18	110		
29.....	1-58	218-5	1-03	70	1-13	96	1-03	70	1-13	96		
30.....	1-58	218-5	0-98	56	1-13	96	1-03	70	1-13	96		
31.....	1-53	205-0	0-98	56			1-03	70				

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Bonaparte River at Collins Ranch, near Ashcroft, for 1914.

(Drainage area, 2,000 square miles.)

MONTH.	DISCHARGES IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	123	56.0	82.6	0.04	0.05	5,079
February.....	70	42.5	51.7	0.03	0.03	2,871
March.....	205	70	131.9	0.06	0.07	8,110
April.....	795	150.5	450.3	0.22	0.25	26,795
May.....	1,768.5	651	1,149.9	0.57	0.66	70,710
June.....	753.5	475.5	590.1	0.29	0.32	35,113
July.....	458	205	295.3	0.15	0.17	18,157
August.....	205	56	114.3	0.06	0.07	7,028
September.....	137	42.5	87.7	0.04	0.05	5,218
October.....	96	70	77.9	0.04	0.05	4,790
November.....	123	70	90.6	0.04	0.05	5,391
December.....	137	96	(for period)	Dec. 1 to Dec. 9.)		
The year.....	1,768.5	42.5	276 (estimated)	0.13 (estimated)	1.82 (estimated)	195,000 (estimated)

NOTE.—Winter conditions obtained after December 9.

Precipitation varies from a minimum of 5 to a maximum of 25 inches per annum. The low run-off "depth in inches on drainage area" seems to indicate high evaporation losses, and probably an over-estimate of the drainage area, which however, was taken from the best available map.

CRISS CREEK (2007).

Location.—Sec. 32, township 22, range 22, west 6th meridian.*Records Available.*—June 14 to September 14, 1912; April 22 to November 21, 1913; April 1 to December 9, 1914.*Drainage Area.*—One hundred and fifty square miles.*Gauge.*—Standard vertical staff gauge, read daily by W. J. Hoey.*Channel.*—The channel at measuring section is straight. Velocity is high. Bed of stream composed of gravel and boulders.*Winter Flow.*—Ice conditions exist on this stream during January, February, and part of March.*Accuracy.*—The accuracy of returns is considered to be very high. The curve is well rated, and results should be within 5 per cent.

DISCHARGE MEASUREMENTS of Criss Creek above Deadman River, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 24	C. B. Corbould	1673	32	77	5.34	2.05	412
July 10	C. B. Corbould	1915	23	29.5	0.83	0.35	24.5

Actual gauge height 2.10 gauge sunk .05 feet during winter, thus making actual reading .05 too high.

Actual gauge height 0.4.

See measurements 1913, Water Resources Paper No. 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoy's Ranch,
for 1914.

DAY.	APRIL.		MAY.		JUNE.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	0.25	18.3	1.45	165.8	1.25	117.0
2.....	0.25	18.3	1.75	265.0	1.25	117.0
3.....	0.25	18.3	1.95	360.8	1.30	127.5
4.....	0.55	29.0	2.15	471.5	1.30	127.5
5.....	0.65	34.8	2.25	532.5	1.25	117.0
6.....	0.95	64.2	2.15	471.5	1.25	117.0
7.....	1.00	71.0	2.10	443.0	1.35	140.0
8.....	1.05	79.2	1.95	360.8	1.45	165.8
9.....	1.10	87.5	1.95	360.8	1.55	194.0
10.....	1.10	87.5	1.95	360.8	1.75	265.0
11.....	1.15	97.0	1.85	309.5	1.85	309.5
12.....	1.25	117.0	1.75	265.0	1.85	309.5
13.....	1.25	117.0	1.75	265.0	1.75	265.0
14.....	1.25	117.0	1.85	309.5	1.65	227.0
15.....	1.25	117.0	1.95	360.8	1.55	194.0
16.....	1.35	140.0	2.25	532.5	1.50	179.0
17.....	1.35	140.0	2.15	471.5	1.45	165.8
18.....	1.35	140.0	2.05	415.2	1.35	140.0
19.....	1.45	165.8	1.95	360.8	1.25	117.0
20.....	1.45	165.8	1.95	360.8	1.25	117.0
21.....	1.45	165.8	1.85	309.5	1.25	117.0
22.....	1.35	140.0	1.85	309.5	1.25	117.0
23.....	1.25	117.0	1.95	360.8	1.15	97.0
24.....	1.25	117.0	1.85	309.5	1.15	97.0
25.....	1.25	117.0	1.75	265.0	1.05	79.2
26.....	1.25	117.0	1.65	227.0	1.05	79.2
27.....	1.25	117.0	1.65	227.0	0.95	64.2
28.....	1.25	117.0	1.60	209.0	0.95	64.2
29.....	1.25	117.0	1.55	194.0	0.95	64.2
30.....	1.25	117.0	1.45	165.8	0.95	64.2
31.....			1.35	140.0		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-90	57-5	0-05	13-0	-0-25	6-5	0-10	14-0	0-15	15-5	0-15	15-5
2	0-85	52-2	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
3	0-75	42-5	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
4	0-75	42-5	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
5	0-65	34-8	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
6	0-65	34-8	0-60	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
7	0-60	31-5	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
8	0-60	31-5	0-00	12-0	-0-25	6-5	0-15	15-5	0-15	15-5	0-15	15-5
9	0-45	24-5	0-00	12-0	-0-35	4-5	0-15	15-5	0-15	15-5	0-25	18-3
10	0-35	21-0	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
11	0-35	21-0	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
12	0-25	18-3	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
13	0-25	18-3	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
14	0-45	24-5	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
15	0-55	29-0	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
16	0-65	34-8	-0-05	10-8	-0-25	6-5	0-15	15-5	0-15	15-5		
17	0-75	42-5	-0-10	9-5	-0-15	8-5	0-20	17-0	0-15	15-5		
18	0-75	42-5	-0-10	9-5	-0-05	10-8	0-20	17-0	0-15	15-5		
19	0-55	29-0	-0-10	9-5	-0-05	10-8	0-15	15-5	0-15	15-5		
20	0-45	24-5	-0-10	9-5	0-00	12-0	0-15	15-5	0-15	15-5		
21	0-35	21-0	-0-15	8-5	0-05	13-0	0-15	15-5	0-15	15-5		
22	0-25	18-3	-0-05	10-8	0-05	13-0	0-15	15-5	0-15	15-5		
23	0-15	15-5	-0-05	10-8	0-15	15-5	0-15	15-5	0-15	15-5		
24	0-15	15-5	-0-15	8-5	0-25	18-3	0-15	15-5	0-15	15-5		
25	0-15	15-5	-0-20	7-5	0-25	18-3	0-15	15-5	0-15	15-5		
26	0-10	14-0	-0-25	6-5	0-25	18-3	0-15	15-5	0-15	15-5		
27	0-10	14-0	-0-25	6-5	0-25	18-3	0-15	15-5	0-15	15-5		
28	0-10	14-0	-0-25	6-5	0-35	21-0	0-15	15-5	0-15	15-5		
29	0-10	14-0	-0-2	6-5	0-35	21-0	0-15	15-5	0-15	15-5		
30	0-05	13-0	-0-25	6-5	0-35	21-0	0-15	15-5	0-15	15-5		
31	0-05	13-0	-0-25	6-5			0-15	15-5				

MONTHLY DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	165-8	18-3	102-2	0-7	0-8	6,081
May	532-5	140	327-7	2-2	2-5	20,149
June	309-5	64-2	145	0-90	1-07	8,628
July	57-5	13-0	26-0	0-18	0-20	1,636
August	13-0	6-5	9-9	0-07	0-08	609
September	21-0	4-5	10-7	0-07	0-08	618
October	17-0	14-0	15-5	0-1	0-1	953
November	15-5	15-5	15-5	0-1	0-1	922
December	18-3	15-5	(for period Dec. 1 to Dec. 9)			
The period	532-5	4-5	81-6	0-55	4-93	39,616

NOTE.—Winter conditions prevailed after December 9. No precipitation records are available for the Criss Creek valley. From the general situation and contour of the drainage basin it is thought that climatic conditions are similar to those of Kamloops, where the mean annual precipitation is 10-3 inches.

Officials of the Dominion Forestry Branch state that Criss creek actually rises from Sitkwhun kun mountain, at a point where government maps show Tranquillo river flowing. If this is verified by later surveys the drainage area of Criss creek shown above (150 square miles) will be much smaller than the actual drainage area of the stream.

COLDWATER RIVER (2006).

Location.—At Merritt, Water District No. 3.

Records Available.—April 17 to August 31, 1913; April 1 to December 6, 1914.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—It is a vertical staff gauge, and is read daily by J. Skimming.

Channel.—The stream is from 50 to 75 feet wide; velocities are medium. Bed of stream is rocky and permanent.

Discharge Measurements.—Are made by wading during low water, and from traffic bridge at high water.

Winter Flow.—Ice conditions exist on this river during January and February.

Accuracy.—Measurements on July 29 appears to indicate that channel shifted during summer of 1914. Results are therefore subject to inaccuracy.

DISCHARGE MEASUREMENTS of Coldwater River at Merritt, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq.-ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 12.....	E. M. Dann & K. G. Chisholm.....	1505	47	73.4	1.11	1.62	81.3
May 2.....	do do ..	1505	68	244.0	5.86	3.27	1,459.0
July 8.....	do do ..	1505	62	151.0	2.78	1.69	420.0
July 29.....	C. B. Corbould.....	1915	56	90.6	0.96	0.85	87.5

For further metering, see Water Resources Paper No. 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater near Merritt, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-25	2	2-60	985	3-10	1,340
2	0-27	3	3-15	1,375	3-7	1,775
3	0-30	4	3-80	1,845	3-70	1,775
4	0-42	9	3-45	1,592	3-00	1,265
5	1-57	345	3-05	1,302	2-55	952
6	1-87	510	2-82	1,125	2-30	790
7	2-00	600	2-70	1,055	2-15	692
8	2-13	692	2-72	1,055	2-07	630
9	2-27	757	3-07	1,302	2-10	660
10	2-40	855	3-57	1,665	2-10	660
11	2-47	887	3-50	1,630	2-25	757
12	2-60	985	3-55	1,665	2-40	835
13	2-67	1,020	3-70	1,775	2-70	1,035
14	2-90	1,195	4-10	2,065	2-90	1,195
15	3-00	1,265	4-40	2,285	3-05	1,302
16	3-05	1,302	4-10	2,065	3-30	1,480
17	2-75	1,090	3-60	1,700	3-30	1,480
18	2-55	952	3-50	1,630	3-00	1,265
19	2-55	952	3-25	1,445	2-70	1,055
20	2-67	1,020	3-25	1,445	2-45	887
21	2-57	952	3-35	1,517	2-15	692
22	2-47	887	3-45	1,592	2-00	600
23	2-40	855	3-70	1,775	1-80	480
24	2-32	790	3-85	1,880	1-92	540
25	2-27	757	3-50	1,630	2-20	725
26	2-25	757	3-05	1,302	2-10	660
27	2-25	757	2-75	1,090	2-12	660
28	2-20	725	2-55	952	2-02	600
29	2-15	692	2-35	822	2-15	692
30	2-27	757	2-35	822	2-30	790
31			2-60	985		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater River near Merritt, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-20	725	0-75	46	0-45	12	0-67	31	3-00	1,265	1-35	247
2	2-30	793	0-75	46	0-45	12	0-65	31	1-80	480	1-25	202
3	2-27	757	0-70	38	0-45	12	0-65	31	1-50	320	1-25	202
4	2-20	725	0-70	38	0-49	9	0-65	31	1-50	320	1-15	159
5	1-9	540	0-70	38	0-49	9	0-65	31	1-60	370	1-15	159
6	1-80	480	0-70	38	0-40	9	0-65	31	1-45	295	1-10	138
7	1-65	397	0-70	38	0-40	9	0-65	31	1-25	202		
8	1-62	370	0-70	38	0-40	9	0-60	25	1-20	180		
9	1-60	370	0-70	38	0-40	9	0-60	25	1-45	295		
10	1-62	370	0-65	31	0-42	9	0-60	25	1-45	295		
11	1-60	370	0-65	31	0-45	12	0-60	25	1-35	247		
12	1-50	323	0-65	31	0-50	15	0-70	38	1-40	270		
13	1-45	293	0-60	25	0-50	15	0-70	38	1-30	225		
14	1-45	293	0-61	23	0-55	21	0-70	38	1-30	225		
15	1-40	270	0-61	23	0-60	25	0-70	38	1-30	225		
16	1-32	225	0-60	25	0-60	25	0-65	31	1-10	138		
17	1-30	225	0-55	20	0-60	31	0-65	31				
18	1-30	225	0-55	20	0-70	38	0-10	0				
19	1-20	180	0-55	20	0-70	38	0-15	0				
20	1-20	180	0-55	20	1-10	138	1-10	138				
21	1-10	138	0-50	15	1-60	102	0-15	0				
22	1-00	102	0-50	15	0-90	77	0-90	89				
23	1-00	102	0-50	15	0-85	66	0-85	66				
24	1-00	102	0-50	15	0-80	55	0-85	66				
25	1-00	102	0-50	15	0-80	55	0-83	66	1-40	270		
26	1-00	102	0-50	15	0-75	46	0-90	77	1-70	425		
27	0-90	77	0-47	12	0-70	38	0-85	66	1-60	370		
28	0-90	77	0-40	12	0-67	31	0-85	66	1-60	370		
29	0-80	55	0-45	12	0-70	38	0-80	55	1-40	270		
30	0-80	55	0-45	12	0-70	38	0-80	55	1-35	247		
31	0-80	55	0-45	12			1-60	102				

MONTHLY DISCHARGE of Coldwater River at Merritt, for 1914.

(Drainage area, 260 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
April	1,302	2	745.8	2.1	2.3	44,378
May	2,285	822	1,463.6	4.1	4.7	119,993
June	1,775	480	943.6	2.6	2.9	56,148
July	790	55	292.8	0.8	0.9	18,003
August	46	12	25.2	0.07	0.08	1,549
September	138	9	33.4	0.1	0.1	1,987
October	128	0	44.4	0.1	0.1	2,730
November	1,565	138	332.0	0.9	1.0	19,755
December	247	138				
The period..	2,285	0	485.1	1.34	12.08	234,543

NOTE.—Winter conditions prevailed after December 6.

No records of precipitation are available for the drainage basin of the Coldwater river. The precipitation at Nicola lake (similar climate to Merritt) is 10.66 inches (mean annual). It must be noted, however, that the Coldwater river rises in the same hills from which the Coquihalla is fed, and the precipitation in the hills is many times that in the lower reaches of the Coldwater.

SESSIONAL PAPER No. 25e

DEADMAN RIVER (2008).

Location.—Section 15, township 22, Range 22, west 6th meridian.

Records Available.—April 22 to November 21, 1913; April 1 to December 9, 1914.

Drainage Area.—300 square miles.

Gauge.—Standard staff gauge read daily by J. Hoey.

Channel.—Channel is straight and control is good. Velocity is high only at high water.

Discharge Measurements.—Curve is well defined with ten measurements at varying stages.

Winter Flow.—Ice conditions exist on this river during January, February, and March.

Accuracy.—Accuracy is considered very high, and results should fall within five per cent.

DISCHARGE MEASUREMENTS of Deadman River near Savona, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 24	C. B. Corbould	1,673	32.0	83.0	3.36	3.4	278.0 ¹
July 10	"	1,915	24.0	29.8	1.45	1.6	43.5

¹Measurements from bridge, high-water section.
See measurements, 1913, Water Resources Paper No. 8.

DAILY GAUGE HEIGHT AND DISCHARGE OF DEADMAN RIVER ABOVE CRISS CREEK,
for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-20	23-0	3-40	245-0	2-60	122-5
2	1-30	27-5	3-50	267-5	2-60	122-5
3	1-30	27-5	3-70	321-5	2-50	110-5
4	1-30	27-5	3-90	389-0	2-40	100-0
5	1-30	27-5	4-10	472-5	2-40	100-0
6	1-30	27-5	4-30	562-5	2-40	100-0
7	1-40	32-5	4-30	562-5	2-50	110-5
8	1-40	32-5	4-30	562-5	2-40	100-0
9	1-60	42-5	4-20	517-5	2-40	100-0
10	1-80	53-5	4-10	472-5	2-40	100-0
11	1-90	59-5	4-10	472-5	2-40	100-0
12	2-20	81-0	4-10	472-5	2-40	100-0
13	2-50	110-5	4-10	472-5	2-40	100-0
14	2-70	135-0	4-20	517-5	2-40	100-0
15	3-10	191-0	4-30	562-5	2-45	105-2
16	3-30	225-0	4-20	517-5	2-50	110-5
17	3-40	245-0	4-15	495-0	2-50	110-5
18	3-50	267-5	4-10	472-5	2-50	110-5
19	3-50	267-5	3-90	389-0	2-40	100-0
20	3-50	267-5	3-80	353-0	2-40	100-0
21	3-40	245-0	3-70	321-5	2-30	89-5
22	3-40	245-0	3-50	267-5	2-30	89-5
23	3-40	245-0	3-40	245-0	2-20	81-0
24	3-40	245-0	3-30	225-0	2-10	73-0
25	3-40	245-0	3-20	207-5	2-10	73-0
26	3-40	245-0	3-00	176-0	2-10	73-0
27	3-40	245-0	3-00	176-0	2-10	73-0
28	3-40	245-0	2-90	161-5	2-20	81-0
29	3-40	245-0	2-80	147-5	2-20	81-0
30	3-40	245-0	2-70	135-0	2-20	81-0
31	...	...	2-70	135-0	...	...

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Deadman River above Criss Creek, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-20	81-0	2-00	66-0	1-50	37-5	0-95	11-0	0-90	9-0	0-90	9-0
2	2-10	73-0	1-90	59-5	1-50	37-5	0-90	9-0	0-90	9-0	0-90	9-0
3	2-00	66-0	1-80	53-5	1-50	37-5	0-90	9-0	0-90	9-0	0-90	9-0
4	2-00	66-0	1-60	42-5	1-45	35-0	0-90	9-0	1-00	13-0	0-90	9-0
5	1-90	59-5	1-60	42-5	1-45	35-0	0-90	9-0	1-00	13-0	0-90	9-0
6	1-90	59-5	1-80	53-5	1-40	32-5	0-90	9-0	1-00	13-0	0-90	9-0
7	1-80	53-5	1-80	53-5	1-40	32-5	0-90	9-0	1-00	13-0	0-90	9-0
8	1-70	48-0	1-90	59-5	1-40	32-5	0-90	9-0	1-00	13-0	0-90	9-0
9	1-70	48-0	2-00	66-0	1-30	27-5	0-90	9-0	1-00	13-0	0-90	9-0
10	1-60	42-5	2-00	66-0	1-30	27-5	0-90	9-0	1-00	13-0		
11	1-60	42-5	2-00	66-0	1-30	27-5	0-90	9-0	1-00	13-0		
12	1-50	37-5	2-00	66-0	1-30	27-5	0-90	9-0	1-00	13-0		
13	1-50	37-5	2-00	66-0	1-30	27-5	0-90	9-0	1-00	13-0		
14	1-50	37-5	1-90	59-5	1-30	27-5	0-90	9-0	1-00	13-0		
15	1-70	48-0	1-90	59-5	1-30	27-5	0-90	9-0	1-00	13-0		
16	1-70	48-0	1-90	59-5	1-25	25-2	0-90	9-0	1-00	13-0		
17	1-70	48-0	1-80	53-5	1-25	25-2	0-90	9-0	1-00	13-0		
18	1-80	53-5	1-80	53-5	1-20	23-0	0-90	9-0	0-95	11-0		
19	1-80	53-5	1-80	53-5	1-20	23-0	0-90	9-0	0-95	11-0		
20	1-90	59-5	1-80	53-5	1-20	23-0	0-90	9-0	0-95	11-0		
21	2-00	66-0	1-80	53-5	1-20	23-0	0-90	9-0	0-95	11-0		
22	2-00	66-0	1-80	53-5	1-20	23-0	0-90	9-0	0-90	9-0		
23	1-90	59-5	1-70	48-0	1-20	23-0	0-90	9-0	0-90	9-0		
24	1-80	53-5	1-70	48-0	1-10	18-0	0-90	9-0	0-90	9-0		
25	1-80	53-5	1-70	48-0	1-10	18-0	0-90	9-0	0-90	9-0		
26	1-80	53-5	1-70	48-0	1-00	13-0	0-90	9-0	0-90	9-0		
27	1-80	53-5	1-70	48-0	1-00	13-0	0-90	9-0	0-90	9-0		
28	1-80	53-5	1-65	45-2	0-95	11-0	0-90	9-0	0-90	9-0		
29	1-80	53-5	1-60	42-5	0-95	11-0	0-90	9-0	0-90	9-0		
30	1-80	53-5	1-60	42-5	0-95	11-0	0-90	9-0	0-90	9-0		
31	1-80	53-5	1-60	42-5			0-90	9-0				

MONTHLY DISCHARGE of Deadman River above Criss Creek, for 1914.

(Drainage area, 300 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				Run-Orr.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	267-5	23-0	154-0	0-51	0-57	9,164
May	562-5	135-0	361-0	1-20	1-40	22,381
June	122-5	73-0	96-0	0-32	0-36	5,748
July	81-0	37-5	54-3	0-18	0-21	3,530
August	66-0	42-5	54-0	0-18	0-21	3,320
September	37-5	11-0	25-0	0-08	0-09	1,488
October	11-0	9-0	9-1	0-03	0-03	559
November	13-0	9-0	11-1	0-04	0-05	660
December	9-0	9-0	(For period Dec 1 to 1) 9-1			
The period	562-5	9-0	96-0	0-32	2-92	46,659

Note.—Winter conditions prevailed after December 9.

FRASER RIVER AT LYTTON (2012).

Location.—Section 1, township 15, range 27, west 6th meridian.

Records Available.—February 20 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Sixty-three thousand square miles.

Gauge.—Gauge painted on rock, and read daily by J. Clark.

Channel.—The channel varies in width from 200 feet at low water to 800 feet at high water. The flow is uniform, but velocities are very high during high water.

Discharge Measurements.—The curve is well defined, from 11,562 second feet to 162,000 second feet; above this the curve has been projected.

Winter Flow.—Open flow throughout the year.

Accuracy.—Conditions for gauge readings are good. Meterings are taken from ferry boat, but should be very accurate except at extreme high water. The results are considered to fall within 10 per cent of true accuracy.

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	10-0	13,000	11-0	16,500	11-0	16,500	10-0	13,000	.....	.....	28-3	119,800
2.	10-5	14,750	10-5	14,750	11-0	16,500	10-0	13,000	.....	.....	27-9	117,375
3.	11-5	18,500	10-0	13,000	11-0	16,500	10-0	13,000	.....	.....	27-7	116,125
4.	12-0	20,500	9-5	11,250	11-0	16,500	10-5	14,750	.....	.....	28-65	121,900
5.	12-5	23,000	9-0	9,500	10-5	14,750	.....	.....	10-5	14,750	29-9	129,400
6.	12-0	20,500	9-0	9,500	10-5	14,750	.....	.....	11-0	16,500	31-0	136,250
7.	12-0	20,500	9-5	11,250	10-5	14,750	.....	.....	11-0	16,500	32-0	142,500
8.	12-0	20,500	11-0	16,500	10-0	13,000	.....	.....	10-5	14,750	32-1	143,100
9.	12-0	20,500	11-5	18,500	11-0	16,500	.....	.....	10-0	13,000	31-4	138,750
10.	11-0	16,500	11-5	18,500	10-0	13,000	.....	.....	11-0	16,500	31-5	139,375
11.	10-5	14,750	12-0	20,500	10-0	13,000	.....	.....	12-0	20,500	31-7	140,625
12.	11-5	18,500	12-0	20,500	10-0	13,000	.....	.....	12-5	23,000	31-5	139,375
13.	11-5	18,500	13-0	25,500	10-0	13,000	.....	.....	13-0	25,500	31-6	140,000
14.	11-0	16,500	13-0	25,500	10-5	14,750	.....	.....	13-5	28,500	31-8	141,250
15.	10-0	13,000	14-0	31,500	11-5	18,500	.....	.....	15-0	37,500	32-6	146,100
16.	10-0	13,000	14-0	31,500	11-0	16,500	.....	.....	16-5	47,000	34-5	157,625
17.	9-5	11,250	13-5	28,500	11-0	16,500	.....	.....	19-0	62,500	36-1	167,600
18.	10-0	13,000	13-0	25,500	12-0	20,500	.....	.....	.....	.....	37-7	177,200
19.	10-0	13,000	12-0	20,500	12-0	20,500	.....	.....	.....	.....	39-2	186,200
20.	10-0	13,000	12-0	20,500	12-5	23,000	.....	.....	.....	.....	39-8	189,800
21.	9-5	11,250	12-0	20,500	13-0	25,500	.....	.....	28-2	119,200	39-9	190,400
22.	9-5	11,250	11-5	18,500	13-5	28,500	.....	.....	28-5	121,000	37-6	176,600
23.	10-0	13,000	11-0	16,500	13-0	25,500	.....	.....	28-6	121,600	35-3	162,625
24.	9-0	9,500	11-0	16,500	13-0	25,500	.....	.....	29-0	124,000	34-2	155,750
25.	9-0	9,500	11-0	16,500	13-0	25,500	.....	.....	29-2	125,200	33-8	153,300
26.	9-0	9,500	11-5	18,500	12-0	20,500	.....	.....	31-0	136,250	32-8	147,300
27.	9-0	9,500	12-0	20,500	12-0	20,500	.....	.....	31-3	138,125	32-3	144,300
28.	9-5	11,250	11-0	16,500	11-0	16,500	.....	.....	32-5	145,500	31-3	138,125
29.	10-0	13,000	.....	.....	11-0	16,500	.....	.....	31-5	139,375	31-2	137,500
30.	10-0	13,000	.....	.....	11-0	16,500	.....	.....	30-3	131,875	32-3	144,300
31.	11-0	16,500	.....	.....	11-0	16,500	.....	.....	29-6	127,600	.....	.....

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	33.6	152,100	27.2	113,000	19.8	67,300	17.5	153,000	14.5	34,500	14.6	35,100
2	33.9	153,900	26.4	108,000	19.4	64,900	17.4	152,400	14.1	32,100	14.6	35,100
3	34.5	157,625	25.8	104,250	19.2	63,700	17.5	53,000	13.6	29,100	14.1	32,100
4	35.0	160,750	25.5	102,375	19.1	63,100	17.0	50,000	14.2	32,700	13.6	29,100
5	35.5	163,875	25.3	101,125	18.5	59,250	16.5	47,000	14.3	33,300	13.0	25,500
6	35.8	165,750	25.3	101,125	18.4	58,600	16.2	45,200	14.2	32,700	13.0	25,500
7	35.0	160,750	25.4	101,750	18.3	57,950	15.2	38,800	14.5	34,500	12.9	25,000
8	34.8	159,500	25.2	100,500	18.3	57,950	14.7	35,700	14.8	36,300	12.5	23,000
9	33.5	151,500	25.1	99,875	18.1	56,650	14.5	34,500	14.3	33,300	12.0	20,500
10	32.8	147,300	24.6	96,750	18.1	56,650	14.5	34,500	13.5	28,500	12.0	20,500
11	32.4	144,900	24.2	94,250	18.6	59,900	14.5	34,500	13.0	25.500	11.7	19,300
12	32.3	144,300	24.2	94,250	18.5	59,250	14.2	32,700	13.1	26,100	11.1	16,900
13	32.5	145,500	24.1	93,625	18.4	58,600	14.5	34,500	13.4	27,900	11.2	17,300
14	32.6	146,100	23.6	90,500	18.2	57,300	14.9	36,900	13.4	27,900	11.0	16,500
15	32.8	147,300	23.1	87,375	18.3	57,950	15.6	41,400	13.0	25,500	10.9	16,150
16	32.6	146,100	23.0	86,750	18.1	56,650	16.6	47,600	13.0	25,500	10.8	15,800
17	32.6	146,100	22.6	84,250	18.0	56,000	17.2	51,200	12.7	24,000	10.9	16,150
18	32.5	145,500	22.2	81,750	17.8	54,800	17.5	53,000	12.5	23,000	10.7	15,450
19	32.2	143,700	21.7	78,700	17.5	53,000	17.8	54,800	12.6	23,500	10.7	15,450
20	31.7	140,625	21.6	78,100	17.3	51,800	17.8	54,800	13.3	27,300	10.6	15,100
21	31.1	136,875	21.6	78,100	16.9	49,400	17.9	55,400	13.8	30,300	10.9	16,150
22	30.5	133,125	21.6	78,100	16.8	48,800	17.5	53,000	14.4	33,900	11.1	16,900
23	30.1	130,625	21.6	78,100	16.5	47,000	17.2	51,200	14.5	34,500	11.4	18,100
24	31.2	137,500	21.5	77,500	16.5	47,000	17.0	50,000	14.2	32,700	12.1	21,000
25	33.2	149,700	21.4	76,900	16.9	49,400	16.5	47,000	14.0	31,500	12.3	22,000
26	34.1	155,125	21.3	76,300	17.2	51,200	15.8	42,700	13.8	30,300	12.8	24,500
27	31.4	138,750	21.2	75,700	17.8	54,800	15.2	38,800	13.6	29,100	12.8	24,500
28	29.8	128,800	20.5	71,500	18.1	56,650	14.7	35,700	13.8	30,300	13.1	26,100
29	29.4	126,400	20.3	70,300	18.0	56,000	14.5	34,500	14.4	33,900	13.2	26,700
30	29.0	124,000	20.0	68,500	17.7	54,200	14.1	32,100	14.3	33,300	13.0	25,500
31	28.3	119,800	19.6	66,100			14.3	33,300			12.9	25,000

For further meter measurements see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of FRASER River at Lytton-above confluence with the Thompson river, for 1914.

(Drainage area, 63,000 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	23,000	9,500	14,839	0.2	0.2	912,418
February	31,500	9,500	19,044	0.3	0.3	1,057,664
March	28,500	13,000	18,048	0.3	0.3	1,109,676
April	14,750	13,000	13,000	(for period April 1 to April 4.)		
May	145,500	14,750	73,592	1.2	1.4	4,525,004
June	190,400	116,125	148,018	2.3	2.6	8,808,062
July	165,750	119,800	145,286	2.3	2.6	8,933,446
August	113,000	66,100	87,593	1.4	1.6	5,385,873
September	67,300	47,000	56,191	0.9	1.0	3,343,569
October	55,400	32,100	43,845	0.7	0.8	2,695,945
November	36,300	23,000	30,100	0.5	0.6	1,791,100
December	35,100	15,100	21,998	0.3	0.3	1,352,578
The year	190,400	9,500	56,000	0.88 (estimated)	11.9	40,800,000 (estimated)

NOTE.—The gauge reader at this station, Chas. Lual, was drowned early in April, and it was nearly a month before a suitable gauge reader could be procured to take his place. Consequently, flow records for the greater part of April must remain blank.

The mean annual precipitation at Quesnel is given as 13.23 inches (Meteorological Service, Department of Marine and Fisheries). This is probably somewhat less than the mean annual precipitation over the whole drainage area of the Fraser.

HAT CREEK, ABOVE HAMMOND'S DIVERSION (2016).

Location.—Section 18, township 19, range 26, west 6th meridian: At Colley's ranch, just above the Hammond diversion.

Records Available.—April 22, 1911, to December 31, 1911; January 1, 1912, to November 18, 1912; April 30, 1913, to December 31, 1913; April 1, 1914, to November 30, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read daily by Thos. King,

Channel.—The channel is 12 to 14 feet in width and is straight above and below the gauge; the control is good.

Discharge Measurements.—Well-distributed meterings have been obtained covering the stream's range. Meterings were mostly made in the box flume above the Hammond diversion weir.

Winter Flow.—Stream is sometimes open during winter months. Snow-fall is about 4 feet per annum, and rainfall probably 10 to 12 inches, bringing the total precipitation up to 14 to 16 inches, annually.

Accuracy.—Conditions for metering are good and gauge readings are carefully taken. Accuracy is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Hat Creek above Hammond's Diversion, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 8	C. B. Corbould	1,915	14.5	11.4	1.6	0.4	18.2

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hat Creek near Hammond's Div.,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-08	2-0	0-73	28-6	1-08	51-0
2	0-07	1-7	0-95	41-7	1-08	51-0
3	0-08	2-0	0-83	34-3	0-93	40-5
4	0-10	2-5	0-68	26-0	0-93	40-5
5	0-09	2-2	0-61	22-5	0-93	40-5
6	0-16	4-0	0-73	28-6	0-83	34-3
7	0-12	3-0	0-73	28-6	0-83	34-3
8	0-28	7-8	0-78	31-4	0-83	34-3
9	0-33	9-7	0-83	34-3	0-83	34-3
10	0-28	7-8	0-98	43-7	0-83	34-3
11	0-33	9-7	1-13	55-2	0-83	34-3
12	0-26	7-1	1-13	55-2	0-88	37-3
13	0-33	9-7	1-20	61-5	0-93	40-5
14	0-26	7-1	1-38	83-3	0-93	40-5
15	0-33	9-7	1-30	72-5	0-95	41-7
16	0-28	7-8	1-23	64-8	0-93	40-5
17	0-35	10-5	1-13	55-2	0-93	40-5
18	0-33	9-7	1-00	45-0	0-83	34-3
19	0-43	13-8	0-93	40-5	0-80	32-5
20	0-38	11-7	0-93	40-5	0-73	28-6
21	0-45	14-8	1-13	55-2	0-73	28-6
22	0-41	13-0	1-13	55-2	0-71	27-5
23	0-43	13-8	1-28	70-3	0-68	26-0
24	0-41	13-0	1-23	64-8	0-68	26-0
25	0-43	13-8	1-08	51-0	0-68	26-0
26	0-41	13-0	1-03	47-2	0-63	23-5
27	0-43	13-8	1-03	47-2	0-63	23-5
28	0-48	16-1	1-03	47-2	0-63	23-5
29	0-46	15-2	0-93	40-5	0-63	23-5
30	0-55	19-5	0-83	34-3	0-60	22-0
31			0-98	43-7		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hat Creek near Hammond's Div.,
for 1914.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-58	21-0	0-21	5-3	0-10	2-5	0-13	3-3	0-13	3-3		
2	0-55	19-5	0-18	4-5	0-10	2-5	0-13	3-3	0-13	3-3		
3	0-53	18-5	0-18	4-5	0-09	2-2	0-13	3-3	0-13	3-3		
4	0-53	18-5	0-18	4-5	0-09	2-2	0-13	3-3	0-13	3-3		
5	0-52	18-0	0-18	4-5	0-08	2-0	0-13	3-3	0-13	3-3		
6	0-48	16-1	0-13	3-3	0-08	2-0	0-13	3-3	0-11	2-8		
7	0-48	16-1	0-13	3-3	0-08	2-0	0-13	3-3	0-11	2-8		
8	0-43	13-8	0-15	3-7	0-11	2-8	0-13	3-3	0-13	3-3		
9	0-43	13-8	0-13	3-3	0-12	3-0	0-13	3-3	0-11	2-8		
10	0-38	11-7	0-13	3-3	0-13	3-3	0-13	3-3	0-11	2-8		
11	0-38	11-7	0-13	3-3	0-13	3-3	0-15	3-7	0-11	2-8		
12	0-38	11-7	0-13	3-3	0-13	2-8	0-15	3-7	0-11	2-8		
13	0-38	11-7	0-13	3-3	0-13	3-3	0-15	3-7	0-11	2-8		
14	0-33	9-7	0-13	3-3	0-13	3-3	0-13	3-3	0-11	2-8		
15	0-33	9-7	0-13	3-3	0-13	3-3	0-13	3-3	0-11	2-8		
16	0-33	9-7	0-13	3-3	0-14	3-5	0-13	3-3	0-11	2-8		
17	0-33	9-7	0-13	3-3	0-13	3-3	0-14	3-5	0-11	2-8		
18	0-33	9-7	0-13	3-3	0-23	6-0	0-13	3-3	0-11	2-8		
19	0-33	9-7	0-13	3-3	0-23	6-0	0-14	3-5	0-11	2-8		
20	0-33	9-7	0-12	3-0	0-21	5-3	0-13	3-3	0-11	2-8		
21	0-33	9-7	0-12	3-0	0-13	3-3	0-13	3-3	0-11	2-8		
22	0-28	7-8	0-12	3-0	0-13	3-3	0-13	3-3	0-11	2-8		
23	0-25	6-8	0-12	3-0	0-13	3-3	0-13	3-3	0-13	3-3		
24	0-25	6-8	0-12	3-0	0-13	3-3	0-13	3-3	0-15	3-7		
25	0-25	6-8	0-12	3-0	0-13	3-3	0-13	3-3	0-15	3-7		
26	0-23	6-0	0-12	3-0	0-13	3-3	0-13	3-3	0-13	3-3		
27	0-23	6-0	0-12	3-0	0-13	3-3	0-13	3-3	0-13	3-3		
28	0-23	6-0	0-12	3-0	0-13	3-3	0-13	3-3	0-13	3-3		
29	0-23	6-0	0-10	2-5	0-11	2-8	0-13	3-3	0-13	3-3		
30	0-23	6-0	0-10	2-5	0-13	3-3	0-13	3-3	0-13	3-3		
31	0-21	5-3	0-10	2-5			0-13	3-3				

MONTHLY DISCHARGE of Hat Creek above Hammond's Diversion, for 1914.

(Drainage area, 47 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	19-5	1-7	9-5	0-2	0-2	565
May	83-3	22-5	46-8	1-0	1-1	2,878
June	51-0	22-0	33-9	0-7	0-8	2,017
July	21-0	5-3	11-1	0-2	0-3	680
August	5-3	2-5	3-4	0-07	0-08	2-9
September	6-0	2-0	3-2	0-07	0-08	190
October	3-7	3-3	3-4	0-07	0-08	269
November	3-7	2-8	3-1	0-06	0-07	184
The period	83-3	1-7	14-3	0-30	2-71	6,932

NOTE.—Ice conditions prevailed early in December, when Hat creek was discharging practically no water.

No precipitation records are available for the Hat Creek drainage basin. The mean annual precipitation at Ashcroft is very low—about 5 inches per annum. The precipitation over the Upper Hat Creek valley is, however, considerably in excess of this amount.

SESSIONAL PAPER No. 25e

NAHATLATCH RIVER, UPPER (2028).

Location.—Section 14, township 12, range 27, west 6th meridian.*Records Available.*—February 26 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.*Drainage Area.*—Three hundred square miles.*Gauge.*—Standard chain gauge, read weekly by Chas. Nicholson.*Channel.*—The channel is straight at measuring section. Velocities are fairly high.*Discharge Measurements.*—Discharge measurements are made from cable car, and curve has been well defined at varying stages.*Winter Flow.*—Open water conditions prevailed throughout the winter.*Accuracy.*—The accuracy of results will eventually be high. The present results should fall well within 15 per cent.

DISCHARGE MEASUREMENTS of Nahatlatch (Upper) River near Keefers, B.C., for 1914.

Date	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 20.	K. G. Chisholm.	1,055	111	793	4.35	8.55	3,452
" 30.	E. M. Dann and K. G. C.	1,055	116	627	3.60	6.70	2,255

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1									8-15	3,725		
2			6-00	1,660								
3												
4	10-0	5,900					4-95	1,035				
5												
6					4-50	820					4-90	1,010
7												
8									6-10	1,730		
9			5-50	1,340								
10												
11	8-90	4,550					4-60	865				
12												
13					4-20	690					4-10	650
14												
15									5-30	1,225		
16			6-10	1,730								
17												
18							8-50	4,110				
19	8-30	3,890										
20					6-00	1,660					4-10	650
21												
22									5-00	1,160		
23			5-60	1,400								
24												
25							5-50	1,340				
26	6-50	2,050									3-90	570
27					5-60	1,400						
28									6-00	1,660		
29												
30			5-50	1,340								
31												

MONTHLY DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.

(Drainage area, 300 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	990	556	800	2.7	3.1	49,190
February	549	408	479	1.6	1.7	26,662
March	1,208	437	753.8	2.5	2.9	46,349
April	2,131	955	1,509.2	5.2	5.8	93,373
May	5,760	2,230	3,654.6	12.2	14.1	224,711
June	4,110	2,810	3,675	12.2	13.6	218,080
July	5,900	2,050	4,497	13.7	15.8	251,967
August	1,730	1,340	1,494	5.0	5.8	91,864
September	1,660	690	1,142	3.8	4.2	67,950
October	4,110	865	1,837	6.1	7.0	112,954
November	3,725	1,100	1,900	6.3	7.0	113,058
December	1,010	570	720	2.4	2.8	44,271
The year	5,000	409	1,843	6.14	83.8	1,340,969

NOTE.—Precipitation above the upper station is probably about 70 to 80 inches in normal years. The fact that the "depth in inches on drainage area" for 1914 is 83.8 seems to indicate either an unusually large rainfall or that the drainage area given (300 square miles) is somewhat too small.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C.,
for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			3-95	2,185					6-00	4,205		
2												
3												
4	8-20	6,570					2-45	1,042				
5												
6					2-10	835					2-40	1,010
7												
8									3-90	2,140		
9			3-20	1,560								
10												
11	7-00	5,255					2-20	890				
12												
13					1-80	655					1-60	600
14												
15									3-00	1,420		
16			3-80	2,050								
17												
18							6-40	4,625				
19	6-10	4,310										
20					3-20	1,560					1-60	600
21												
22									2-60	1,140		
23			3-20	1,560								
24												
25							3-20	1,560				
26	4-30	2,500									1-50	555
27					3-00	1,420						
28									3-80	2,050		
29			3-00	1,420								
30												
31												

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of Nahatlatch (Lower) River at Keefers, B.C. for 1914.

(Drainage area, 400 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	1,140	600	836	2-1	2-4	51,446
February	520	310	395	1-0	1-0	21,937
March	1,385	410	784	2-0	2-3	48,206
April	2,500	1,140	1,910	4-8	5-3	113,650
May	6,570	2,880	4,609	11-5	13-3	283,404
June	5,255	3,365	4,572	11-4	12-7	272,080
July	6,570	2,500	4,659	11-6	13-4	286,469
August	2,185	1,420	1,755	4-4	5-1	107,910
September	1,560	085	1,125	2-8	3-1	66,940
October	4,625	890	2,029	5-0	5-8	124,758
November	4,205	1,140	2,191	5-5	6-1	130,369
December	1,010	555	091	1-7	2-0	42,488
The year	6,570	310	2,130	5-3	72-5	1,849,657

NOTE.—No precipitation records available—it is probable, however, that the rainfall is about the same as at the headwaters of the Lillooet river—from 80 to 90 inches annually.

The high run-off in depth in inches on drainage area seems to indicate that the drainage area is slightly too small.

NICOLA RIVER AT MERRITT (2029).

Location.—At Merritt, Water District No. 3.

Records Available.—June 16 to December 31, 1911; January 31 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand five hundred square miles.

Gauge.—Standard vertical staff gauge, read tri-weekly by Miss C. A. Seaton.

Channel.—The bed of the stream is gravelly, and the flow is in two channels during high water.

Discharge Measurements.—Four well-distributed measurements have been obtained in 1914.

Winter Flow.—Open conditions usually prevail throughout the year.

Accuracy.—The accuracy is considered to be within 15 per cent of true conditions.

DISCHARGE MEASUREMENTS of Nicola River at Merritt, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
May 3.....	K. G. Chisholm.....	1505	135	537	4.65	7.53	2,500
May 25.....	do	1055	135	649	4.51	7.80	2,926
July 8.....	do	1913	60	306	3.45	6.07	750
July 29.....	C. B. Corbould.....	1915	55	245	0.90	5.10	218

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			4-80	130	5-00	185					7-40	2,330
2							5-15	255	6-40	1,055		
3			4-80	130	5-00	185	5-30	292	6-50	1,170	7-90	3,060
4												
5	4-80	130	4-70	104	4-90	156	5-40	335			7-20	2,050
6									6-90	1,640		
7	5-70	490	4-60	82	4-90	156	5-50	380			6-80	1,520
8									7-00	1,780		
9	5-50	380	4-60	82	4-90	156	5-80	550			6-80	1,520
10									7-50	2,470		
11	5-20	253	4-60	82	4-80	130	6-10	775			6-90	1,640
12							6-10	775	7-60	2,610		
13	5-20	253	4-65	93	4-80	130					6-90	1,640
14							6-30	955	8-40	3,790		
15	5-00	185	4-65	93	5-00	185					7-10	1,915
16							6-60	1,280	8-20	3,500		
17	5-00	185	4-65	93	5-00	185					7-10	1,915
18							6-50	1,170	7-60	2,610		
19	5-00	185	4-65	93	5-10	218					7-00	1,780
20							6-60	1,280	7-60	2,610		
21	4-80	130	4-70	104	5-10	218					6-70	1,395
22					5-10	218	6-70	1,395	7-77	2,760		
23	4-60	82	4-70	104							6-60	1,280
24					5-00	185	6-80	1,520	8-10	3,350		
25	4-70	104	4-70	104							6-60	1,280
26					5-00	185	6-60	1,280	7-60	2,610		
27	4-80	130	4-80	130							6-60	1,280
28					5-00	185	6-40	1,055	7-10	1,915		
29	4-80	130			5-10	218					6-50	1,170
30							6-30	955	7-10	1,915		
31	4-80	130			5-10	218						

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

DAY.	July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	6.40	1,055	5.00	185	4.30	34	4.40	50
2.	6.30	955	4.90	156	4.30	34	4.40	50
3.	6.20	860	4.80	130	4.30	34	4.40	50
4.	6.20	860	4.80	130	4.40	50	4.40	50
5.	6.20	860	4.80	130	4.50	64	4.30	34
6.	6.20	860	4.80	130	4.50	64	4.30	34
7.	6.20	860	4.80	130	4.60	82	4.40	50
8.	5.90	620	4.70	104	4.60	82	4.40	50
9.	5.90	620	4.70	104	4.60	82	4.40	50
10.	5.90	620	4.70	104	4.60	82	4.40	50
11.	5.80	550	4.60	82	4.60	82	4.50	64
12.	5.70	490	4.60	82	4.60	82	4.50	64
13.	5.70	490	4.60	82	4.60	82	4.50	64
14.	5.70	490	4.60	82	4.60	82	4.50	64
15.	5.70	490	4.60	82	4.60	82	4.50	64
16.	5.50	380	4.50	64	4.60	82	4.60	82
17.	5.50	380	4.50	64	4.60	82	4.60	82
18.	5.50	380	4.50	64	4.60	82	4.60	82
19.	5.50	380	4.50	64	4.60	82	4.60	82
20.	5.50	380	4.50	64	4.60	82	4.60	82
21.	5.50	380	4.50	64	4.60	82	4.60	82
22.	5.30	292	4.50	64	4.60	82	4.70	104
23.	5.30	292	4.50	64	4.60	82	4.70	104
24.	5.30	292	4.50	64	4.60	82	4.70	104
25.	5.30	292	4.50	64	4.60	82	4.70	104
26.	5.20	253	4.50	64	4.50	64	4.60	82
27.	5.20	253	4.50	64	4.50	64	4.60	82
28.	5.10	218	4.40	50	4.50	64	4.60	82
29.	5.10	218	4.40	50	4.50	64	4.60	82
30.	5.10	218	4.40	50	4.50	64	4.60	82
31.	5.00	185	4.40	50	4.50	64	4.70	104

MONTHLY DISCHARGE of Nicola River at Merritt, for 1914.

(Drainage area, 1,500 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	490	82	198	6.13	0.15	12,175
February	130	82	102	0.07	0.07	5,665
March	218	130	183	0.12	0.14	11,252
April	1,520	235	889	0.59	0.66	52,899
May	3,790	1,055	2,386	1.59	1.83	146,712
June	3,060	1,170	1,718	1.14	1.27	102,230
July	1,055	185	516	0.34	0.39	31,728
August	185	50	97	0.06	0.07	5,964
September	104	34	67	0.04	0.04	3,987
October	117	34	69	0.05	0.06	4,243
The period	3,790	34	622.5	0.41	4.68	376,855

NOTE.—Precipitation on the Coldwater varies from 10 to 50 inches, while on the Nicola river proper it averages only about 10 inches, and this is subject to large evaporation losses.

The flow at this station includes the flow of Coldwater river.

SESSIONAL PAPER No. 25e

NICOLA RIVER, AT MOUTH (2030).

Location.—Section 12, township 17, range 25, west 6th meridian.

Records Available.—August 1 to November 31, 1911; April 5 to December 21, 1912; May 9 to December 11, 1913; April 1 to September 30, 1914.

Drainage Area.—Two thousand six hundred and fifty square miles.

Gauge.—Inclined staff gauge, read three times a week by Miss Violet Curnow.

Channel.—Is straight at measuring section. Velocity high. Bed of stream is composed of rocks and gravel. During high water on the Thompson river the control is affected at the measuring section but not at the gauge.

Discharge Measurements.—Are made from bridge at all stages.

Winter Flow.—Ice conditions exist usually during January, February and March.

Accuracy.—The accuracy will eventually be high, but at present more measurements are required.

DISCHARGE MEASUREMENTS of Nicola River at mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 23.....	K. G. Chisholm.....	1055	144	801	8.06	7.6	6.456
July 31.....	C. B. Corbould.....	1915	115	197	2.40	2.42	468

For further hydrographic data, see Water Resources Papers Nos. 1 and 5.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec. ft.	Feet.	Sec.-ft.
1	2-90	575				
2					7-20	5,345
3			7-60	6,640		
4	3-30	775				
5			7-60	6,640	6-50	3,860
6			6-40	3,710		
7					5-80	2,955
8	4-80	1,870				
9			6-60	4,025		
10					5-60	2,725
11	5-10	2,165				
12			7-80	7,370		
13					6-40	3,710
14			7-90	7,710		
15	6-30	3,570	7-15	5,205	6-80	4,385
16						
17						
18	6-10	3,315				
19			7-80	7,370		
20						
21	5-80	2,955				
22						
23	5-60	2,725	7-60	6,640		
24					5-60	2,725
25	5-40	2,495				
26			7-20	5,345		
27					5-40	2,495
28	5-40	2,495	6-40	3,710		
29						
30	5-60	2,725			5-20	2,270
31			6-30	3,570		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914—
Concluded.

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....										
2.....	5-20	2,270								
3.....			2-30	335	1-50	115				
4.....										
5.....	4-80	1,870								
6.....					1-40	100				
7.....										
8.....	4-30	1,445								
9.....			2-10	270						
10.....										
11.....										
12.....					1-50	115				
13.....			2-00	240						
14.....										
15.....	4-00	1,220			1-80	180				
16.....										
17.....			1-80	180						
18.....										
19.....										
20.....			1-70	155	1-80	180				
21.....	3-40	830								
22.....									4-00	1,220
23.....										
24.....			1-60	135	1-70	155				
25.....	2-60	450							3-70	1,020
26.....										
27.....			1-50	115	1-90	210				
28.....	2-55	430					1-99	210	3-40	830
29.....					2-00	240				
30.....										
31.....			1-90	210			2-00	240		

MONTHLY DISCHARGE of Nicola River at Mouth, for 1914.

(Drainage area, 2,650 square miles.)

MONTH	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet
April.....	3,570	575	2,333	0-9	1-0	138,820
May.....	7,740	3,570	5,664	2-1	2-4	348,264
June.....	5,345	2,270	3,385	1-3	1-4	201,420
July.....	2,270	430	1,216	0-46	0-5	74,766
August.....	335	115	205	0-08	0-09	12,665
September.....	240	100	162	0-06	0-07	9,640
October.....	240	210				
November.....	1,220	830				

NOTE: Gauge readings during October and November were not numerous enough to give accurate run-off data. Precipitation varies from a minimum of 5 to 10 inches at Spences Bridge to 50 inches in the upper reaches of several tributaries of the Nicola river.

The maximum recorded flow was 7,740 second-feet in May, and the minimum 100 second-feet in September.

The autumn rains on the Coldwater-Coquihalla summit probably account for the increased November flow.

SPIUS CREEK (2037).

Location.—Section 23, township 13, range 23, west 6th meridian.

Records Available.—August 18 to November 22, 1911; May 8 to September 12, 1912; May 25 to November 30, 1913; March 22 to December 24, 1914.

Drainage Area.—Three hundred and forty-four (344) square miles.

Gauge.—Standard chain gauge, read daily by G. A. Longbotham.

Channel.—The channel is composed of rocks and boulders; velocity of water is high at all stages.

Discharge Measurements.—Six discharge measurements were obtained during 1914 at varying stages, and curve is fairly well defined.

Winter Flow.—Ice conditions exist from November to February under normal conditions.

Accuracy.—Accuracy of results is considered high, except at freshet, when they should fall within 15 per cent.

DISCHARGE MEASUREMENTS OF Spius Creek near Canford, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 18.....	K. G. Chisholm.....	1505	70	111	1.73	1.48	191
May 5.....	do.....	1505	91	234	5.51	3.04	1,309
May 6.....	do.....	1505	90	224	5.16	2.92	1,171
May 27.....	do.....	1055	108	240	5.11	3.00	1,236
July 19.....	do.....	1913	76	138	3.60	2.08	499
July 10.....	C. B. Corbould.....	1915	68	67.1	1.85	1.25	120

For further hydrographic data on Spius creek, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek, near Canford, for 1914.

Day.	March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1-45	180	2-75	1,031	4-10	2,415
2.....			1-50	198	3-35	1,627	4-35	2,677
3.....			1-50	198	3-95	2,257	4-05	2,362
4.....			1-55	218	2-80	1,077	2-80	1,077
5.....			1-80	335	2-95	1,221	2-75	1,031
6.....			2-15	545	2-90	1,173	2-50	810
7.....			2-30	650	2-90	1,173	2-65	939
8.....			2-40	728	3-15	1,420	2-60	894
9.....			2-50	810	3-20	1,470	2-60	894
10.....			2-65	939	3-25	1,522	2-65	939
11.....			2-90	1,173	3-30	1,575	2-70	984
12.....			2-75	1,031	3-90	2,205	2-95	1,221
13.....			3-00	1,270	3-80	2,160	3-10	1,370
14.....			3-05	1,320	4-60	2,940	2-95	1,221
15.....			3-05	1,330	4-55	2,887	3-80	2,100
16 ..			3-10	1,370	4-35	2,677	4-10	2,415
17.....			3-60	1,270	4-60	2,310	3-70	1,995
18.....			2-90	1,173	3-75	2,047	3-30	1,375
19 ..			2-80	1,077	3-70	1,995	2-70	984
20.....			2-65	939	3-90	2,205	2-50	810
21.....			2-60	894	4-00	2,310	2-30	650
22.....	1-70	285	2-55	852	4-20	2,520	2-35	689
23.....	1-65	261	2-55	852	4-25	2,572	2-25	614
24.....	1-60	238	2-60	894	4-00	2,310	2-25	614
25.....	1-55	198	2-65	939	3-25	1,522	2-30	650
26.....	1-45	180	2-60	894	3-10	1,370	2-40	728
27.....	1-40	162	2-50	810	3-05	1,320	2-50	810
28.....	1-45	180	2-35	769	3-10	1,370	2-55	852
29.....	1-45	180	2-45	769	2-70	984	2-85	1,125
30 ..	1-45	180	2-45	769	2-95	1,221	2-80	1,077
31.....	1-40	162			3-80	2,100		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek near Canford, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-85	1,125		112	0-90	52	1-15	96	2-40	728	2-00	450
2	2-80	1,077	1-20	107	0-90	52	1-15	96	2-40	728	2-00	450
3	2-80	1,077	1-20	107	0-90	52	1-15	96	2-40	728	2-00	450
4	2-50	810	1-15	96	0-90	52	1-10	86	2-45	769	1-95	420
5	2-40	728	1-15	96	0-90	52	1-10	86	2-40	728	1-85	362
6	2-35	689	1-10	86	0-90	52	1-05	76	2-30	650	1-75	310
7	2-25	614	1-10	86	0-90	52	1-05	76	2-15	545	1-65	261
8	2-20	578	1-05	76	1-00	67	1-05	76	1-90	390	1-60	238
9	2-20	578	1-05	76	1-05	76	1-10	86	1-90	390	1-50	198
10	2-25	614	1-05	76	1-10	86	1-10	86	1-85	362	1-45	180
11	2-20	578	1-05	76	1-15	96	1-10	86	1-85	362	1-40	162
12	1-95	420	1-05	76	1-25	120	1-10	86	1-90	390	1-40	162
13	1-90	390	1-05	76	1-40	162	1-15	96	1-85	362	1-40	162
14	1-85	362	1-05	76	1-55	218	1-20	107	1-85	362	1-40	162
15	1-85	362	1-05	76	1-60	238	1-25	120	1-80	335	1-35	147
16	1-80	335	1-05	76	1-65	261	1-30	133	1-80	335	1-40	162
17	1-80	335	1-05	76	1-75	310	1-35	147	1-75	310	1-45	180
18	1-70	285	1-00	67	1-55	218	1-40	162	1-70	285	1-50	198
19	1-65	261	1-00	67	1-50	198	1-40	162	1-70	285	1-50	198
20	1-50	198	1-00	67	1-35	147	1-50	198	1-65	261	1-65	261
21	1-45	180	1-00	67	1-20	107	1-55	218	1-60	238	1-95	420
22	1-40	162	1-00	67	1-20	107	1-65	261	1-60	238	2-25	614
23	1-40	162	1-00	67	1-15	96	1-65	261	1-70	285	2-00	450
24	1-40	162	1-00	67	1-15	96	1-65	261	1-70	285	2-00	450
25	1-40	162	1-00	67	1-15	96	1-60	238	2-30	650		
26	1-35	147	1-00	67	1-15	96	1-60	238	2-40	728		
27	2-35	147	0-95	52	1-10	86	1-60	238	2-15	545		
28		138	0-95	59	1-15	96	1-60	238	2-10	512		
29		129	0-95	59	1-15	96	1-60	238	2-10	512		
30	1-25	120	0-90	52	1-15	96	1-85	362	2-05	481		
31		116	0-90	52			2-00	450				

MONTHLY DISCHARGE of Spius Creek near Canford, B.C., for 1914.

(Drainage area, 344 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	1,370	180	839-5	2-4	2-7	49,953
May	2,940	984	1,823-0	5-3	6-1	112,693
June	2,677	614	1,217-4	3-5	3-9	72,444
July	1,125	116	420-7	1-2	1-4	25,867
August	112	52	75-3	0-2	0-2	4,630
September	310	52	117-8	0-3	0-3	7,069
October	450	76	166-0	0-5	0-6	10,207
November	769	238	459-3	1-3	1-4	27,330
December	614	147	293-6	0-8	0-9	18,052
The period.	2,940	52	601-4	1-7	17-5	327,585

NOTE.—Mean annual precipitation at the mouth of Spius creek is about 10 inches, while in the higher altitudes it is probably about 30 inches.

Winter conditions existed subsequent to December 24.

SESSIONAL PAPER No. 25e

THOMPSON RIVER AT SPENCE'S BRIDGE (2039).

Location.—Section 10, township 17, range 25, west of 6th meridian.

Records available.—October 25 to December 31, 1911; January 1 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—Twenty-one thousand square miles.

Gauge.—Gauge is standard chain gauge, situated on traffic bridge, read daily by Miss Violet Curnow.

Channel.—The channel varies in width from 400 feet to 500 feet. Depth of section at high water greater by 16 feet than at low.

Velocities range from 2.0 second-feet to 11 feet per second.

Discharge measurements.—Measurements are made from traffic bridge. Owing to great velocity at high water, meterings are difficult to obtain. However, curve is well defined.

Winter flow.—River usually remains open throughout the year.

Accuracy.—Results are considered to be very accurate, and all returns should fall within 5 per cent of the truth.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height.	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft
1	1.90	5,870	1.70	5,640	1.91	5,870	1.75	5,695	7.8	26,880	13.5	61,170
2	2.00	6,000	1.70	5,640	1.86	5,750	1.70	5,640	8.1	28,300	13.5	61,170
3	2.10	6,140	1.70	5,640	1.85	5,810	1.75	5,695	9.2	33,840	13.5	61,170
4	2.20	6,290	1.60	5,330	1.80	5,750	1.80	5,750	9.6	35,920	13.5	61,170
5	2.20	6,290	1.50	5,425	1.80	5,750	1.90	5,870	10.0	38,000	14.1	66,080
6	2.30	6,450	1.50	5,425	1.75	5,695	2.00	6,000	10.0	38,000	14.6	70,240
7	2.40	6,620	1.50	5,425	1.70	5,640	2.30	6,450	10.3	39,660	15.3	76,240
8	2.50	6,800	1.45	5,375	1.65	5,585	2.50	6,800	10.6	41,340	15.0	73,680
9	2.60	7,000	1.50	5,425	1.60	5,530	2.70	7,240	10.7	41,900	14.8	71,910
10	2.60	7,000	1.60	5,530	1.65	5,585	3.00	8,000	10.8	42,460	14.5	69,405
11	2.50	6,800	1.70	5,640	1.70	5,640	3.30	8,830	11.0	43,630	14.5	69,405
12	2.40	6,620	1.70	5,640	1.70	5,640	3.60	9,670	11.4	46,100	14.6	70,240
13	2.40	6,620	1.75	5,695	1.75	5,695	4.00	10,850	11.9	49,330	14.7	71,075
14	2.30	6,450	1.80	5,750	1.80	5,750	4.40	12,230	12.4	52,795	14.9	75,750
15	2.30	6,450	1.80	5,750	1.80	5,750	4.80	14,020	12.8	55,730	15.0	77,660
16	2.30	6,450	1.80	5,750	1.75	5,695	5.30	15,660	13.1	57,230	15.0	75,680
17	2.30	6,450	1.75	5,695	1.75	5,695	5.70	17,340	13.2	58,770	15.9	81,520
18	2.20	6,290	1.70	5,610	1.80	5,730	5.80	17,760	13.4	60,370	16.3	85,040
19	2.20	6,290	1.70	5,640	1.80	5,730	5.90	18,180	14.8	71,910	16.7	79,760
20	2.10	6,140	1.75	5,695	1.80	5,730	6.40	20,440	14.3	67,740	16.5	80,080
21	2.10	6,140	1.70	5,640	1.85	5,810	6.50	20,960	14.3	67,740	16.35	87,240
22	2.10	6,140	1.70	5,610	1.85	5,810	6.60	21,360	14.1	66,080	16.3	85,040
23	2.00	6,000	1.75	5,695	1.90	5,870	6.70	21,820	14.2	66,940	15.9	81,520
24	2.00	6,000	1.70	5,610	1.90	5,870	6.80	22,280	14.3	67,740	15.7	79,760
25	1.90	5,870	1.70	5,640	1.85	5,810	6.90	22,740	14.3	69,405	15.5	78,000
26	1.80	5,750	1.75	5,695	1.80	5,750	6.90	22,740	14.8	71,910	15.0	78,000
27	1.80	5,750	1.80	5,730	1.80	5,750	7.15	23,800	14.8	71,910	14.6	76,540
28	1.60	5,530	1.90	5,870	1.90	5,870	7.15	24,800	14.7	71,075	14.2	71,490
29	1.45	5,375			1.85	5,810	7.30	24,800	14.6	70,240	14.5	71,490
30	1.40	5,330			1.85	5,810	7.50	25,500	14.2	66,910	14.8	75,910
31	1.00	5,530			1.80	5,750			13.8	61,900		

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	14-8	71,910	11-0	43,600	7-30	24,580	6-60	21,360	5-70	17,340	4-80	13,650
2.	15-0	74,600	10-7	41,900	7-00	23,200	6-80	22,280	5-80	17,760	4-80	13,650
3.	15-1	74,480	10-65	41,620	6-80	22,280	7-00	23,200	5-80	17,760	4-80	13,650
4.	15-2	75,360	10-7	41,900	6-63	21,360	7-30	24,580	6-00	18,600	4-70	13,280
5.	15-4	77,120	10-5	40,780	6-50	23,900	7-30	24,580	6-20	19,520	4-65	13,095
6.	15-6	78,880	10-6	41,310	6-50	20,900	6-80	22,280	6-40	20,440	4-50	12,550
7.	15-4	77,120	10-4	40,220	6-23	19,520	6-50	20,900	6-70	21,820	4-40	12,200
8.	15-2	75,360	10-3	39,630	6-20	19,520	6-30	19,980	6-50	20,900	4-30	11,860
9.	15-0	73,600	10-2	39,160	6-26	19,520	5-90	18,180	6-30	19,980	4-30	11,860
10.	14-35	68,155	10-1	38,540	6-20	19,520	5-80	17,760	6-10	19,060	4-20	11,520
11.	14-3	67,740	9-7	36,440	6-20	19,520	5-80	17,760	6-00	18,600	3-70	9,950
12.	14-3	67,740	9-4	34,880	6-23	19,520	5-90	18,180	6-00	18,600	3-40	9,110
13.	14-3	67,740	9-3	34,360	6-20	19,520	5-70	17,340	6-10	19,060	3-40	9,110
14.	14-35	68,155	8-90	32,300	6-20	19,520	5-63	16,920	6-03	18,600	3-20	8,550
15.	14-4	68,570	8-63	30,800	6-10	19,060	5-50	16,500	6-00	18,600	3-10	8,270
16.	14-6	70,240	8-60	30,800	6-00	18,600	5-40	16,080	5-80	17,760	3-00	8,000
17.	14-5	69,405	8-63	30,800	5-83	17,760	5-30	15,660	5-63	16,920	2-90	7,740
18.	14-4	68,570	8-40	29,800	5-50	16,500	5-30	15,660	5-50	16,500	2-80	7,490
19.	14-0	65,250	8-40	29,800	5-46	16,080	5-40	16,080	5-40	16,080	2-80	7,490
20.	13-7	62,770	8-30	29,300	5-20	15,240	5-83	17,760	5-30	15,660	2-80	7,490
21.	13-3	59,570	8-23	28,800	5-40	16,080	6-00	18,600	5-20	15,240	2-80	7,490
22.	13-3	59,570	8-23	28,800	5-80	17,760	6-20	19,520	5-10	14,820	2-90	7,740
23.	12-9	55,590	8-10	28,360	5-83	17,760	6-50	20,900	5-10	14,820	2-90	7,740
24.	12-6	54,250	8-10	28,300	6-00	18,600	6-30	19,980	5-10	14,820	3-00	8,000
25.	12-1	53,680	8-10	28,300	5-93	18,180	6-00	18,600	5-10	14,820	3-00	8,000
26.	11-9	49,330	7-80	26,880	6-00	18,600	5-83	17,760	5-03	14,400	3-10	8,270
27.	11-9	49,330	7-83	26,880	6-00	18,600	5-65	17,130	5-00	14,400	3-10	8,270
28.	11-8	48,670	7-70	26,420	6-00	18,600	5-70	17,340	4-90	14,020	3-10	8,270
29.	11-7	48,020	7-63	25,960	6-20	19,520	5-63	16,920	4-90	14,020	3-20	8,550
30.	11-6	47,380	7-50	25,500	6-30	19,980	5-55	16,710	4-8	13,650	3-20	8,550
31.	11-3	45,460	7-40	25,040			5-60	16,920			3-20	8,550

MONTHLY DISCHARGE of Thompson River at Spence's Bridge for 1914.

(Drainage area, 21,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January.....	7,000	5,300	6,208	0-3	0-3	381,720
February.....	5,870	5,375	5,625	0-3	0-3	312,395
March.....	5,870	5,530	5,742	0-3	0-3	353,062
April.....	25,500	5,640	14,593	0-7	0-8	868,380
May.....	71,910	26,880	54,304	2-6	3-0	3,339,044
June.....	89,000	61,170	73,908	3-5	3-9	4,397,875
July.....	78,880	45,460	64,210	3-0	3-4	3,948,120
August.....	43,600	25,040	33,133	1-6	1-8	2,037,246
September.....	24,580	15,240	19,210	0-9	1-0	1,143,690
October.....	24,580	15,660	18,820	0-9	1-0	1,157,210
November.....	21,820	13,650	17,152	0-8	0-9	1,020,820
December.....	13,650	7,490	9,675	0-4	0-5	594,885
The year.....	89,000	5,330	26,881	1-28	17-2	19,553,657

NOTE.—Precipitation varies from 5 inches at the confluence of the Thompson and Fraser rivers to 49 inches at the Albrede summit and 40 inches at the source of several streams tributary to Shuswap lake.

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

MISCELLANEOUS METERING STATIONS.

Date.	Stream.	Tributary to—	Locality.	Gauge Height.	Dis-charge
				Feet.	Sec.-ft.
May 8	Alkali creek	Cherry creek	Above Cornwall's div.	—	2.5
June 11	"	"	Cornwall's ranch	—	1.2
" 12	"	"	Below beaver dam div.	—	2.2
Sept. 4	Bear creek	Clearwater river	Crossing Myrtle trail	—	7.4
June 11	"	"	"	—	162.0
" 10	Beaver creek	"	"	—	190.4
Sept. 6	Boulder creek	N. Thompson river	1 mile from mouth	1.0	19.2
Aug. 12	Cahilty creek	Louis creek	1 mile from mouth	0.95	6.8
June 11	Candle creek	Clearwater river	Larkey's ranch	—	49.7
Aug. 29	"	"	"	—	0.3
June 15	Chartrand creek	Guignon creek	At bridge	1.25	4.6
" 16	Chartrand spring	Chartrand creek	Chartrand ranch	—	0.5
April 27	Cherry creek	Kamloops lake	Cornwall's ranch	—	9.6
May 8	"	"	"	—	23.8
" 11	"	"	"	—	86.1
June 11	"	"	"	—	8.3
" 17	Dupuis creek	Mamit lake	Above Mamit lake	—	2.2
" 3	Edwards creek	Hefley creek	1 mile above Hefley creek	—	6.7
Aug. 25	Fishtrap creek	N. Thompson river	1 mile from mouth	0.5	11.4
May 27	Gordon creek	North Thompson river	At highway bridge	—	1.8
June 17	Greenstone creek	Meadow creek	Above Homfray dam	—	10.5
" 15	Guichon creek	(Chartrand div. of)	At road	—	2.9
" 13	"	Mamit lake	F. Allen's ranch	—	25.8
" 15	"	"	Chartrand ranch	—	5.6
" 3	Hefley creek	(Anderson diversion of)	At intake	—	3.4
" 10	Hemp creek	Clearwater	Crossing Clearwater trail	—	284.0
" 16	Meadow creek	Guichon creek	Above Indian Reserve ditch	—	66.7
Sept. 1	Myrtle river	Clearwater river	At lower crossing	1.1	852.0
May 27	Noble creek	N. Thompson river	Above B. C. F. div.	—	6.8
Aug. 7	Paul creek	"	At outlet of lake	4.45	23.0
May 8	Pendleton creek	Cherry creek	Above Cornwall's intake	—	1.3
June 12	"	"	"	—	0.6
Aug. 17	Queest creek	Shuswap lake	½ mile from mouth	—	9.2
June 16	Quenville creek	Guichon creek	Above Quenville div.	—	2.9
Aug. 12	Scotch creek	Shuswap lake	3 miles from mouth	—	93.5
" 15	Seymour river	"	1 mile from mouth	2.37	1,051.0
June 13	Three-mile creek	Kamloops lake	Harris ranch	—	6.7
Aug. 21	N. Thompson river	Thompson river	○ N. R. bridge near Kamloops	—	17,775.0
" 25	Whitewood creek	N. Thompson river	At highway bridge	—	1.7
June 15	Witch creek	Guichon creek	½ mile from mouth	—	28.1

MISCELLANEOUS METERING STATIONS.

Date.	Stream.	Tributary to—	Locality.	Gauge Height.	Dis-charge
				Feet.	Sec.-ft.
Aug. 13.	Hat creek (Hammond's diversion)	"	"	—	7.6
June 16.	Six-mile creek	Tulameen river	Above diversions	3.77	1.0
Nov. 15, 1913.	Twenty-mile creek	Similkameen river	Above intake Nickel Plate mine	0.70	13.2
June 12..	"	"	"	2.60	236.0
1914.	"	"	"	"	"
June 23..	"	"	"	2.00	140.0
July 2	"	"	"	0.89	30.2
Aug. 31.	"	"	"	0.59	12.0

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 7

Nelson Division—Hydrographic Data

CHAPTER VII.

Nelson Division.—Hydrographic Data.

REGULAR METERING STATION.

CARIBOO CREEK, NEAR BURTON CITY (3057).

Location.—Upstream side of highway bridge, one-quarter mile from mouth, and one-quarter mile from Burton City wharf, between Upper and Lower Arrow lakes, Nelson district.

Records Available.—August to December, 1914.

Climatic Conditions.—Summers, hot with considerable rain in May and June, and very little rain in July and August. Winters mild, seldom below 0°F. with light snowfall. High water occurs generally in April or May. Extreme floods occur after heavy snowfall, during preceding winter, and continuous hot days and nights or warm rains in the latter part of April or the beginning of May. Low water may occur in August or September or during the winter. The stream does not stay frozen for long periods in the winter. Frazil ice is seldom present.

Gauge.—Located at highway bridge, near Burton. It is affected by backwater from Columbia river during May, June, July, and part of August. Mr. Ralph Islip reads the gauge daily.

Channel.—The channel above and below the gauge is wide and filled with small log jams. It is very liable to shift during high water.

Discharge Measurements.—The curve is based on two discharge measurements made in September and October. A measurement was made early in August, but the gauge height was affected by backwater.

Accuracy.—The results published herein are probably within 20 per cent of the true discharge.

General.—Cariboo creek and its many tributaries rise in the divide between the Arrow lakes and Slocan lake watersheds, between Barton City and New Denver. The drainage area, in all, is about 225 square miles. The freshet is caused by the melting of snow, and not from glaciers.

Cariboo creek deposits large quantities of silt in Columbia river narrows, and is a detriment to navigation. The maximum flow has been estimated at 8,000 c.f.s., but this discharge will only occur once in a long time.

DISCHARGE MEASUREMENTS of Cariboo Creek near Burton City, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec	Feet.	Sec. ft.
July 24	C. E. R.	1,672	46	177	2.05	4.40	363
Sept 3	C. E. R. & J. A. E.	1,927	47	144	0.94	1.28	136
Oct 30	J. A. E.	1,909	63	172	1.75	1.75	303

¹Affected by backwater

DAILY GAUGE HEIGHTS AND DISCHARGES of Cariboo Creek near Barton City, B.C., for 1914.

DAY.	August.		September.		October.		November.		December.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		300	1-0	77	1-28	129	1-73	293	1-85	348
2		293	1-0	77	1-28	129	1-75	302	1-82	334
3		286	1-28	129	1-26	124	1-75	302	1-85	348
4		279	1-28	129	1-25	122	1-76	306	1-85	348
5		272	1-25	122	1-25	122	1-76	306	1-85	348
6		265	1-24	120	1-2	110	1-75	302	1-9	372
7	1-65	258	1-25	122	1-2	110	1-75	302	1-9	372
8		251	1-25	122	1-2	110	1-78	315	1-92	382
9		244	1-25	122	1-2	110	1-78	315	1-92	382
10		230	1-28	129	1-2	110	1-78	315	1-92	382
11										
12		223	1-25	122	1-22	115	1-78	315	1-92	382
13	1-55	216	1-25	122	1-22	115	1-8	324	1-95	396
14	1-5	196	1-2	110	1-2	110	1-8	324	1-95	396
15	1-5	196	1-25	122	1-2	110	1-8	324	1-96	401
16	1-4	164	1-3	134	1-15	103	1-8	324	1-96	401
17	1-4	164	1-28	129	1-15	103	1-8	324	1-96	401
18	1-45	180	1-28	129	1-15	103	1-8	324	1-95	396
19	1-4	164	1-25	122	1-2	110	1-8	324	1-95	396
20	1-4	164	1-25	122	1-25	122	1-8	324	1-95	396
21	1-45	180	1-2	110	1-4	164	1-82	334	1-97	406
22	1-45	180	1-2	110	1-45	180	1-82	334	1-97	406
23	1-45	180	1-25	122	1-50	196	1-85	348	1-97	406
24	1-4	164	1-25	122	1-6	236	1-85	348	1-97	406
25	1-4	164	1-2	110	1-69	276	1-85	348	1-96	401
26	1-4	164	1-2	110	1-69	276	1-85	348	1-96	401
27	1-4	164	1-25	122	1-68	271	1-8	324	1-95	396
28	1-4	164	1-28	129	1-68	271	1-8	324	1-95	396
29	1-3	134	1-27	127	1-7	280	1-82	334	1-95	396
30	1-2	110	1-25	122	1-75	302	1-82	334	1-96	401
31	1-2	110			1-73	293			1-96	401

MONTHLY DISCHARGE of Cariboo Creek near Burton City, B.C., for 1914.

(Drainage area, 225 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
August		110	203	0-90	1-04	12,500	
September	134	77	116	0-51	0-57	6,900	D
October	302	103	162	0-72	0-83	9,961	D
November	348	293	322	1-43	1-59	19,200	D
December	406	334	386	1-71	1-97	23,700	D

CARPENTER CREEK NEAR NEW DENVER (3024).

Location.—About 3 miles from the mouth, opposite the Denver Light and Power Company's power-house, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot. May and June are generally wet, but there is very little rain in July and August. Winters not severe, seldom below zero. Snowfall is not heavy in the lower altitudes.

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Gauge.—Vertical staff enamel gauge was originally established immediately above the dam, but in December it was moved below the dam and opposite the power-house. Mr. C. J. Campbell reads the gauge three times a week.

Channel.—The channel generally below the dam and canyon is rocky and filled with huge boulders, but at the new gauge should be fairly permanent, though the water will be very broken during freshet.

Discharge Measurements.—No desirable metering station has as yet been established. Five measurements were made in 1914 from the highway bridge near New Denver. At this section and for a mile above the creek is flowing through a shifting gravel bed, and it is doubtful if the total discharge at the gauge is recorded when measurements are made from the bridge.

Accuracy.—The results published are not guaranteed.

General.—Carpenter creek is a flashy mountain stream, flowing from the east into Slocan lake, near New Denver. The drainage area is about 65 square miles of very mountainous country, abundant in mineral wealth. Glaciers feed the various forks. Heavy freshets are liable to occur in May, June, or July.

The water is used for mining and power purposes. The only plant operating at present on Carpenter creek is the Denver Light and Power Company, Ltd., Mr. C. J. Campbell, manager. The plant is located at the canyon about 3 miles above New Denver. The head is about 100 feet and a 93.75-k.v.a. C.G.E. generator is installed. At present, in the neighbourhood of 100 h.p. is developed.

DISCHARGE MEASUREMENTS of Carpenter Creek at New Denver, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
April 16 . .	C. E. W., D. O. B. G.	1,048	199	96.6	5.60	1.9	541.0
May 13 . . .	J. A. E., G. K. B.	1,672	200	130	7.28	2.35	919.0
July 9	D. O. R. G., J. A. E.	1,929	199	132	5.19	2.10	684.0
Aug. 18 . . .	D. O. B. Gill	1,929	33	47	3.83	1.10	180.0
Nov. 4	J. A. E., G. K. B.	1,969	32	47	4.28	0.90	180.0

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DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver,
B.C., for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1			2-0	610	2-6	1,140
2			2-1	690	3-0	1,550
3			2-4	950	3-4	1,990
4			2-1	690	3-2	1,770
5			2-0	610	2-6	1,140
6			1-9	540	2-2	775
7			1-8	472	2-0	610
8			1-95	575	1-9	540
9			2-3	860	1-9	540
10			2-25	817	1-9	540
11			2-1	690	2-0	610
12			2-35	860	2-1	690
13			2-6	905	2-3	860
14			2-6	1,140	2-4	950
15			2-75	1,290	2-7	1,240
16			2-85	1,390	2-85	1,390
17			2-7	1,240	3-0	1,550
18			2-5	1,040	2-9	1,440
19			2-5	1,040	2-7	1,240
20	1-7	414	2-5	1,040	2-5	1,040
21		396	2-6	1,140	2-2	775
22		378	2-6	1,140	2-1	690
23	1-6	360	2-6	1,140	2-0	610
24	1-6	360	2-7	1,240	2-0	610
25		337	2-6	1,140	2-0	610
26	1-5	315		1,000	2-1	690
27	1-6	360	2-3	860	2-2	775
28		260	2-2	775	2-2	775
29	1-6	360	2-1	690	2-3	860
30	1-7	414	2-1	690	2-3	860
31			2-3	860		

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DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet. [*]	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2.4	950		340	0.90	159	0.90	159	0.8	144	0.4	99
2	2.4	950	1.5	315	0.80	144	0.85	166	1.0	174	0.4	99
3	2.6	1,140	1.5	315	0.80	144	0.85	151	1.0	174	0.4	99
4	2.5	1,040	1.5	315	0.80	144	0.80	144	0.9	159	0.4	99
5	2.4	950	1.4	278	0.80	144		144	1.1	194	0.3	91
6		817	1.4	278	0.80	144	0.80	144	0.9	159	0.3	91
7	2.2	775		261	0.80	144	0.80	144	0.8	144	0.3	91
8		732	1.3	245	0.80	144	0.80	144	0.8	144	0.3	91
9	2.1	690		245	0.80	144	0.80	144	0.8	144	0.3	91
10		650	1.3	245	0.80	144	0.80	144	0.8	144	0.3	91
11	2.0	610		245	0.80	144	0.80	144	0.8	144	0.3	91
12	2.1	690	1.3	245	0.80	144	0.80	144	0.8	144		91
13	2.4	950		231	0.80	144	0.80	144	0.7	130		91
14		841	1.2	217	0.8	144	0.80	144	0.6	118		91
15	2.15	732	1.2	217	0.8	144	0.80	144	0.6	118		91
16	1.85	506	1.2	217	0.8	144	0.8	144	0.6	118		91
17	1.8	472	1.3	245	0.8	144	1.0	174	0.6	118		91
18	1.75	443	1.25	231	0.85	151	1.0	174	0.3	91		91
19	1.85	506	1.0	224	1.15	205	1.0	174	0.5	108		91
20		513	1.2	217	1.1	194	1.0	174	0.5	108	0.4	99
21		520		217	1.0	174	0.85	151	0.5	108	0.4	99
22		527	1.2	217	0.9	159	0.80	144	0.5	108	0.25	88
23		534	1.1	194	0.8	144	0.80	144	0.5	108	0.2	85
24	1.90	540		194	0.8	144	0.80	144	0.4	99	0.2	85
25	1.90	540	1.1	194	0.8	144	0.80	144	0.4	99	0.2	85
26	1.80	472		194	1.05	184		144	0.4	99	0.1	79
27		443	1.1	194	1.2	217		144	0.4	99	0.1	79
28	1.70	414		189	1.05	184		144	0.4	99	0.1	79
29	1.60	360	1.05	184	1.00	174		144	0.4	99	0.1	79
30		360	1.00	174	0.90	159	0.80	144	0.4	99	0.1	79
31	1.60	360	0.90	159			0.80	144			0.1	79

MONTHLY DISCHARGE of Carpenter Creek near New Denver, for 1914.

(Drainage area, 65 square miles.)

Month.	DISCHARGE IN SECOND FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	1,300	472	905	13.9	16.0	55,700
May	1,990	540	962	14.8	16.5	57,290
June	1,140	360	646	9.94	11.5	39,700
July	340	159	233	3.58	4.13	14,300
August	217	144	157	2.42	2.70	9,340
September	174	144	148	2.28	2.63	9,100
October	194	91	126	1.94	2.16	7,500
November	90	79	92.5	1.42	1.64	5,690
December						
The period						

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CARPENTER CREEK, SOUTH FORK, NEAR SANDON (3025).

Location.—In the flume back of the C.P.R. station at Sandon, behind a deserted bakery, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Carpenter creek, New Denver, only the winters are longer, with more snow. Frazil ice is a possibility.

Gauge.—Enamel gauge, 0 feet to 3 feet, placed at the side of the box flume. Mrs. E. A. Cameron reads the gauge daily.

Flume.—The creek is flumed for several hundred feet through the townsite of Sandon. The flume is a box flume, 11.67 feet wide by 6 feet deep. For 50 feet above and below the section the slope is 0.056 feet. Kutter's formula was applied to determine the daily discharges.

Accuracy.—During high water the results are probably within 10 per cent, but at low stages, due to the gauge being only read to tenths, no accuracy can be given. A measurement made by Messrs. Webb and Gill, in April, agrees closely with the slope method.

General.—Sandon is about 6 miles from the source of the south fork of Carpenter creek, and is at an altitude of 3,488 feet. The drainage area, from the topographical map of the Geological Survey appears to be only about 12 miles. This shows a tremendous run-off per square mile during the months of May, June, and July.

The south fork has been used a great deal for mining, particularly during 1896-1902, but at present no water is used.

DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0.4	114	0.85	310
2			0.6	192	1.10	444
3			0.8	284	1.65	778
4			0.6	192	1.30	560
5			0.4	114	1.00	388
6			0.4	114	0.80	284
7			0.4	114	0.80	284
8			0.4	114	0.65	214
9			0.6	192	0.60	192
10			0.65	214	0.55	171
11			0.7	235	0.55	171
12			0.8	284	0.55	171
13			0.9	335	0.85	310
14			0.95	362	1.1	444
15			1.00	388	1.35	590
16			0.95	362	1.55	714
17			0.9	335	1.65	778
18			0.8	284	1.65	778
19			0.8	284	1.3	560
20			0.85	310	1.0	388
21			0.85	310	0.8	284
22			0.85	310	0.7	235
23			0.85	310	0.6	192
24			0.85	310	0.6	192
25			0.9	335	0.65	214
26			0.2	52	0.8	284
27			0.3	82	0.8	284
28			0.2	52	0.75	260
29			0.2	52	0.75	260
29			0.2	52	0.55	171
30			0.3	82	0.55	171
31				0.55	171	

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DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.—(Con.)

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-95	362	0-30	82	0-10	27	0-20	52	0-2	52	0-1	27
2	1-1	444	0-30	82	0-0	27	0-20	52	0-2	52	0-1	27
3	1-35	590	0-30	82	0-10	27	0-20	52	0-2	52	0-1	27
4	1-05	446	0-20	52	0-10	27	0-20	52	0-2	52	0-1	27
5	0-9	335	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
6	0-85	310	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
7	0-85	310	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
8	0-8	284	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
9	0-75	260	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
10	0-7	235	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
11	0-65	214	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
12	0-75	260	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
13	0-75	260	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
14	0-7	235	0-2	52	0-10	27	0-20	52	0-2	52	0-1	27
15	0-7	235	0-2	52	0-10	27	0-20	52	0-1	27	0-1	27
16	0-6	192	0-2	52	0-10	27	0-20	52	0-1	27	0-1	27
17	0-55	171	0-20	52	0-10	27	0-20	52	0-1	27	0-1	27
18	0-55	171	0-20	52	0-10	27	0-20	52	0-1	27	0-1	27
19	0-50	150	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
20	0-40	114	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
21	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
22	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
23	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
24	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
25	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
26	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
27	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
28	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
29	0-30	82	0-20	52	0-20	52	0-20	52	0-1	27	0-1	27
30	0-30	82	0-10	27	0-20	52	0-20	52	0-1	27	0-1	27
31	0-30	82	0-10	27	.....	.....	0-20	52	.....	.....	0-1	27

MONTHLY DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

(Drainage area, 12 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth. in inches on Drainage area.	Total in acre-feet	
May	388	114	249	20-8	24-0	15,300	B
June	778	171	367	30-6	34-1	21,800	B
July	590	82	208	17-3	19-9	12,800	C
August	82	27	53-3	4-44	5-12	3,280	
September	52	27	37-0	3-08	3-44	2,200	
October	52	52	52-0	4-33	4-99	3,200	
November	52	27	38-7	3-22	3-59	2,300	
December	27	27	27-0	2-25	2-59	1,660	

COLUMBIA RIVER NEAR CASTLEGAR (3004).

Location.—Castlegar precinct, Nelson Water district, below Arrow lakes and above mouth of Kootenay river, at the C.P.R. bridge near Castlegar, B.C., Nelson district.

Records Available.—1913 and 1914.

Climatic Conditions.—Summers hot, with plenty of rain in May and June, but very little rain in July and August. Winters, the snowfall is not very heavy, the temperature seldom goes below 0°F.; the river rarely freezes over.

Gauge.—Vertical staff gauge was used till August, when a chain gauge was established. Messrs. P. G. Farmer, J. McE. Agnew, and J. A. Turnbull read the gauges at different times during the year.

Channel.—Straight for 200 yards above and below the measuring section and gauge. A pronounced riffle in low water is lost during high water. The rise and fall of the river is about 25 feet.

Discharge Measurements.—Measurements are made from the upstream side of the railway bridge. Five measurements were made in 1914.

Accuracy.—This station is maintained chiefly to check the results obtained from Kootenay river near Glade, and Columbia river near Trail. Due to a probability of backwater, these results are not guaranteed.

DISCHARGE MEASUREMENTS of Columbia River near Castlegar, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Jan. 14	C. E. W. and A. J. V.	1048	380	6,800	1.66	1.7	11,300
Mar. 5	C. E. R. and A. J. V.	1672	398	6,170	1.24	0.72	7,680
May 31	J. A. Elliott	1909	515	14,100	5.82	15.12	82,100
July 28	G. K. Beeston	1672	530	13,500	7.67	17.52	104,000
Aug. 6	G. K. B. and D. O. R. G.	1929	515	12,900	6.60	15.8	85,100

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	1.3	9,600	0.8	8,000	0.8	8,000	1.0	8,600	6.6	33,000	17.3	91,100
2.	1.2	9,200	0.8	8,000	0.8	8,000	1.0	8,600	7.0	35,000	17.9	94,600
3.	1.2	9,200	0.8	8,000	0.8	8,000	1.0	8,600	7.4	37,000	18.3	96,900
4.	1.2	9,200	0.7	7,700	0.8	8,000	1.0	8,600	7.6	38,000	18.8	99,800
5.	1.2	9,200	0.7	7,700	0.8	8,000	1.1	8,900	7.8	39,000	19.2	102,000
6.	1.1	8,900	0.7	7,700	0.8	8,000	1.2	9,200	8.1	40,500	19.3	103,000
7.	1.1	8,900	0.7	7,700	0.8	8,000	1.2	9,200	8.5	42,700	19.1	102,000
8.	1.1	8,900	0.6	7,400	0.8	8,000	1.3	9,600	8.9	44,800	19.0	101,000
9.	1.2	9,200	0.6	7,400	0.8	8,000	1.5	10,200	9.4	47,500	18.9	100,000
10.	1.3	9,600	0.5	7,100	0.8	8,000	1.8	11,300	9.9	50,200	18.4	97,500
11.	1.3	9,600	0.5	7,100	0.8	8,000	2.0	12,000	10.2	51,800	18.4	97,500
12.	1.3	9,600	0.5	7,100	0.8	8,000	2.3	13,200	10.8	55,100	18.5	98,000
13.	1.4	9,900	0.5	7,100	0.8	8,000	2.5	14,000	11.4	58,400	18.7	99,200
14.	1.5	10,200	0.5	7,100	0.8	8,000	2.7	14,800	12.0	61,700	18.8	99,800
15.	1.6	10,600	0.5	7,100	0.8	8,000	2.9	15,600	12.6	65,000	19.0	101,000
16.	1.6	10,600	0.4	6,800	0.8	8,000	3.0	16,000	13.6	70,500	19.6	105,000
17.	1.5	10,200	0.4	6,800	0.8	8,000	3.3	17,200	14.0	72,700	20.6	111,000
18.	1.5	10,200	0.4	6,800	0.8	8,000	3.6	18,500	14.2	73,800	21.4	115,000
19.	1.4	9,900	0.5	7,100	0.8	8,000	3.9	19,800	14.6	76,000	22.2	120,000
20.	1.3	9,600	0.5	7,100	0.8	8,000	4.2	21,200	14.8	77,100	22.6	125,000
21.	1.3	9,600	0.6	7,400	0.9	8,300	4.5	22,600	15.2	79,300	23.0	125,000
22.	1.3	9,600	0.6	7,400	0.9	8,300	4.8	24,000	15.2	79,300	22.6	125,000
23.	1.3	9,600	0.6	7,400	0.9	8,300	5.1	25,500	15.4	80,500	22.4	125,000
24.	1.3	9,600	0.7	7,700	0.9	8,300	5.4	27,000	15.7	82,100	22.2	120,000
25.	1.2	9,200	0.7	7,700	0.9	8,300	5.6	28,000	16.0	83,800	21.8	118,000
26.	1.2	9,200	0.8	8,000	1.0	8,600	5.8	29,000	16.2	84,900	21.2	114,000
27.	1.1	8,900	0.8	8,000	1.0	8,600	6.0	30,000	16.4	86,100	21.0	113,000
28.	1.0	8,600	0.8	8,000	1.0	8,600	6.2	31,000	16.6	87,200	20.8	112,000
29.	1.0	8,600	.....	.....	1.0	8,600	6.2	31,000	16.6	87,200	20.6	111,000
30.	0.9	8,300	.....	.....	1.1	8,900	6.4	32,000	16.8	88,300	20.4	110,000
31.	0.9	8,300	.....	.....	1.1	8,900	.....	.....	17.0	89,400	.....	.....

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	20-6	111,000	.....	89,400	11-3	57,800	6-3	31,500	5-0	25,000	3-8	19,400
2.....	20-8	112,000	.....	86,600	11-1	56,700	6-2	31,000	5-0	25,000	4-0	20,200
3.....	21-0	113,000	.....	83,800	11-0	56,200	6-4	32,000	4-9	24,500	4-1	20,700
4.....	21-6	116,000	.....	83,000	10-8	55,100	6-6	33,000	4-8	24,000	4-0	20,200
5.....	22-1	120,000	.....	82,300	10-7	54,500	6-9	34,500	4-9	24,500	4-0	20,200
6.....	22-8	124,000	15-6	81,600	10-5	53,500	7-0	35,000	5-0	25,000	3-8	19,400
7.....	23-2	126,000	15-6	81,600	10-4	52,900	7-2	36,000	5-2	26,000	3-4	17,700
8.....	23-6	128,000	15-4	80,500	10-2	51,800	7-3	36,500	5-1	25,500	3-5	18,100
9.....	23-6	128,000	15-0	78,200	10-0	50,800	6-8	34,000	5-0	25,000	3-4	17,700
10.....	23-4	127,000	14-8	77,100	9-9	50,200	6-6	33,000	5-1	25,500	3-3	17,200
11.....	23-3	127,000	14-6	76,000	9-7	49,100	6-6	33,000	5-0	25,000	3-2	16,800
12.....	23-2	126,000	14-2	73,800	9-5	48,100	6-5	32,500	5-1	25,500	3-1	16,400
13.....	23-1	126,000	13-9	72,100	9-4	47,500	6-5	32,500	5-1	25,500	3-0	16,000
14.....	23-6	128,000	13-6	70,500	9-2	46,400	6-4	32,000	5-0	25,000	2-8	15,200
15.....	23-8	129,000	13-3	68,800	9-0	45,400	6-2	31,000	5-0	25,000	2-8	15,200
16.....	24-0	131,000	13-2	68,300	8-7	43,800	5-9	29,500	5-0	25,000	2-8	15,200
17.....	24-3	133,000	13-0	67,200	8-4	42,200	5-8	29,000	4-9	24,500	2-7	14,800
18.....	24-0	131,000	12-9	66,600	8-1	40,500	5-6	28,000	4-8	24,000	2-6	14,400
19.....	23-6	128,000	12-9	66,600	7-9	39,500	5-8	29,000	4-8	24,000	2-4	13,600
20.....	23-4	127,000	12-8	66,100	7-7	38,500	5-9	29,500	4-8	24,000	2-3	13,200
21.....	23-2	126,000	12-8	66,100	7-6	38,000	5-9	29,500	4-7	23,500	2-2	12,800
22.....	22-8	124,000	12-7	65,500	7-4	37,000	5-8	29,000	4-4	22,100	2-1	12,400
23.....	22-2	120,000	12-6	65,000	7-1	35,500	5-8	29,000	4-5	22,600	2-0	12,000
24.....	21-6	116,000	12-6	65,000	6-9	34,500	5-7	28,500	4-4	22,100	1-9	11,600
25.....	21-3	115,000	12-5	64,400	6-7	33,500	5-7	28,500	4-2	21,200	1-8	11,300
26.....	20-0	107,000	12-4	63,900	6-6	33,000	5-6	28,000	4-0	20,200	1-8	11,300
27.....	.....	104,000	12-4	63,900	6-6	33,000	5-5	27,500	3-9	19,800	1-7	10,900
28.....	.....	101,000	12-2	62,800	6-5	32,500	5-4	27,000	3-8	19,400	1-6	10,600
29.....	.....	98,000	12-0	61,700	6-3	31,500	5-3	26,500	3-9	19,800	1-5	10,200
30.....	.....	95,100	11-7	60,000	6-3	31,500	5-2	26,000	4-0	20,200	1-4	9,900
31.....	.....	92,300	11-5	58,900	.....	.....	5-1	25,500	.....	.....	1-4	9,900

MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914.

(Drainage area, 15,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.		RUN-OFF.	
	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	9,000	0-6	0-69	553,000
February.....	7,370	0-49	0-51	409,000
March.....	7,400	0-49	0-56	455,000
April.....	17,460	1-16	1-29	1,040,000
May.....	54,400	3-62	4-17	3,340,000
June.....	93,900	6-25	6-97	5,590,000
July.....	118,000	7-87	9-07	7,260,000
August.....	72,400	4-83	5-57	4,450,000
September.....	44,300	2-96	3-30	2,640,000
October.....	27,000	1-80	2-08	1,660,000
November.....	23,400	1-56	1-74	1,390,000
December.....	16,100	1-07	1-23	990,000

NOTE.—In this case the mean discharge represents the difference between the mean discharges of the Columbia near Trail and the Kootenay near Glade.

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MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914—*Concluded*.

(Drainage area, 15,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	10,600	8,300	9,410	0.63	0.73	579,000
February.....	8,000	6,800	7,440	0.50	0.52	413,000
March.....	8,900	8,600	8,180	0.54	0.62	503,000
April.....	32,000	8,600	17,800	1.18	1.32	1,060,000
May.....	89,400	33,000	64,400	4.29	4.95	3,960,000
June.....	125,000	91,100	108,000	7.2	8.03	6,430,000
July.....	133,000	92,300	119,000	7.93	9.14	7,320,000
August.....	89,400	58,900	71,500	4.76	5.49	4,400,000
September.....	57,800	31,500	44,000	2.03	3.27	2,620,000
October.....	36,500	25,500	30,600	2.04	2.35	1,880,000
November.....	26,000	19,400	23,600	1.57	1.75	1,400,000
December.....	20,700	9,900	15,000	1.00	1.15	922,000

COLUMBIA RIVER NEAR REVELSTOKE (3007).

Location.—S.E. $\frac{1}{4}$ section 33, township 23, range 2, west 6th, meridian, above the mouth of Illecillewaet river on downstream side of highway bridge near Revelstoke.

Records Available.—1912-13-14, during open season.

Climatic Conditions.—In 1914 the precipitation was 40.5 inches, of which about 10 feet was snowfall. The summers are hot, with considerable rainfall. The winters are fairly cold, as low as -20°F . some seasons, with very heavy snowfall. Frazil ice forms in large quantities.

Gauge.—Chain gauge used and read daily during open season by Mr. J. H. Jones.

Channel.—About 1,000 feet wide, controlled by a fairly permanent sandbar, 500 yards below. Shift in 1913 apparently caused by the building of a break-water at the control.

Discharge Measurements.—Sixteen well distributed measurements taken during 1911-12-13-14. Miscellaneous ice-cover metering taken on February 27, 1912. Discharge, 4,460 c.f.s.

Accuracy.—Accurate gauge reading, fair conditions for metering. These results are considered to be within 3 per cent.

DISCHARGE MEASUREMENTS of Columbia River near Revelstoke, B.C., for 1914.

Date.	Hydrographer	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec. ft.
June 25	J. A. Elliott	1909	846	11,500	6.38	13.2	73,000
May 20	"	1672	835	8,190	5.93	11.6	48,500
Sept 7	J. A. E. C. E. R.	1927	825	7,940	4.75	9.5	37,700
Oct. 8	J. A. E.	1909	710	5,750	3.18	7.0	18,300
Nov 18	"	1909	705	4,210	2.66	5.1	11,200

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

DAY.	May.		June.		
	Gauge Height	Discharge	Gauge Height	Discharge.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	
1.....	Average	11-6	52,700	
2.....	35,000	13-18	67,300	
3.....	15-25	88,700	
4.....	16-35	100,000	
5.....	16-05	97,500	
6.....	15-3	89,300	
7.....	14-1	76,500	
8.....	13-3	68,000	
9.....	12-8	63,200	
10.....	12-9	64,700	
11.....	13-3	68,000	
12.....	13-9	74,000	
13.....	15-2	88,200	
14.....	16-2	98,600	
15.....	16-9	106,000	
16.....	17-8	116,000	
17.....	18-8	129,000	
18.....	19-0	132,000	
19.....	19-0	132,000	
20.....	11-8	54,000	17-4	113,000
21.....	12-2	56,500	16-1	98,200
22.....	12-4	59,400	15-6	90,900
23.....	12-9	64,600	14-6	81,300
24.....	13-6	71,500	14-1	76,800
25.....	13-8	73,500	14-1	77,000
26.....	13-5	70,500	14-9	85,200
27.....	12-8	63,700	15-4	90,500
28.....	12-2	58,100	15-4	90,800
29.....	11-4	51,000	15-7	93,200
30.....	10-8	46,400	16-1	97,900
31.....	10-96	47,400

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	16.1	97,900	14.7	82,700	10.5	43,600	8.9	31,300	6.8	18,200	5.5	12,400
2	17.1	109,000	15.0	86,000	10.8	46,000	8.6	29,200	6.9	18,700	5.4	12,000
3	18.1	121,000	15.0	86,000	10.7	45,200	8.3	27,100	7.0	19,200	5.3	11,600
4	19.1	133,000	15.0	86,000	10.5	43,600	7.9	24,400	6.9	18,700	5.1	10,800
5	19.2	134,000	15.0	86,000	10.4	42,800	7.6	22,600	6.8	18,200	5.0	10,500
6	19.0	132,000	14.4	79,500	9.8	38,000	7.4	21,400	6.6	17,200	4.9	10,200
7	18.2	122,000	14.2	77,500	9.7	37,200	7.2	20,200	6.4	16,200	4.8	9,900
8	18.0	120,000	14.4	79,500	10.6	44,400	7.2	20,200	6.3	15,700	4.8	9,900
9	17.2	110,000	13.4	69,500	10.0	39,600	7.3	20,800	6.3	15,700		
10	17.4	112,000	12.3	59,000	9.7	37,200	7.2	20,200	6.2	15,200		
11	18.6	127,000	11.9	55,400	9.3	34,100	7.1	19,700	6.3	15,700		
12	18.4	124,000	11.5	51,800	8.6	29,200	6.9	18,700	6.1	14,800		Average 8,000
13	18.2	122,000	11.7	53,600	8.2	26,400	6.8	18,200	6.0	14,400		
14	20.7	146,000	12.4	59,900	8.1	25,700	6.7	17,700	5.9	14,000		
15	19.3	136,000	12.9	64,700	7.6	22,600	6.6	17,200	5.8	13,600		
16	18.8	129,000	12.8	63,700	6.8	18,200	7.7	23,200	5.7	13,200		
17	16.3	100,000	12.6	61,700	7.0	19,200	7.9	24,400	5.4	12,000		
18	16.2	99,000	12.5	60,800	7.2	20,200	7.8	23,800	5.3	11,600		
19	16.8	105,000	12.5	60,800	8.0	25,000	7.7	23,200	5.3	11,600		
20	16.1	98,000	12.8	63,700	7.7	23,200	7.0	19,200	5.2	11,200		
21	15.3	89,300	13.0	65,700	7.6	22,600	6.6	17,200	5.2	11,200		
22	14.6	81,600	12.9	64,700	7.5	22,000	6.4	16,200	5.2	11,200		
23	14.2	77,500	12.6	61,700	7.4	21,400	6.4	16,200	5.3	11,600		
24	14.1	76,500	12.0	56,300	7.5	22,000	6.3	15,700	5.4	12,000		
25	14.2	77,500	11.5	51,800	7.7	23,200	6.2	15,200	5.5	12,400		
26	13.7	72,500	11.3	50,200	8.0	25,000	6.1	14,800	5.7	13,200		
27	13.4	69,500	11.4	51,000	9.7	37,200	6.0	14,400	5.6	12,800		
28	13.1	66,600	11.6	52,700	9.6	36,400	5.9	14,000	5.7	13,200		
29	12.9	64,700	11.8	54,500	9.6	36,400	5.7	13,200	5.7	13,200		
30	13.2	67,500	10.5	43,600	9.1	32,700	6.2	15,200	5.6	12,800		
31	13.9	74,500	10.4	42,800			6.8	18,200				

MONTHLY DISCHARGE of Columbia River near Revelstoke, for 1914.

(Drainage area, 9,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum.	Minimum.	Mean.	Per Square Mile	Depth in inches	Total in	
					Drainage Area.	Acres-feet	
May	73,500		44,500	4.94	5.70	2,740,000	
June	132,000	52,700	90,200	10.0	11.2	5,370,000	B
July	116,000	64,700	103,000	11.4	13.1	6,300,000	B
August	86,000	42,800	66,700	7.41	2.54	1,100,000	A
September	46,000	18,200	31,700	3.52	3.93	1,804,000	A
October	31,300	13,200	19,900	2.21	2.55	1,250,000	A
November	19,200	11,200	14,300	1.59	1.77	851,000	A
December	12,400		8,750	0.97	1.12	508,000	

FOUR-MILE CREEK BELOW HEWITT MILL (3027).

Location.—At bridge about 3 miles from mouth, near Silverton, and about a mile below Hewitt Mill. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot with light rainfall after June. Winters, not very severe, with moderate snowfall. The creek does not stay frozen for more than a few days at a time. Frazil and anchor ice may form at times.

Gauge.—Vertical staff, enamel, read daily by Mr. Geo. Stilwell, superintendent at Hewitt mill.

Channel.—Swift water, with rocky bed. Apparently permanent.

Discharge Measurements.—Seven measurements were made in 1914.

Accuracy.—The measurements may not be very accurate. Daily gauge readings are obtained. Accuracy not guaranteed below gauge height, 0.5. Accuracy above 0.5 and below 1.5, 10 per cent. Accuracy above 1.5, 20 per cent.

General.—Four-mile creek is a small creek flowing from the east into Slocan lake, near Silverton. It drains a mountainous country, abundant in mineral wealth, and the creek is used for mining purposes by Standard, Hewitt, and Van Roi mines.

DISCHARGE MEASUREMENTS of Four Mile Creek, Silverton, below Hewitt Mill, for 1914.

Date.	Hydrographer.	Meter No.	Width.		Area of Section.		Mean Velocity.		Gauge Height.		Discharge.	
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.					
April 19	C. E. W., D. O' B. G.	1,048	26.5	43.0	3.97	0.85	171					
May 12	J. A. E., G. K. B.	1,672	33.5	63.5	4.69	1.20	298					
June 11	G. K. B., C. E. R.	1,927	30.0	57.2	4.81	1.15	275					
June 18	G. K. B.	1,927	37.0	95.6	5.01	2.10	479 ¹					
July 9	D. O. B. G., J. A. E.	1,929	28.0	66.0	4.30	1.25	283					
Aug. 18	D. O' B. G., J. A. E.	1,929	24.0	33.1	2.64	0.5	87.6					
Nov. 3	J. A. E., G. K. B.	1,909	22.0	32.5	3.12	0.5	101					

¹Meter out of order.

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DAILY GAUGE HEIGHT AND DISCHARGE of Four-Mile River, below Hewitt Mill, for 1914.

DAY.	May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0.9	190	1.65	436
2	1.1	150	2.10	612
3	1.25	296	2.45	758
4	1.2	280	2.40	737
5	1.1	250	1.85	514
6	1.05	235	1.70	455
7	1.05	235	1.50	381
8	1.05	235	1.40	346
9	1.17	271	1.35	329
10	1.2	280	1.35	329
11	1.2	280	1.35	329
12	1.2	280	1.45	364
13	1.28	306	1.60	417
14	1.37	336	1.95	553
15	1.7	455	2.05	592
16	1.8	494	2.25	674
17	1.65	456	2.4	737
18	1.55	399	2.4	737
19	1.5	381	2.47	767
20	1.45	364	2.0	572
21	1.45	364	1.60	417
22	1.45	364	1.40	346
23	1.52	388	1.30	312
24	1.62	425	1.30	312
25	1.65	436	1.30	312
26	1.52	388	1.40	346
27	1.45	364	1.50	381
28	1.32	319	1.5	381
29	1.25	296	1.55	399
30	1.32	319	1.6	417
31	1.48	374		

DAILY GAUGE HEIGHT AND DISCHARGE of Four-Mile River, below Hewitt Mill, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-65	436	0-70	140	0-30	65	0-55	108	0-62	122	0-10	41
2	1-7	455	0-70	140	0-30	65	0-50	98	0-67	133	0-15	46
3	1-7	455	0-70	140	0-30	65	0-50	98	0-65	129	0-15	46
4	1-7	455	0-70	140	0-30	65	0-45	89	0-55	108	0-10	41
5	1-6	417	0-70	140	0-25	59	0-45	89	0-50	98	0-10	41
6	1-5	381	0-70	140	0-32	68	0-45	89	0-45	89	0-10	41
7	1-4	346	0-80	165	0-40	80	0-45	89	0-45	89	0-10	41
8	1-4	346	0-70	140	0-40	80	0-40	80	0-45	89	0-10	41
9	1-3	312	0-60	118	0-40	80	0-40	80	0-45	89	0-10	41
10	1-25	296	0-60	118	0-37	76	0-40	80	0-45	89	0-05	36
11	1-2	280	0-60	118	0-35	73	0-40	80	0-40	80	0-05	36
12	1-2	280	0-55	108	0-35	73	0-40	80	0-40	80	0-05	36
13	1-25	296	0-50	98	0-35	73	0-35	73	0-40	80	0-05	36
14	1-3	312	0-50	98	0-38	77	0-35	73	0-45	89	0-02	34
15	1-25	296	0-50	98	0-40	80	0-30	65	0-30	65	0-05	36
16	1-22	286	0-50	98	0-50	98	0-30	65	0-30	65	0-05	36
17	1-07	241	0-55	108	0-55	108	0-55	108	0-25	59	0-05	36
18	1-00	220	0-50	98	0-65	129	0-55	108	0-25	59	0-00	32
19	1-00	220	0-45	89	0-65	129	0-55	108	0-25	59	0-00	32
20	1-00	220	0-45	89	0-60	118	0-55	108	0-25	59	0-00	32
21	0-87	183	0-42	84	0-55	108	0-52	102	0-25	59	-0-05	28
22	0-85	177	0-40	80	0-50	98	0-40	80	0-25	59	-0-10	25
23	0-80	165	0-40	80	0-50	98	0-40	80	0-25	59	-0-18	21
24	0-80	165	0-40	80	0-50	98	0-40	80	0-25	59	-0-20	20
25	0-80	165	0-35	73	0-50	98	0-40	80	0-20	52	-0-10	25
26	0-80	165	0-35	73	0-50	98	0-40	80	0-25	59	-0-00	32
27	0-80	165	0-30	65	0-68	136	0-35	73	0-25	59	-0-05	36
28	0-75	152	0-30	65	0-60	118	0-35	73	0-25	59	-0-05	36
29	0-75	152	0-35	73	0-60	118	0-35	73	0-25	59	-0-00	32
30	0-70	140	0-35	73	0-55	108	0-46	91	0-20	52	0-00	32
31	0-70	140	0-30	65			0-50	98			0-00	32

MONTHLY DISCHARGE of Four-Mile Creek near Silverton, for 1914.

(Drainage area, 41 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May	494	190	328	8-00	9-22	10,200	D
June	758	312	475	11-6	12-9	28,300	D
July	455	140	268	6-54	7-54	16,500	D
August	165	65	103	2-51	2-89	6,300	B
September	136	59	91-3	2-23	2-50	5,430	B
October	108	65	86-3	2-10	2-42	5,360	B
November	133	52	76-9	1-88	2-10	4,580	B
December	46	20	34-8	0-85	0-98	2,140	B

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FOUR MILE CREEK ABOVE HEWITT INTAKE (3028).

Location.—Immediately above Hewitt intake, about 5 miles from Silverton, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Four-mile creek below Hewitt mill.

Gauge.—Vertical staff, enamel, read daily by Mr. P. Harding, of Van Roi mill.

Channel.—Water smooth and swift, controlled by Hewitt diversion dam.

Discharge Measurements.—Five measurements were made in 1914, by wading.

Accuracy.—No high-water measurements were made. The gauge readings have been somewhat intermittent. The results may not be closer than 20 per cent.

General.—Granite creek flows in below this station and above the station located below Hewitt mill.

DISCHARGE MEASUREMENTS of Four Mile Creek near Silverton, above Hewitt Intake, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 19	G. E. W., D. O'B. G.....	1048	38.5	62.7	1.27	1.05	80.1
June 11.....	G. K. B., C. E. R.....	1927	28.2	55.0	3.55	1.52	195.0 ¹
July 9.....	J. A. E., D. O'B. G.....	1929	30.5	57.8	3.56	1.58	206.0
Aug. 18.....	D. O'B. G.....	1929	26	26.9	1.86	0.8	50.1
Nov. 3.....	J. A. E., G. K. B.....	1909	25	22.6	2.09	0.8	47.4

¹Different section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0-9	60-0	2-05	348-0
2			1-2	110-0	2-3	430-0
3			1-55	198-0	2-0	332-0
4			1-7	241-0	1-9	301-0
5			1-65	226-0	1-8	271-0
6			1-6	212-0	1-6	212-0
7			1-55	198-0	1-6	212-0
8			1-5	183-0	1-6	212-0
9			1-85	226-0	1-5	183-0
10			1-7	241-0	1-7	241-0
11			1-6	212-0	1-7	241-0
12			1-5	183-0	1-8	271-0
13			1-5	183-0	1-9	301-0
14			1-8	271-0	1-9	301-0
15			2-0	332-0	2-1	365-0
16			2-15	381-0	2-2	397-0
17			2-1	365-0	2-3	430-0
18			1-9	301-0	2-2	397-0
19			1-7	241-0	2-0	332-0
20			1-7	241-0	2-2	397-0
21			1-8	271-0	2-0	332-0
22			1-9	301-0	1-9	301-0
23			1-9	301-0	1-7	241-0
24			0-7	39-5	1-6	212-0
25			0-7	39-5	1-6	212-0
26		0-6	1-45	170-0	1-5	183-0
27		0-7	1-4	157-0	1-5	183-0
28		0-6	1-5	183-0	1-4	157-0
29		0-8	1-6	212-0	1-5	183-0
30		0-8	1-8	271-0	1-6	212-0
31			1-9	301-0		

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DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.5	183-0	1.0	71.5	0.80	48.0	0.82	50.4	0.8	48.0	0.5	26.2
2		183-0	1.0	71.5	0.75	43.8	0.82	50.4	0.9	60.0	0.48	25.2
3		183-0	1.0	71.5	0.75	43.8	0.80	48.0	0.82	50.4	0.45	23.7
4		183-0	1.0	71.5	0.75	43.8	0.78	46.3	0.8	48.0	0.4	21.2
5		183-0	0.9	60.0	0.75	43.8	0.78	46.3	0.85	54.0	0.4	21.2
6		183-0	0.9	60.0	0.55	29.0	0.72	41.2	0.82	50.4	0.4	21.2
7		183-0	1.0	71.5	0.50	26.2	0.69	37.9	0.78	46.3	0.5	26.2
8		183-0	1.0	71.5	0.60	31.7	0.70	39.5	0.7	39.5	0.5	26.2
9	1.5	183-0	1.0	71.5	0.62	33.3	0.68	37.9	0.72	41.2	0.5	26.2
10	1.45	170.0	1.0	71.5	0.62	33.3	0.68	37.9	0.7	39.5	0.5	26.2
11	1.45	170.0		70.0	0.68	37.9	0.7	39.5	0.7	39.5	0.45	23.7
12	1.6	212.0		65.0	0.68	37.9	0.68	37.9	0.7	39.5	0.45	23.7
13	1.65	226.0		60.0	0.68	37.9	0.65	35.6	0.68	37.9	Ice	20.0
14	1.65	226.0		60.0	0.68	37.9	0.62	33.3	0.65	35.6		18.0
15	1.65	226.0		60.0	0.68	37.9	0.6	31.7	0.62	33.3		17.0
16	1.45	170.0		55.0	0.60	31.7	0.6	31.7	0.57	30.0		16.0
17	1.25	121.0		50.0	0.68	37.9	0.82	50.4	0.60	31.7		15.0
18	1.25	121.0	0.8	48.0	0.78	46.3	0.88	57.6	0.60	31.7		15.0
19	1.35	144.0	0.9	60.0	0.97	68.0	0.85	54.0	0.60	31.7		15.0
20	1.30	132.0	0.95	65.8	0.98	69.2	0.78	46.3	0.58	30.6		16.0
21	1.15	109.0	0.9	60.0	0.85	54.0	0.7	39.5	0.60	31.7		16.0
22	1.15	109.0	0.95	65.8	0.88	57.6	0.7	39.5	0.58	30.6	0.3	16.8
23	1.20	110.0	0.9	60.0	0.78	46.3	0.68	37.9	0.55	29.0	0.3	16.8
24	1.10	90.0	1.0	71.5	0.80	48.0	0.65	35.6	0.52	27.3	0.3	16.8
25	1.10	90.0	1.0	71.5	0.80	48.0	0.65	35.6	0.5	26.2	0.25	13.6
26	1.1	90.0	0.85	54.0	0.85	54.0	0.65	35.6	0.55	29.0	0.25	13.6
27	1.1	90.0	0.85	54.0	0.95	65.8	0.62	33.3	0.52	27.3	0.25	13.6
28	1.1	90.0	0.85	54.0	0.95	65.8	0.6	31.7	0.5	26.2	0.25	13.6
29	1.1	90.0	0.85	54.0	0.95	65.8	0.6	31.7	0.5	26.2	0.25	13.6
30	1.1	90.0	0.85	54.0	0.88	57.6	0.65	35.6	0.5	26.2	0.25	13.6
31	1.0	71.5	0.80	48.0			0.70	39.5			0.20	12.5

MONTHLY DISCHARGE of Four Mile Creek near Silverton, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	
May	381	60	234	7.80	8.99	14,400	D
June	430	157	290	9.66	10.8	17,300	D
July	226	71.5	148	4.93	5.68	9,100	
August	71.5	48	62.4	2.08	2.40	3,840	
September	69.2	26.2	46.1	1.54	1.72	2,740	C
October	57.6	31.7	40.3	1.34	1.54	2,480	C
November	60.0	26.2	36.6	1.22	1.30	2,180	C
December	26.2	12.5	18.8	0.63	0.73	1,160	

GOAT RIVER NEAR ERICKSON (3031).

Location.—Immediately above bridge near Erickson, and 5 miles from Creston. Nelson district.

Records Available.—May to November, 1914.

Climatic Conditions.—Similar to Nelson (see Kootenay river near Nelson), being affected by Kootenay lake, only a few miles distant. The river generally freezes over, however, for two or three weeks at a time, but seldom for the whole winter. Frazil ice may be expected.

Gauge.—Vertical staff gauge, located immediately above head of canyon, 20 yards from Canyon Siding station, on C.P.R. The control is permanent.

Channel.—At the gauge, permanent; below measuring section, shifting.

Discharge Measurements.—Seven measurements were made in 1914 from the highway bridge below the canyon, one-quarter mile from Erickson. This section is temporary. One measurement was made on December 21, under ice conditions, and a discharge of 261 c.f.s. was obtained.

General.—Goat river is a large stream discharging into Kootenay river immediately above Kootenay lake. The drainage area is about 275 square miles of mountainous country. There are however, no high peaks, and it is not probable that the stream is glacial fed. During August the river may get very low; in fact the discharge was lower at the end of August than at the end of December, 1914.

The canyon near Erickson affords a good power, which will probably be harnessed in the future. A head of at least 100 feet may be obtained, and the low flow is probably in the neighborhood of 100 c.f.s.

Accuracy.—Daily gauge readings are obtained. The gauge control is permanent. The measurements are fair, and the gauge-height discharge curve is very good. Accuracy, 5 per cent.

DISCHARGE MEASUREMENTS of Goat River near Erickson, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-feet.
1914.							
May 8.....	C. E. R., G. K. B.....	1672	99	549	4.55	3.9	2,500
May 28.....	J. A. Elliott.....	1909	99	589	5.00	3.5	2,940
June 18.....	C. E. R.....	1672	103	711	6.02	4.95	4,280
July 21.....	D. O'B. G.....	1929	87	431	1.7	0.00	735
Aug. 4.....	do.....	1929	79	367	0.95	-1.10	348
Oct. 18.....	do.....	1929	96	394	1.26	-0.69	498
Dec. 21.....	J. A. E., C. B. C.....	1909	32	22.9	1.14	-1.20	251 ¹

¹Ice conditions.

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DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C.,
for 1914.

DAY.	May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			4.70	3,980
2.....			5.50	4,760
3.....			6.50	5,780
4.....			6.20	5,460
5.....			4.85	4,130
6.....			4.10	3,440
7.....	3.0	2,530	3.45	2,880
8.....	3.0	2,530	3.00	2,530
9.....		3,080	2.60	2,240
10.....	4.4	3,710	2.20	1,970
11.....		3,530	2.25	2,200
12.....	4.1	3,440	3.05	2,570
13.....	4.3	3,620	3.80	3,170
14.....	5.0	4,280	4.45	3,760
15.....	6.5	5,780		3,989
16.....	6.40	5,670	5.00	4,280
17.....	5.90	5,160	4.80	4,080
18.....	5.60	4,860	5.15	4,430
19.....	5.60	4,860	4.65	3,930
20.....	4.95	4,230	3.95	3,300
21.....	4.75	4,030	2.80	2,380
22.....	5.20	4,470	2.70	2,310
23.....	5.20	4,470	2.05	1,860
24.....	5.35	4,610	1.85	1,730
25.....	5.15	4,430	2.80	2,380
26.....	4.45	3,760	3.55	2,960
27.....	3.95	3,300	3.10	2,610
28.....	3.50	2,920	1.80	1,380
29.....	3.00	2,530	2.60	2,240
30.....	3.15	2,650	2.85	2,410
31.....	3.95	3,300		

DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	2.70	2,310	-0.95	400	-1.60	205	-1.10	355	0.10	785	-0.8	445
2.	2.65	2,270	-1.00	385	-1.60	205	-1.10	355	0.40	930	-0.85	430
3.	2.70	2,310	-1.10	355	-1.60	205	-1.00	385	1.30	1,410	-0.85	430
4.	2.70	2,310	-1.10	355	-1.60	205	-1.15	340	1.30	1,410	-0.80	445
5.	2.25	2,000	-1.10	355	-1.60	205	-1.10	355	1.45	1,490	-0.80	445
6.	1.95	1,800	-1.10	355	-1.60	205	-1.15	340	1.90	1,760	-0.90	415
7.	1.65	1,610	-1.20	325	-1.60	205	-1.10	355	1.50	1,520	-0.90	415
8.	1.55	1,560	-1.20	325	-1.60	205	-1.10	355	1.9	1,760	-0.90	415
9.	1.40	1,460	-1.20	325	-1.50	235	-1.10	355	1.75	1,670	-0.90	415
10.	1.10	1,300	-1.20	325	-1.50	235	-1.08	361	1.45	1,490	-0.90	415
11.	1.05	1,270	-1.20	325	-1.50	235	-1.05	370	1.1	1,300	-0.90	415
12.	0.75	1,100	-1.20	325	-1.50	235	-1.00	385	0.8	1,130	-1.00	385
13.	1.00	1,240	-1.20	325	-1.50	235	-1.00	385	0.35	900	ice	385
14.	1.30	1,410	-1.20	325	-1.40	265	-1.00	385	0.05	765	.....	385
15.	1.15	1,330	-1.20	325	-1.35	280	-0.90	415	0.0	745	.....	385
16.	0.80	1,130	-1.20	325	-1.30	295	-0.70	480	-0.05	725	.....	385
17.	0.50	980	-1.15	340	-1.20	325	-0.55	530	-0.05	725	.....	385
18.	0.35	900	-1.30	295	-0.90	415	-0.40	585	-0.15	685	.....	385
19.	0.30	880	-1.35	280	-0.50	550	-0.25	645	-0.20	665	.....	385
20.	0.25	850	-1.40	265	-0.40	585	-0.25	645	-0.25	645	.....	385
21.	0.10	785	-1.40	265	-0.55	530	-0.45	565	-0.30	625	.....	385
22.	-0.10	705	-1.40	265	-0.65	500	-0.60	515	-0.35	605	.....	385
23.	-0.30	625	-1.40	265	-0.85	430	-0.65	495	-0.40	585	.....	385
24.	-0.30	625	-1.40	265	-1.00	385	-0.70	480	-0.40	585	.....	385
25.	-0.45	565	-1.40	265	-1.00	385	-0.70	480	-0.50	550	.....	385
26.	-0.50	550	-1.50	235	-1.05	370	-0.70	480	-0.50	550	.....	385
27.	-0.50	550	-1.50	235	-1.10	350	-0.65	500	-0.50	550	.....	385
28.	-0.60	515	-1.50	235	-1.10	355	-0.60	515	-0.50	550	.....	385
29.	.....	480	-1.60	205	-1.10	355	-0.65	500	-0.50	550	.....	385
30.	-0.80	445	-1.60	205	-1.10	355	-0.50	550	-0.70	480	.....	385
31.	-0.90	415	-1.60	205	.....	.....	-0.40	585	.....	.....	.....	385

MONTHLY DISCHARGE of Goat River near Erickson, B.C., for 1914.

(Drainage area, 276 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.	5,780	1,730	3,200	11.6	12.9	190,000	B
July.	2,310	415	1,170	4.25	4.90	71,930	A
August.	400	205	299	1.08	1.24	18,400	A
September.	585	205	318	1.15	1.28	18,900	A
October.	645	340	440	1.59	1.83	27,100	A
November.	1,760	480	938	3.40	3.79	55,800	A

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KASLO CREEK (3029).

Location.—At the second highway bridge from the mouth near Kaslo, Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—From December 1, 1913, to November 30, 1914, the precipitation at Kaslo was 24.4 inches. The summers are hot and generally dry in July and August. The winters are mild, the temperature seldom going below 0°F. The snowfall is not very heavy, and considerable rain falls in the fall and spring. The creek freezes over during cold spells, but seldom for more than two weeks at a time. Frazil ice is a possibility.

Gauge.—A chain gauge is read daily by Mr. W. F. Hurst, of Kaslo.

Channel.—The bed of the stream is full of large boulders, but apparently permanent, and the water is very fast and not at right angles to the bridge.

Discharge Measurements.—Five well distributed measurements were made in 1914.

Accuracy.—Daily gauge readings are obtained, the measurements may not be very accurate, and the gauge height discharge curve seems fairly good. The results should be well within 15 per cent.

General.—Kaslo creek is a turbulent mountain stream, about 25 miles long (two forks), flowing eastward into Kootenay lake, near Kaslo. The drainage area is about 120 square miles of country containing valuable mineral deposits. Four miles from the mouth the stream divides into what are known as North and South Forks of Kaslo creek. It is along the North Fork that the old narrow gauge railway (Great Northern) was built during the rush several years ago. The narrow gauge has long been out of commission, and, in 1914, the C.P.R. completed their line from Kaslo to Sandon and Rosebery.

Kaslo creek and its tributaries are used still for mining purposes, and the town of Kaslo has a water-power development for lighting purposes, near the mouth.

DISCHARGE MEASUREMENTS of Kaslo Creek near Kaslo, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 23	J. A. E.	1,672	64	282	7.11	2.90	2,000
June 17	C. E. R.	1,672	73	349	9.35	3.75	3,270
July 22	"	1,672	65.9	191	3.86	1.95	737
Sept. 23	J. A. E.	1,929	62.9	131	2.70	1.25	354
Nov. 30	C. E. R., G. K. B.	1,929	63.0	96	2.04	0.85	195

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DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C.,
for 1914.

DAY.	May.		June.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			3-08	2,210
2.....			3-40	2,710
3.....			4-15	4,120
4.....			3-82	3,460
5.....			3-20	2,390
6.....			2-98	2,060
7.....			2-65	1,600
8.....			2-50	1,420
9.....			2-50	1,420
10.....			2-55	1,480
11.....			2-60	1,540
12.....			2-75	1,740
13.....			3-10	2,240
14.....			3-5	2,870
15.....			3-8	3,420
16.....			4-0	3,800
17.....			4-17	4,160
18.....			4-15	4,120
19.....			3-75	3,320
20.....			3-35	2,630
21.....			3-05	2,160
22.....			2-72	1,700
23.....	3-0	2,090	2-55	1,480
24.....	3-0	2,090	2-5	1,420
25.....	3-1	2,240	2-65	1,600
26.....	2-87	1,900	2-95	2,020
27.....	2-67	1,630	2-97	2,040
28.....	2-55	1,480	2-95	2,020
29.....	2-42	1,330	3-07	2,200
30.....	2-4	1,310	3-2	2,390
31.....	2-6	1,540		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C.,
for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-32	2,580	2-0	880	1-20	330	1-28	370	1-3	380	0-83	185
2.....	3-45	2,790	1-92	810	1-18	321	1-30	405	1-45	458	0-85	192
3.....	3-57	2,960	1-92	810	1-15	307	1-25	355	1-4	430	0-85	192
4.....	3-6	3,040	1-83	727	1-22	340	1-20	330	1-27	365	0-73	154
5.....	3-3	2,550	1-65	585	1-17	316	1-10	285	1-3	380	0-75	160
6.....	3-25	2,470	1-72	636	1-10	245	1-08	277	1-3	380	0-77	166
7.....	3-15	2,320	1-8	700	1-20	330	1-08	277	1-25	355	0-83	185
8.....	3-1	2,240	1-57	530	1-25	355	1-02	253	1-25	355	0-7	145
9.....	3-05	2,160	1-45	458	1-15	307	1-00	245	1-12	294	0-7	145
10.....	3-05	2,160	1-42	441	1-02	253	0-98	238	1-15	307	.....	145
11.....	3-05	2,160	1-42	441	1-12	294	1-07	273	1-25	355	.....	135
12.....	3-17	2,340	1-45	458	1-15	307	1-0	245	1-15	307	.....	125
13.....	3-2	2,390	1-55	518	1-02	253	1-0	245	1-2	330	.....	120
14.....	3-15	2,320	1-45	458	1-05	265	0-97	235	1-05	265	.....	115
15.....	3-05	2,160	1-52	498	1-07	273	0-93	220	1-1	285	.....	115
16.....	2-67	1,630	1-55	518	1-60	245	0-95	227	0-92	217	.....	115
17.....	2-5	1,420	1-52	498	1-05	265	1-07	273	1-07	273	.....	115
18.....	2-6	1,540	1-37	415	1-27	365	1-27	365	0-95	227	.....	115
19.....	2-6	1,540	1-40	430	1-78	684	1-33	395	0-98	238	.....	115
20.....	2-65	1,600	1-35	405	1-52	498	1-25	355	1-05	265	.....	115
21.....	2-30	1,200	1-35	405	1-35	405	1-15	307	0-97	235	.....	115
22.....	2-00	880	1-37	415	1-30	380	1-12	294	0-92	217	.....	115
23.....	1-95	835	1-32	390	1-35	405	1-05	265	0-95	227	.....	115
24.....	2-08	960	1-28	370	1-30	405	1-02	253	0-98	238	.....	115
25.....	2-05	930	1-25	355	1-48	474	1-05	265	0-95	227	.....	115
26.....	1-95	835	1-25	355	1-60	550	1-05	265	0-95	227	.....	115
27.....	2-0	880	1-25	355	1-80	700	1-05	265	0-98	238	.....	115
28.....	1-95	835	1-28	370	1-58	537	1-05	265	0-95	227	.....	115
29.....	1-9	790	1-32	390	1-42	441	1-05	265	1-02	253	.....	115
30.....	1-85	745	1-32	390	1-35	405	1-15	307	0-82	182	.....	115
31.....	1-95	835	1-25	355	.....	.....	1-25	355	.....	.....	.....	.....

MONTHLY DISCHARGE of Kaslo Creek near Kaslo, for 1914.

(Drainage area, 170 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				Run Off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches Drainage area.	Total acre-feet.
June.....	4,160	1,420	2,390	14-1	15-7	142,000
July.....	3,040	790	1,750	10-3	11-9	108,000
August.....	880	355	495	2-91	3-36	30,400
September.....	684	245	375	2-20	2-46	22,300
October.....	395	220	289	1-70	1-96	17,800
November.....	458	182	291	1-71	1-91	17,300
December.....	192	115	133	0-78	0-90	8,180

Accuracy "C"

KOOSKANAX CREEK NEAR NAKUSP (3022).

Location.—At bridge over canyon, 1 mile from Nakusp and about 1 mile from the mouth. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation at Nakusp, from December, 1913, to November 30, 1914, was 26.8 inches. The summers are hot and fairly dry. The winters are mild. Occasionally, for a day or two, the temperature will go below zero, but the mean temperature of winter months is probably 25° to 35°F. Frazil ice may be expected for a few days at a time only.

Gauge.—A chain is located at the bridge, and read by Mr. L. H. Rawlings twice a week.

Channel.—The river is confined between perpendicular walls, 38 feet apart at the gauging and measuring section. The control is a sand and gravel bar, and seems fairly permanent.

Discharge Measurements.—Nine measurements were made in 1914.

Accuracy.—These results should be within 20 per cent. The gauge readings only being twice a week almost prohibit giving an accuracy during May, June, and July.

General.—Kooskanax creek is a stream about 25 miles long, rising in the divide between Trout lake and Upper Arrow lake, southeast of Nakusp, and discharging into Upper Arrow lake near Nakusp. The drainage area is about 125 square miles.

There is a power site in the canyon about a mile from the mouth, where, at some future date, the town of Nakusp might obtain a suitable development for lighting purposes and small industries. The canyon is about 100 feet long, 30 feet wide, and about 40 to 50 feet deep. The low-water flow is seldom less than 100 c.f.s. Mr. C. E. Webb made a preliminary report in March, 1914, on the power possibilities of this creek near Nakusp. His report is included in part 2 of this report.

DISCHARGE MEASUREMENTS of Kooskanax River near Nakusp, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 19.....	C. E. Webb	1048	27	204	0.59	0.7	122
May 16.....	J. A. E. and G. K. B.	1672	26	274	5.63	4.2	1,540
June 13.....	G. K. B.	1927	26	273	4.30	3.50	1,150
" 20.....	G. K. B.	1927	26	275	5.40	3.80	1,480
" 28.....	J. A. E.	1909	27	293	4.73	3.34	1,390
Aug. 12.....	J. A. E.	1909	27	229	1.07	1.1	245
Sept. 4.....	J. A. E., C. E. R.	1928	28	221	0.62	0.65	137
Oct. 28.....	J. A. E.	1909	29	240	1.28	1.15	309
Nov. 23.....	J. A. E., O. J. B.	1909	28	230	0.95	1.2	220

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DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanax Creek near Nakusp,
for 1914.

DAY.	March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			0.7	115		920		1,740
2.....				125		945		1,780
3.....			135	135	2.06	975	4.1	1,820
4.....				145		1,010		1,810
5.....			0.8	155		1,045		1,790
6.....				195	2.8	1,080		1,770
7.....				235		1,040	4.0	1,760
8.....			1.1	275		1,000		1,720
9.....				305		960		1,680
10.....				335	2.5	920	3.8	1,650
11.....				365		935		1,590
12.....			1.4	395		955		1,530
13.....				410	2.6	975	3.5	1,470
14.....				425		1,275		1,480
15.....			1.5	440		1,575		1,500
16.....				460	4.2	1,880		1,510
17.....				480	3.1	1,250	3.6	1,530
18.....				500		1,340		1,570
19.....	0.7	115	1.7	530		1,430		1,610
20.....		115		620	3.6	1,530	3.8	1,650
21.....	0.7	115		720		1,560		1,620
22.....		115		820		1,590		1,590
23.....		115	2.5	920		1,620		1,560
24.....	0.7	115		975	3.8	1,650	3.6	1,530
25.....		112		1,030		1,660		1,500
26.....		109	2.8	1,080		1,680		1,470
27.....		105		1,010	3.9	1,700		1,440
28.....	0.65	102		940		1,750	3.4	1,410
29.....		108	2.4	870		1,700		1,410
30.....		111		895		1,700	3.4	1,410
31.....	0.7	115			3.9	1,700		

DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanox Creek near Nakusp,
for 1914—Concluded.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		1,470		990		128		680	1-3	355		235
2		1,530	2-5	920	0-7	115		690		345	1-0	235
3	3-7	1,590		820		115		700		335		225
4		1,570		720		115	2-1	720		325		215
5		1,560	1-9	620		115		700	1-2	315		205
6		1,550		560	0-7	115		685		335	0-9	195
7	3-6	1,530		500		118	2-0	670		365		195
8		1,500		445		120		650	1-4	395		195
9		1,470	1-4	395	0-72	123		630		395	0-9	195
10		1,440		365		121		610		395		195
11	3-4	1,410		335		119	1-85	597	1-4	395		195
12		1,380	1-2	315		117		590		385		195
13		1,350		305	0-7	115		580		375	0-9	195
14		1,320		295		111	1-8	575		365		195
15	3-2	1,300		285		107		545	1-3	355		195
16		1,300	1-1	275	0-65	102		525		370	0-9	195
17		1,300		261		155		505		380		185
18		1,300		248		210	1-6	485	1-4	395		175
19	3-2	1,300	1-0	235		260		470		395		165
20		1,280		225	1-20	315		455		395	0-8	155
21		1,260		215		355	1-5	440		395		155
22	3-1	1,250		205		395		415	1-4	395		155
23		1,250	0-9	195	1-50	449		395		365		155
24		1,250		195		485		375		335		155
25		1,250		195		530	1-3	355	1-2	315		155
26	3-1	1,250	0-9	195		575		340		295		155
27		1,230		185	1-90	620		330		275	0-8	155
28		1,210		175		630	1-2	315		255		140
29	3-0	1,200		165		650		325	1-0	235		130
30		1,180	0-8	155	2-00	670		335		235	0-7	115
31		1,060		141				345				115

MONTHLY DISCHARGE of Kooskanox Creek near Nakusp, B.C., for 1914.

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	1,080	115	530	4-25	4-74	31,500
May	1,880	920	1,330	10-6	12-2	81,800
June	1,820	1,410	1,600	12-8	14-3	95,200
July	1,590	1,060	1,350	10-8	12-4	83,000
August	990	141	362	2-90	3-34	22,300
September	670	102	272	2-18	2-43	16,200
October	720	315	517	4-14	4-77	31,800
November	395	235	336	2-69	3-00	20,000
December	235	115	178	1-42	1-64	10,900

Accuracy "D."

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KOOTENAY RIVER AT UPPER BONNINGTON FALLS (3075).

Location.—At the head-race of the West Kootenay Power and Light Company's plant No. 2, at Upper Bonnington, 10 miles west of Nelson and about 15 miles from the mouth of the Kootenay, near Castlegar. Nelson district.

Records Available.—October, 1907, to December, 1914, through the courtesy of the West Kootenay Power and Light Company.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson). The warming influence of Kootenay lake keeps the water of the river below the lake at a temperature such that the river never freezes over, and very little, if any, frazil ice and anchor ice is formed.

Gauge.—The elevation of the water each day was determined by means of measuring the distance to the surface of the water from a known point. These readings were taken by the West Kootenay Power and Light Company for their own information. The gauge is located at a point at the upstream end of the head-race, where part of the water is diverted to the turbines, and the remainder flows over the falls, some 200 feet below.

Method of Compilation.—The only metering section on Kootenay river between the lake and the mouth is near Glade, about 6 miles below Upper Bonnington. The only stream of any size entering between these points is Slocan river. The discharge curve for the Kootenay at Bonnington falls, near Nelson, and at Bonnington pool, is obtained by subtracting the discharge of Slocan river from the discharge of the Kootenay river near Glade. For more complete information on the studies carried on regarding the Kootenay between Kootenay lake and the mouth see report in Part 2, called, "Compilation of data on Kootenay river, between Kootenay lake and the mouth."

Accuracy.—As we do not know sufficient regarding the gauge, these data are not guaranteed, but it appears that they agree very well with similar data gathered in 1914 at Bonnington pool and near Nelson.

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

DAY.	October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	192-0	36,200	189-0	18,800	186-9	9,900
2.	192-0	36,200	189-0	18,800	186-9	9,900
3.	191-9	35,500	189-0	18,800	186-9	9,900
4.	191-9	35,500	189-0	18,800	186-8	9,600
5.	191-8	34,800	189-0	18,800	186-8	9,600
6.	191-7	34,200	189-0	18,800	187-5	12,200
7.	191-5	33,000	188-0	18,300	187-7	13,000
8.	191-0	30,000	188-8	17,900	187-6	12,600
9.	191-8	28,800	188-7	17,400	187-6	12,600
10.	196-5	27,000	188-6	16,900	187-5	12,200
11.	190-4	26,400	188-6	16,900	187-5	12,200
12.	190-4	26,400	188-6	16,900	187-5	12,200
13.	190-4	26,400	188-5	16,400	187-5	12,200
14.	190-3	25,800	188-0	14,200	187-5	12,200
15.	190-3	25,800	188-0	14,200	187-5	12,200
16.	190-3	25,800	187-9	13,800	187-5	12,200
17.	190-3	25,800	187-5	12,200	187-5	12,200
18.	190-0	24,000	187-3	11,400	187-3	11,400
19.	190-0	24,000	187-2	11,000	187-3	11,400
20.	189-8	22,900	187-2	11,000	187-3	11,400
21.	189-7	22,400	187-2	11,000	187-1	10,600
22.	189-7	22,400	187-2	11,000	187-1	10,600
23.	189-5	21,400	187-1	10,600	187-1	10,600
24.	189-5	21,400	187-1	10,200	187-0	10,200
25.	189-5	21,400	187-0	10,200	187-0	10,200
26.	189-4	20,800	187-0	10,200	187-0	10,200
27.	189-4	20,800	187-0	10,200	186-9	9,900
28.	189-1	19,300	187-0	10,200	186-9	9,900
29.	189-1	19,300	187-0	10,200	186-9	9,900
30.	189-1	19,300	186-9	9,900	187-1	10,600
31.	189-1	19,300	.....	.....	187-1	10,600

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
October	36,200	19,300	26,200	1-47	1-70	1,610,000
November	18,800	9,900	14,200	0-80	0-89	845,000
December	13,000	9,600	11,100	0-62	0-72	682,000

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	187-0	10,200	186-1	7,500	185-9	7,000	187-4	11,800	193-0	43,200	196-5	73,000
2	186-9	9,900	186-0	7,200	185-9	7,000	187-4	11,800	193-3	45,300	196-7	75,000
3	186-9	9,900	186-0	7,200	185-9	7,000	187-4	11,800	193-5	46,700	196-8	76,000
4	186-8	9,600	186-0	7,200	185-9	7,000	187-4	11,800	193-5	46,700	196-9	77,000
5	186-7	9,300	186-0	7,200	185-9	7,000	187-4	11,800	193-6	47,400	197-0	79,000
6	186-7	9,300	186-0	7,200	185-9	7,000	187-4	11,800	193-8	48,800	197-2	81,000
7	186-6	9,000	186-0	7,200	185-9	7,000	187-4	11,800	194-1	51,200	197-5	84,000
8	186-6	9,000	186-0	7,200	185-9	7,000	187-4	11,800	194-5	54,500	197-8	88,000
9	186-6	9,000	186-0	7,200	185-9	7,000	187-4	11,800	194-9	58,100	198-0	91,000
10	186-6	9,000	186-0	7,200	185-9	7,000	187-4	11,800	195-1	59,900	198-3	94,000
11	186-6	9,000	186-0	7,200	185-9	7,000	187-5	12,200	195-3	61,700	198-5	98,500
12	186-6	9,000	186-0	7,200	185-9	7,000	187-5	12,200	195-5	63,500	198-8	101,000
13	186-6	9,000	186-0	7,200	185-9	7,000	187-6	12,600	195-6	64,400	199-0	104,000
14	186-7	9,300	186-0	7,200	186-0	7,200	187-7	13,000	195-9	67,100	199-2	107,000
15	186-7	9,300	186-0	7,200	186-0	7,200	188-0	14,200	196-0	68,000	199-3	108,000
16	186-5	8,700	186-0	7,200	186-1	7,500	188-3	15,400	196-2	70,000	199-5	110,000
17	186-4	8,400	186-0	7,200	186-2	7,800	188-5	16,400	196-3	71,000	199-7	113,000
18	186-4	8,400	186-0	7,200	186-4	8,400	189-0	18,800	196-4	72,000	199-7	113,000
19	186-5	8,700	186-0	7,200	186-5	8,700	189-4	20,800	196-5	73,000	199-7	113,000
20	186-6	9,000	186-0	7,200	186-6	9,000	190-0	24,000	196-4	72,000	199-7	113,000
21	186-6	9,000	186-0	7,200	186-6	9,000	190-5	27,000	196-4	72,000	199-6	111,000
22	186-6	9,000	186-0	7,200	186-7	9,300	191-0	30,000	196-4	72,000	199-5	110,000
23	186-5	8,700	186-0	7,200	186-8	9,600	191-5	33,000	196-4	72,000	199-3	108,000
24	186-5	8,700	186-0	7,200	186-9	9,900	191-9	33,300	196-4	72,000	199-1	106,000
25	186-4	8,400	186-0	7,200	186-9	9,900	192-2	37,600	196-4	72,000	199-0	104,000
26	186-4	8,400	186-0	7,200	186-9	9,900	192-5	39,700	196-4	72,000	198-9	102,000
27	186-3	8,100	186-0	7,200	187-0	10,200	192-8	41,800	196-4	72,000	198-7	99,500
28	186-2	7,800	186-0	7,200	187-0	10,200	193-0	43,200	196-4	72,000	198-5	96,500
29	186-4	8,400	186-0	7,200	187-1	10,600	193-0	43,200	196-4	72,000	198-4	95,000
30	186-4	8,400	186-0	7,200	187-4	11,800	193-0	43,200	196-4	72,000	198-3	94,000
31	186-2	7,800	186-0	7,200	187-4	11,800	193-0	43,200	196-5	73,000	198-3	94,000

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	198-1	92,000	195-1	59,900	190-2	25,200	188-5	16,400	187-2	11,000	187-7	13,000
2	198-0	91,000	194-8	57,200	190-1	24,600	188-5	16,400	187-3	11,400	187-9	13,800
3	198-0	91,000	194-5	54,500	190-1	24,600	188-5	18,400	187-3	11,400	187-9	13,800
4	198-0	91,000	194-3	52,800	190-0	24,000	188-4	15,900	187-3	11,400	187-9	13,800
5	197-9	89,500	194-1	51,200	190-0	24,000	188-3	15,400	187-3	11,400	187-9	13,800
6	197-7	86,500	194-0	50,400	190-0	24,000	188-2	15,000	187-3	11,400	187-6	12,600
7	197-5	84,000	193-9	49,600	190-0	24,000	188-1	14,600	187-3	11,400	187-4	11,800
8	197-5	84,000	193-6	47,400	190-0	24,000	188-0	14,200	187-3	11,400	187-3	11,400
9	197-5	84,000	193-5	46,700	189-7	22,400	187-9	13,800	187-2	11,000	187-2	11,000
10	197-5	84,000	193-3	45,300	189-6	21,900	187-8	13,400	187-2	11,000	187-1	10,600
11	197-2	81,000	193-1	43,900	189-6	21,900	187-7	13,000	187-2	11,000	187-0	10,200
12	197-2	81,000	193-0	43,200	189-6	21,900	187-7	13,000	187-2	11,000	187-0	10,200
13	197-2	81,000	192-9	42,500	189-6	21,900	187-7	13,000	187-2	11,000	187-0	10,200
14	197-2	81,000	192-7	41,100	189-6	21,900	187-7	13,000	187-2	11,000	187-0	10,200
15	197-2	81,000	192-5	39,700	189-5	21,400	187-6	12,600	187-0	10,200	187-0	10,200
16	197-2	81,000	192-3	38,300	189-5	21,400	187-6	12,600	187-0	10,200	187-0	10,200
17	197-1	80,000	192-0	35,200	189-5	21,400	187-6	12,600	187-0	10,200	187-0	10,200
18	197-0	79,000	191-8	34,800	189-5	21,400	187-6	12,600	187-0	10,200	186-5	8,700
19	197-0	79,000	191-7	34,200	189-4	20,800	187-6	12,600	187-0	10,200	186-5	8,700
20	196-7	75,000	191-6	33,600	189-3	20,300	187-6	12,600	187-0	10,200	186-5	8,700
21	196-6	74,000	191-5	33,000	189-2	19,800	187-6	12,600	187-1	10,600	186-5	8,700
22	196-5	73,000	191-4	32,400	189-2	19,800	187-6	12,600	187-4	11,800	186-5	8,700
23	196-5	73,000	191-3	31,800	189-1	19,300	187-5	12,200	187-5	12,200	186-4	8,400
24	196-5	73,000	191-2	31,200	189-1	19,300	187-5	12,200	187-5	12,200	186-4	8,400
25	196-3	71,000	191-0	30,000	189-0	18,800	187-5	12,200	187-5	12,200	186-4	8,400
26	196-2	70,000	191-0	30,000	189-0	18,800	187-5	12,200	187-5	12,200	186-4	8,400
27	196-1	69,000	190-9	29,400	188-9	18,300	187-5	12,200	187-5	12,200	186-4	8,400
28	196-0	68,000	190-7	28,200	188-8	17,900	187-4	11,800	187-5	12,200	186-4	8,400
29	195-7	65,300	190-6	27,600	188-7	17,400	187-3	11,400	187-5	12,200	186-4	8,400
30	195-5	63,500	190-5	27,000	188-6	16,900	187-3	11,400	187-5	12,200	186-2	7,800
31	195-3	61,700	190-5	27,000			187-3	11,400			186-0	7,200

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	10,200	7,800	8,880	0-50	0-58	546,000
February	7,500	7,200	7,200	0-40	0-43	414,000
March	11,800	7,000	8,600	0-48	0-55	529,000
April	43,200	11,800	21,700	1-22	1-36	1,290,000
May	73,000	43,200	63,800	3-58	4-13	3,920,000
June	113,000	73,000	94,100	5-29	5-90	5,600,000
July	92,000	61,700	72,100	4-05	4-67	4,430,000
August	59,900	27,000	39,700	2-23	2-57	2,440,000
September	25,200	16,900	21,300	1-21	1-35	1,270,000
October	16,400	11,400	13,300	0-75	0-86	818,000
November	12,200	10,200	10,300	0-58	0-65	615,000
December	13,800	7,200	10,100	0-57	0-66	621,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	186-3	8,100	186-1	7,500	186-2	7,800	186-4	8,400	188-0	14,200	195-0	59,000
2.	186-1	7,500	186-1	7,500	186-2	7,800	186-6	9,000	188-0	14,600	195-5	63,500
3.	186-0	7,200	186-1	7,500	186-2	7,800	186-7	9,300	188-3	15,400	196-0	68,000
4.	186-1	7,500	186-1	7,500	186-2	7,800	186-8	9,650	188-4	15,900	196-5	73,000
5.	186-2	7,800	186-1	7,500	186-2	7,800	186-9	9,900	188-5	16,400	197-0	79,000
6.	186-1	7,500	186-1	7,500	186-1	7,500	186-9	9,900	188-6	16,900	197-4	83,000
7.	186-0	7,200	186-1	7,500	186-1	7,500	187-0	10,200	188-8	17,900	197-7	86,000
8.	186-0	7,200	186-1	7,500	186-1	7,500	187-0	10,200	189-0	18,800	198-0	91,000
9.	186-0	7,200	186-1	7,500	186-1	7,500	187-0	10,200	189-1	19,300	198-2	93,000
10.	186-2	7,800	186-1	7,500	186-1	7,500	187-0	10,200	189-3	20,300	198-4	95,000
11.	.....	7,800	186-2	7,800	186-1	7,500	187-0	10,200	189-4	20,800	198-6	98,000
12.	Ice.	7,800	186-2	7,800	186-1	7,500	187-0	10,200	189-5	21,400	198-6	98,000
13.	186-2	7,800	186-2	7,800	186-1	7,500	187-0	10,200	189-6	21,900	198-7	99,000
14.	185-9	7,000	186-2	7,800	186-1	7,500	187-0	10,200	189-8	22,900	198-9	102,000
15.	185-8	6,800	186-2	7,800	186-1	7,500	187-0	10,200	189-9	23,400	199-0	104,000
16.	185-8	6,800	186-2	7,800	186-1	7,500	187-0	10,200	190-0	24,600	199-0	104,000
17.	185-8	6,800	186-2	7,800	186-1	7,500	187-1	10,800	190-1	24,600	199-1	106,000
18.	185-8	6,800	186-2	7,800	186-2	7,800	187-1	10,600	190-3	25,800	199-2	107,000
19.	185-8	6,800	186-2	7,800	186-3	8,100	187-1	10,600	190-5	27,000	199-3	108,000
20.	185-9	7,000	186-3	8,100	186-3	8,100	187-2	11,000	190-7	28,200	199-3	108,000
21.	185-9	7,000	186-3	8,100	186-2	7,800	187-2	11,000	190-8	28,800	199-4	109,000
22.	186-0	7,200	186-3	8,100	186-1	7,500	187-3	11,400	191-1	30,600	199-5	110,000
23.	186-0	7,200	186-2	7,800	186-1	7,500	187-4	11,800	191-2	31,200	199-4	109,000
24.	186-1	7,500	186-2	7,800	186-1	7,500	187-4	11,800	191-5	33,000	199-1	106,000
25.	186-1	7,500	186-2	7,800	186-1	7,500	187-5	12,200	191-7	34,200	199-0	104,000
26.	186-1	7,500	186-2	7,800	186-1	7,500	187-5	12,200	192-1	36,900	198-9	102,000
27.	186-1	7,500	186-2	7,800	186-1	7,500	187-6	12,600	192-5	39,700	198-7	99,000
28.	186-1	7,500	186-2	7,800	186-1	7,500	187-7	13,000	193-0	43,200	198-5	96,000
29.	186-1	7,500	.....	.....	186-2	7,800	187-8	13,400	193-5	46,700	198-3	94,000
30.	186-1	7,500	.....	.....	186-2	7,800	187-9	13,800	194-0	50,400	198-2	93,000
31.	186-1	7,500	.....	.....	186-3	8,100	.....	.....	194-5	54,500	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	198-7	99,000	194-6	55,400	190-1	24,600	188-5	16,400	187-5	12,200	188-7	17,400
2.	198-6	93,000	194-6	55,400	190-0	24,000	188-5	16,400	187-5	12,200	188-9	18,300
3.	198-5	96,000	194-5	54,500	189-9	23,400	188-5	16,400	187-5	12,200	189-0	18,800
4.	194-4	95,000	194-2	52,000	189-9	23,400	188-5	16,400	187-5	12,200	189-0	18,800
5.	198-3	94,000	194-0	50,400	189-9	23,400	188-5	16,400	187-6	12,600	189-0	18,800
6.	198-3	94,000	193-8	48,800	189-9	23,400	188-5	16,400	187-7	13,000	189-0	18,800
7.	198-3	94,000	193-6	47,400	189-9	23,400	188-5	16,400	187-8	13,400	189-0	18,800
8.	198-3	94,000	193-5	46,700	189-9	23,400	188-5	16,400	187-9	13,800	189-0	18,800
9.	198-3	94,000	193-4	46,000	189-7	22,400	188-5	16,400	187-9	13,800	189-0	18,800
10.	198-3	94,000	193-2	44,600	189-5	21,400	188-5	16,400	187-9	13,800	188-7	17,400
11.	198-2	93,000	193-0	43,200	189-5	21,400	188-5	16,400	187-9	13,800	188-6	16,900
12.	198-1	92,000	192-9	42,500	189-5	21,400	188-5	16,400	187-9	13,800	188-6	16,900
13.	198-0	91,000	192-8	41,800	189-5	21,400	188-5	16,400	187-8	13,400	188-6	16,900
14.	197-8	88,000	192-6	40,400	189-4	20,800	188-5	16,400	187-7	13,000	188-6	16,900
15.	197-6	85,000	192-3	39,700	189-3	20,300	188-3	15,400	187-7	13,000	188-7	17,400
16.	197-5	84,000	192-2	37,600	189-1	19,300	188-2	15,000	187-6	12,600	188-8	17,900
17.	197-4	83,000	192-0	36,200	189-1	19,300	188-1	14,600	187-6	12,600	188-8	17,900
18.	197-2	81,000	191-8	34,800	189-1	19,300	188-0	14,200	187-6	12,600	188-6	16,900
19.	197-0	79,000	191-7	34,200	189-1	19,300	188-0	14,200	187-7	13,000	188-5	16,400
20.	196-9	77,000	191-6	33,600	189-1	19,300	188-0	14,200	187-7	13,000	188-2	15,000
21.	196-7	75,000	191-5	33,000	189-1	19,300	188-0	14,200	187-7	13,000	188-0	14,200
22.	196-5	73,000	191-4	32,400	188-9	18,300	187-9	13,800	187-6	12,600	188-0	14,200
23.	196-2	70,000	191-3	31,800	188-7	17,400	187-8	13,400	187-6	12,600	188-0	14,200
24.	196-0	65,000	191-1	30,600	188-5	16,400	187-7	13,000	187-5	12,200	188-0	14,200
25.	195-8	66,000	191-0	30,000	188-5	16,400	187-7	13,000	187-5	12,200	187-8	13,400
26.	195-7	65,300	191-0	30,000	188-5	16,400	187-7	13,000	187-7	13,400	187-6	12,600
27.	195-5	63,500	190-9	29,400	188-5	16,400	187-7	13,000	188-0	14,200	187-5	12,200
28.	195-4	62,600	190-7	28,200	188-5	16,400	187-7	13,000	188-1	14,600	187-2	11,000
29.	195-2	60,800	190-6	27,600	188-5	16,400	187-7	13,000	188-2	15,000	187-1	10,600
30.	194-9	58,100	190-5	27,000	188-5	16,400	187-7	13,000	188-3	15,400	187-0	10,200
31.	194-8	57,200	190-4	26,400	.....	.....	187-7	13,000	.....	.....	187-0	10,200

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	8,100	6,800	7,350	0-41	0-47	452,000
February.....	8,100	7,500	7,740	0-44	0-46	430,000
March.....	8,100	7,500	7,650	0-43	0-50	470,000
April.....	13,800	8,400	10,800	0-61	0-68	645,000
May.....	54,500	14,200	27,100	1-52	1-75	1,670,000
June.....	110,000	59,000	98,200	5-52	6-16	5,840,000
July.....	99,000	57,200	81,500	4-58	5-28	5,010,000
August.....	55,400	26,400	40,200	2-26	2-61	2,470,000
September.....	24,600	16,400	20,100	1-13	1-26	1,200,000
October.....	16,400	13,000	14,900	0-84	0-97	916,000
November.....	15,400	12,200	13,200	0-74	0-83	786,000
December.....	18,800	10,200	15,800	0-89	1-03	972,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	187.5	12,200	186.5	8,700	186.0	7,200	189.5	21,400	195.5	63,500	197.8	88,000
2.....	187.3	11,400	186.5	8,700	186.0	7,200	189.5	21,400	195.8	66,200	197.8	88,000
3.....	187.2	11,000	186.5	8,700	186.0	7,200	189.5	21,400	195.8	66,200	197.8	88,000
4.....	187.0	10,200	186.5	8,700	186.0	7,200	189.5	21,400	195.8	66,200	197.7	86,500
5.....	186.9	9,900	186.5	8,700	186.0	7,200	189.5	21,400	195.8	66,200	197.6	85,000
6.....	186.9	9,900	186.4	8,400	186.1	7,800	189.5	21,400	195.8	66,200	197.6	85,000
7.....	186.8	9,600	186.2	7,800	186.3	8,100	189.6	21,900	195.9	67,100	197.5	84,000
8.....	186.8	9,600	186.2	7,800	186.4	8,400	189.6	21,900	196.1	69,000	197.4	83,000
9.....	186.7	9,300	186.2	7,800	186.5	8,700	189.7	22,400	196.3	71,000	197.5	84,000
10.....	186.7	9,300	186.2	7,800	186.5	8,700	189.9	23,400	196.5	73,000	197.3	82,000
11.....	186.6	9,000	186.2	7,800	186.5	8,700	190.0	24,000	196.8	76,000	197.1	80,000
12.....	186.6	9,000	186.3	8,100	186.6	9,000	190.3	25,800	197.0	79,000	197.0	79,000
13.....	186.6	9,000	186.3	8,100	186.7	9,300	190.4	26,400	197.1	80,000	197.0	79,000
14.....	186.6	9,000	186.4	8,400	186.8	9,600	190.6	27,600	197.3	82,000	197.0	79,000
15.....	186.6	9,000	186.4	8,400	186.9	9,900	190.8	28,800	197.4	83,000	197.0	79,000
16.....	186.5	8,700	186.4	8,400	187.1	10,600	191.0	30,000	197.5	84,000	197.0	79,000
17.....	186.4	8,400	186.4	8,400	187.3	11,400	191.1	30,600	197.5	84,000	196.9	77,000
18.....	186.4	8,400	186.4	8,400	187.4	11,800	191.4	32,400	197.5	84,000	196.9	77,000
19.....	186.5	8,700	186.4	8,400	187.5	12,200	191.5	33,000	197.3	82,000	196.8	76,000
20.....	186.6	9,000	186.4	8,400	187.5	12,200	191.8	34,800	196.8	76,000	196.8	76,000
21.....	186.6	9,000	186.4	8,400	187.5	12,200	192.0	36,200	196.2	70,000	196.9	77,000
22.....	186.6	9,000	186.4	8,400	187.8	13,400	192.4	39,000	196.1	69,000	196.9	77,000
23.....	186.5	8,700	186.3	8,100	188.1	14,600	192.6	40,400	196.1	69,000	196.8	76,000
24.....	186.5	8,700	186.0	7,200	188.6	16,900	193.0	43,200	196.1	69,000	196.7	75,000
25.....	186.5	8,700	185.9	7,000	189.2	19,800	193.8	45,300	196.2	70,000	196.5	73,000
26.....	186.4	8,400	185.9	7,000	189.5	21,400	193.7	48,100	196.4	72,000	196.4	72,000
27.....	186.5	8,700	185.9	7,000	189.5	21,400	194.1	51,200	196.5	73,000	196.3	71,000
28.....	186.5	8,700	185.9	7,000	189.5	21,400	194.5	54,500	196.5	73,000	196.3	71,000
29.....	186.5	8,700	.....	.....	189.4	20,800	195.0	59,000	196.5	73,000	196.3	71,000
30.....	186.5	8,700	.....	.....	189.5	21,400	195.2	60,800	197.1	80,000	196.2	70,000
31.....	186.5	8,700	.....	.....	189.5	21,400	.....	.....	197.5	84,000	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	196-0	68,000	192-6	40,400	189-4	20,800	188-1	14,600	188-8	17,900	189-0	18,800
2	196-0	68,000	192-4	39,000	189-4	20,800	188-1	14,600	188-7	17,400	188-7	17,400
3	196-0	68,000	192-3	38,300	189-3	20,300	188-1	14,600	188-7	17,400	188-5	16,400
4	195-9	67,100	192-1	36,900	189-1	19,300	188-1	14,600	188-7	17,400	188-5	16,400
5	195-7	65,300	192-0	35,200	189-0	18,800	188-2	15,000	188-7	17,400	188-5	16,400
6	195-5	63,500	191-9	35,500	188-9	18,300	188-2	15,000	188-7	17,400	188-4	15,900
7	195-4	62,600	191-8	34,800	188-8	17,900	188-3	15,400	188-7	17,400	188-4	15,900
8	195-4	62,600	191-6	33,600	188-6	16,900	188-3	15,400	188-7	17,400	188-3	15,400
9	195-3	61,700	191-5	33,000	188-6	16,900	188-5	16,400	188-8	17,900	188-1	14,600
10	195-2	60,800	191-5	33,000	188-5	16,400	188-6	16,900	188-8	17,900	188-1	14,600
11	195-1	59,900	191-4	32,400	188-5	16,400	188-6	16,900	188-9	18,300	188-1	14,600
12	195-0	59,000	191-3	31,800	188-4	15,900	188-7	17,400	188-9	18,300	188-5	16,400
13	194-9	58,100	191-2	31,200	188-4	15,900	188-7	17,400	188-9	18,300	188-4	15,900
14	194-8	57,200	191-2	31,200	188-4	15,900	188-7	17,400	188-9	18,300	188-3	15,400
15	194-6	55,400	191-1	30,600	188-3	15,400	188-8	17,900	189-0	18,800	188-2	15,000
16	194-5	54,500	191-1	30,600	188-3	15,400	188-9	18,300	189-0	18,800	188-1	14,600
17	194-4	53,600	191-0	30,000	188-2	15,000	188-9	18,300	189-1	19,300	188-0	14,200
18	194-3	52,800	190-9	29,400	188-1	14,600	188-8	17,900	189-2	19,800	188-0	14,200
19	194-2	52,000	190-7	28,200	188-0	14,200	188-9	18,300	189-2	19,800	188-0	14,200
20	194-1	51,200	190-6	27,600	188-0	14,200	189-0	18,800	189-1	19,300	188-0	14,200
21	194-1	51,200	190-5	27,000	188-0	14,200	189-1	19,300	189-0	18,800	187-8	13,400
22	194-1	51,200	190-4	26,400	188-0	14,200	188-9	18,300	189-0	18,800	187-7	13,000
23	194-0	50,400	190-4	26,400	188-0	14,200	188-9	18,300	189-1	19,300	187-6	12,600
24	193-9	49,600	190-2	25,200	188-1	14,600	188-9	18,300	189-1	19,300	187-6	12,600
25	193-6	47,400	190-1	24,600	188-2	15,000	188-9	18,300	189-2	19,800	187-5	12,200
26	193-5	46,700	190-0	24,000	188-2	15,000	188-9	18,300	189-2	19,800	187-5	12,200
27	193-5	46,700	189-9	23,400	188-1	14,600	188-9	18,300	189-2	19,800	187-5	12,200
28	193-3	45,300	189-8	22,900	188-1	14,600	188-9	18,300	189-2	19,800	187-5	12,200
29	193-0	43,200	189-7	22,400	188-1	14,600	188-9	18,300	189-2	19,800	187-5	12,200
30	192-9	42,500	189-6	21,900	188-1	14,600	188-9	18,300	189-2	19,800	187-5	12,200
31	192-7	41,100	189-5	21,400	.....	.....	188-9	18,300	.....	.....	187-5	12,200

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	12,200	8,490	9,240	0-52	0-60	568,000
February.....	8,700	7,060	8,070	0-45	0-47	448,000
March.....	21,400	7,200	12,500	0-70	0-81	769,000
April.....	60,800	21,400	32,900	1-85	2-06	1,960,000
May.....	84,000	63,500	73,800	4-15	4-78	4,540,000
June.....	88,000	70,060	78,900	4-43	4-94	4,695,000
July.....	68,000	41,100	55,400	3-11	3-58	3,410,000
August.....	40,400	21,400	30,000	1-68	1-94	1,840,000
September.....	20,800	14,200	16,200	0-91	1-02	964,000
October.....	19,300	14,600	17,200	0-97	1-12	1,060,000
November.....	19,800	14,600	18,600	1-04	1-16	1,100,000
December.....	18,800	12,200	14,400	0-81	0-93	885,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	187.4	11,800	186.1	7,500	185.5	6,300	188.0	14,200	191.3	31,860	194.7	56,300
2	187.3	11,400	186.1	7,500	185.5	6,300	188.0	14,200	191.4	32,400	194.9	58,100
3	187.1	10,600	186.1	7,500	185.5	6,300	188.1	14,600	191.6	33,600	195.2	60,800
4	187.0	10,200	186.1	7,500	185.5	6,300	188.2	15,000	191.8	34,800	195.4	62,600
5	186.9	9,900	186.1	7,500	185.5	6,300	188.2	15,000	192.0	36,200	195.6	64,400
6	186.8	9,600	186.1	7,500	185.5	6,300	188.3	15,400	192.4	39,000	195.8	66,200
7	186.8	9,600	186.1	7,500	185.5	6,300	188.3	15,400	192.7	41,100	196.0	68,000
8	186.7	9,300	186.1	7,500	185.5	6,300	188.4	15,900	193.0	43,200	196.2	70,000
9	186.7	9,300	186.1	7,500	185.6	6,400	188.4	15,900	193.3	45,300	196.3	71,000
10	186.7	9,300	186.1	7,500	185.6	6,400	188.4	15,900	193.5	46,700	196.3	75,000
11	186.6	9,000	186.2	7,800	185.7	6,600	188.4	15,900	193.6	47,400	196.6	74,000
12	186.6	9,000	186.2	7,800	185.8	6,800	188.4	15,900	193.7	48,100	196.9	77,000
13	186.6	9,000	186.2	7,800	185.8	6,800	188.5	16,400	193.8	48,800	197.1	80,000
14	186.4	8,400	186.2	7,800	185.8	6,800	188.5	16,400	193.8	48,800	197.4	83,000
15	186.3	8,100	186.2	7,800	185.9	7,000	188.5	16,400	193.9	49,600	197.6	85,000
16	186.1	7,500	186.2	7,800	185.9	7,000	188.5	16,400	194.0	50,400	197.9	89,500
17	186.0	7,200	186.2	7,800	186.0	7,200	188.5	16,400	194.0	50,400	198.1	92,000
18	185.9	7,000	186.3	8,100	186.0	7,200	188.5	16,400	194.1	51,200	198.3	94,000
19	185.9	7,000	186.3	8,100	186.1	7,500	188.5	16,400	194.3	52,800	198.5	96,500
20	186.0	7,200	186.3	8,100	186.3	8,100	188.5	16,400	194.5	54,500	198.7	99,500
21	186.1	7,500	186.3	8,100	186.4	8,400	188.6	16,900	194.6	55,400	198.8	101,000
22	186.3	8,100	186.2	7,800	186.5	8,700	188.7	17,400	194.7	56,300	199.0	104,000
23	186.2	7,800	185.8	6,800	186.6	9,000	188.9	18,300	194.7	56,300	199.0	104,000
24	186.2	7,800	185.7	6,600	186.7	9,300	189.0	18,800	194.6	55,400	199.0	104,000
25	186.2	7,800	185.7	6,600	186.8	9,600	189.5	21,400	194.6	55,400	199.0	104,000
26	186.4	8,400	185.7	6,600	187.0	10,200	189.8	22,900	194.5	54,500	199.0	104,000
27	186.4	8,400	185.7	6,600	187.2	11,000	190.2	25,200	194.5	54,500	199.0	104,000
28	186.3	8,100	185.6	6,400	187.4	11,800	190.5	27,000	194.5	54,500	199.0	104,000
29	186.4	8,400	.....	.....	187.6	12,600	190.9	29,400	194.5	54,500	199.0	104,000
30	186.4	8,400	.....	.....	187.7	13,000	191.2	31,200	194.5	54,500	199.0	104,000
31	186.2	7,800	.....	.....	187.9	13,800	.....	.....	194.5	54,500	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.—*Con.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	198-9	102,000	194-3	52,800	190-5	27,000	188-7	17,400	187-2	11,000	187-0	10,200
2.	198-8	101,000	194-2	52,000	190-4	26,400	188-7	17,400	187-1	10,800	186-9	9,900
3.	198-7	99,500	194-0	50,400	190-4	26,400	188-6	16,900	187-1	10,600	186-7	9,300
4.	198-5	96,500	193-7	48,100	190-4	26,400	188-5	16,400	187-0	10,200	186-6	9,000
5.	198-4	95,000	193-6	47,400	190-4	26,400	188-5	16,400	187-0	10,200	186-5	8,700
6.	198-2	93,000	193-5	46,700	190-3	25,800	188-5	16,400	187-0	10,200	186-5	8,700
7.	198-0	91,000	193-4	46,000	190-2	25,200	188-4	15,900	187-0	10,200	186-5	8,700
8.	197-8	88,000	193-3	45,300	190-2	25,200	188-3	15,400	187-0	10,200	186-4	8,400
9.	197-7	86,000	193-1	43,900	190-1	24,600	188-3	15,400	187-0	10,200	186-4	8,400
10.	197-5	84,000	193-0	43,200	190-0	24,000	188-2	15,000	186-9	9,900	186-4	8,400
11.	197-3	82,000	193-0	43,200	189-9	23,400	188-2	15,000	186-9	9,900	186-3	8,100
12.	197-2	81,000	193-0	43,200	189-9	23,400	188-2	15,000	186-8	9,600	186-3	8,100
13.	197-1	80,000	192-8	41,800	189-8	22,900	188-2	15,000	186-7	9,300	186-3	8,100
14.	197-0	79,000	192-7	41,100	189-7	22,400	188-2	15,000	186-5	8,700	186-3	8,100
15.	197-0	79,000	192-5	39,700	189-7	22,400	188-0	14,200	186-4	8,400	186-3	8,100
16.	196-9	77,000	192-4	39,000	189-6	21,900	187-9	13,800	186-4	8,400	186-3	8,100
17.	196-7	75,000	192-2	37,600	189-6	21,900	187-8	13,400	186-4	8,400	186-3	8,100
18.	196-6	74,000	192-1	36,900	189-5	21,400	187-8	13,400	186-4	8,400	186-3	8,100
19.	196-5	73,000	191-9	35,500	189-5	21,400	187-7	13,000	186-5	8,700	186-3	8,100
20.	196-3	71,000	191-7	34,200	189-4	20,800	187-7	13,000	186-5	8,700	186-2	7,800
21.	196-1	69,000	191-6	33,600	189-4	20,800	187-6	12,600	186-5	8,700	186-2	7,800
22.	195-9	67,100	191-5	33,000	189-3	20,300	187-6	12,600	186-6	9,000	186-1	7,500
23.	195-7	65,300	191-4	32,400	189-3	20,300	187-6	12,600	186-7	9,300	186-1	7,500
24.	195-6	64,400	191-3	31,800	189-2	19,800	187-5	12,200	186-7	9,300	186-1	7,500
25.	195-5	63,500	191-2	31,200	189-2	19,800	187-5	12,200	186-8	9,600	186-0	7,200
26.	195-3	61,700	191-1	30,600	189-0	18,800	187-5	12,200	186-9	9,900	186-0	7,200
27.	195-2	60,800	190-9	29,400	188-9	18,300	187-5	12,200	187-0	10,200	186-0	7,200
28.	195-0	59,000	190-8	28,800	188-9	18,300	187-5	12,200	187-0	10,200	186-0	7,200
29.	194-9	58,100	190-7	28,200	188-8	17,900	187-4	11,800	187-0	10,200	186-0	7,200
30.	194-7	56,300	190-6	27,600	188-8	17,900	187-3	11,400	187-0	10,200	186-0	7,200
31.	194-5	54,500	190-5	27,000			187-2	11,000			185-8	6,800

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	11,800	7,000	8,670	0-49	0-56	533,000
February.....	8,100	6,400	7,480	0-42	0-44	415,000
March.....	13,800	6,300	8,120	0-46	0-53	499,000
April.....	31,200	14,200	18,100	1-01	1-13	1,080,000
May.....	56,300	31,800	48,100	2-70	3-11	2,960,000
June.....	104,000	56,300	85,300	4-78	5-33	5,080,000
July.....	102,000	54,500	77,000	4-32	4-98	4,730,000
August.....	52,800	27,000	38,800	2-18	2-51	1,540,000
September.....	27,000	17,900	22,400	1-26	1-41	1,330,000
October.....	17,400	11,000	14,100	0-79	0-91	867,000
November.....	11,000	8,400	9,610	0-54	0-60	572,000
December.....	10,200	6,800	8,090	0-45	0-52	497,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	185.8	6,800	185.0	5,800	185.4	6,200	185.2	6,000	189.8	22,900	195.0	59,000
2	185.8	6,800	185.0	5,800	185.3	6,100	185.2	6,000	189.9	23,400	194.9	58,100
3	185.8	6,800	185.0	5,800	185.3	6,100	185.5	6,300	190.0	24,000	194.9	58,100
4	185.8	6,800	185.2	6,000	185.3	6,100	185.5	6,300	190.0	24,000	195.0	59,000
5	185.8	6,800	185.3	6,100	185.1	5,900	185.6	6,400	190.0	24,000	194.8	57,200
6	185.8	6,800	185.1	5,900	185.0	5,800	185.9	7,000	190.1	24,600	194.8	57,200
7	185.8	6,800	185.1	5,900	185.2	6,000	186.1	7,500	190.1	24,600	194.8	57,200
8	186.0	7,200	185.1	5,900	185.0	5,800	186.1	7,500	190.2	25,200	194.7	56,300
9	184.9	5,700	185.1	5,900	185.0	5,800	186.5	8,700	190.5	27,000	194.7	56,300
10	185.0	5,800	185.1	5,900	185.0	5,800	186.5	8,700	190.7	28,200	194.7	56,300
11	185.0	5,800	185.3	6,100	185.0	5,800	186.9	8,900	192.0	30,000	194.5	54,500
12	185.0	5,800	185.3	6,100	185.0	5,800	187.1	10,600	191.3	31,800	194.5	54,500
13	185.0	5,800	185.0	5,800	185.0	5,800	187.1	10,600	191.5	33,000	194.7	56,300
14	185.0	5,800	185.0	5,800	185.0	5,800	187.6	12,600	193.0	36,200	194.8	57,200
15	185.0	5,800	185.0	5,800	185.0	5,800	187.9	13,800	192.3	38,300	194.9	56,100
16	185.0	5,800	184.9	5,700	185.0	5,800	188.0	14,200	192.6	40,400	195.0	59,000
17	185.0	5,800	185.1	5,900	185.0	5,800	188.2	15,000	193.0	43,200	195.0	59,000
18	185.0	5,800	184.9	5,700	185.0	5,800	188.4	15,900	193.3	45,300	195.1	59,000
19	185.0	5,800	184.9	5,700	184.9	5,700	188.7	17,400	193.5	46,700	195.1	59,000
20	185.0	5,800	184.9	5,700	185.0	5,800	189.0	18,300	193.7	48,100	195.2	60,800
21	185.0	5,800	185.0	5,800	185.0	5,800	189.1	19,300	194.0	50,400	195.2	60,800
22	185.0	5,800	185.5	6,300	184.9	5,700	189.2	19,800	194.2	52,000	175.2	60,800
23	185.0	5,800	185.5	6,300	185.0	5,800	189.3	20,300	194.4	53,600	195.3	61,700
24	185.0	5,800	185.4	6,200	184.9	5,700	189.4	20,800	194.5	54,500	195.4	62,600
25	185.0	5,800	185.0	5,800	185.0	5,800	189.4	20,800	194.6	55,400	195.5	63,500
26	185.0	5,800	184.9	5,700	184.8	5,600	189.4	20,800	194.7	56,300	195.5	63,500
27	185.0	5,800	184.9	5,700	184.8	5,600	189.6	21,900	194.7	56,300	195.5	63,500
28	185.0	5,800	184.9	5,700	184.9	5,700	189.6	21,900	194.8	57,200	195.5	63,500
29	185.0	5,800	184.9	5,700	184.9	5,700	189.7	22,400	195.0	59,000	195.4	62,600
30	185.0	5,800	.....	.....	184.9	5,700	189.7	22,400	195.0	59,000	195.0	59,000
31	185.0	5,800	.....	.....	184.9	5,700	.....	.....	195.1	59,000	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	195-0	59,000	192-9	42,500	190-4	26,400	188-5	16,400	187-6	12,600	187-5	12,200
2	195-0	59,000	192-8	41,800	190-3	25,800	188-5	16,400	187-5	12,200	187-4	11,800
3	195-0	59,000	192-7	41,100	190-2	25,200	188-4	15,900	187-4	11,800	187-4	11,800
4	194-5	54,600	192-6	40,400	190-1	24,600	188-2	15,000	187-3	11,400	187-3	11,400
5	194-5	54,500	192-5	39,700	190-0	24,000	188-1	14,600	187-3	11,400	187-2	11,000
6	194-4	53,600	192-4	39,000	190-0	24,000	188-1	14,600	187-3	11,400	187-1	10,600
7	194-3	62,800	192-4	39,000	190-0	24,000	188-1	14,600	187-3	11,400	187-2	11,000
8	194-0	50,400	192-2	37,600	190-0	24,000	188-0	14,200	187-3	11,400	187-2	11,000
9	194-0	50,400	192-1	36,900	190-0	24,000	188-0	14,200	187-4	11,800	187-1	10,600
10	194-0	50,400	192-0	35,200	190-0	24,000	188-0	14,200	187-5	12,200	187-1	10,600
11	194-0	50,400	191-9	35,500	189-7	22,400	188-0	14,200	187-5	12,200	187-1	10,600
12	193-8	48,800	191-9	35,500	189-8	22,900	187-9	13,800	187-5	12,200	187-1	10,600
13	193-8	48,800	191-9	35,500	189-7	22,400	187-9	13,800	187-5	12,200	187-0	10,200
14	193-9	49,600	191-6	33,600	189-8	22,900	187-9	13,800	187-6	12,600	187-0	10,200
15	193-9	49,600	191-6	33,600	189-8	22,900	187-9	13,800	187-7	13,000	187-0	10,200
16	193-9	49,600	191-5	33,000	189-7	22,400	187-7	13,000	187-8	13,400	186-9	9,900
17	193-9	49,600	191-4	32,400	189-6	21,900	187-7	13,000	188-0	14,200	186-9	9,900
18	193-9	49,600	191-3	31,800	189-5	21,400	187-7	13,000	188-0	14,200	186-8	9,600
19	193-7	48,100	191-1	30,600	189-3	20,300	187-7	13,000	188-0	14,200	186-8	9,600
20	193-7	48,100	191-0	30,000	189-3	20,300	187-7	13,000	188-0	14,200	186-7	9,300
21	193-7	48,100	191-0	30,000	189-3	20,300	187-6	13,400	187-9	13,800	186-7	9,300
22	193-5	46,700	191-0	30,000	189-1	19,300	187-8	13,400	187-9	13,800	186-7	9,300
23	193-6	46,700	191-0	30,000	189-0	18,800	187-7	13,000	188-0	14,200	186-9	9,900
24	193-5	46,700	191-0	30,000	189-0	18,800	187-7	13,000	188-0	14,200	186-8	9,600
25	193-4	46,000	191-0	30,000	189-0	18,800	187-8	13,400	188-9	13,800	186-8	9,500
26	193-1	43,900	190-8	25,000	189-0	18,800	187-7	13,000	188-9	13,800	186-7	9,300
27	193-0	43,200	190-6	27,600	188-8	17,900	187-7	13,000	188-8	13,400	186-6	9,000
28	192-9	42,500	190-6	27,600	188-8	17,900	187-7	13,000	188-8	13,400	186-7	9,300
29	193-0	43,200	190-6	27,600	189-8	17,900	187-7	13,000	188-7	13,000	186-7	9,300
30	192-9	42,500	190-6	27,600	188-6	16,900	187-7	13,000	188-5	12,200	186-3	8,100
31	192-9	42,500	190-6	27,600	.....	.....	187-7	13,000	.....	.....	186-1	7,500

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1912.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	7,200	5,700	6,070	0-34	0-39	373,000
February	6,300	5,700	5,880	0-33	0-36	338,000
March	6,200	5,600	5,820	0-33	0-38	358,000
April	22,400	6,000	14,000	0-79	0-88	833,000
May	59,900	22,900	40,500	2-27	2-62	2,490,000
June	63,500	54,500	59,200	3-32	3-70	3,520,000
July	59,000	42,500	49,300	2-77	3-19	3,030,000
August	42,500	27,600	33,600	1-88	2-17	2,070,000
September	26,400	16,900	21,700	1-22	1-36	1,290,000
October	16,400	13,000	13,800	0-78	0-90	848,000
November	14,200	11,400	12,800	0-71	0-79	762,000
December	12,200	7,500	10,100	0-57	0-66	621,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	186-3	8,100	185-6	6,400	185-5	6,300	186-1	7,500	191-5	33,000	197-5	84,000
2.....	186-3	8,100	185-9	7,000	185-8	6,800	186-1	7,500	191-5	33,000	197-9	89,500
3.....	186-3	8,100	185-9	7,000	185-4	6,200	186-1	7,500	191-7	34,200	198-5	96,500
4.....	186-6	9,000	185-8	6,800	185-5	6,300	186-1	7,500	191-6	33,600	199-0	104,000
5.....	186-5	8,700	185-7	6,600	185-5	6,300	185-9	7,000	191-5	33,000	199-2	107,000
6.....	186-4	8,400	185-6	6,400	185-5	6,300	186-2	7,800	191-5	33,000	199-4	109,000
7.....	186-3	8,100	185-7	6,600	185-5	6,300	186-0	7,200	191-4	32,400	199-8	114,000
8.....	186-2	7,800	185-6	6,400	185-4	6,200	186-0	7,200	191-4	32,400	200-1	119,000
9.....	186-2	7,800	185-8	6,800	185-6	6,400	186-2	7,800	191-5	33,000	200-5	125,000
10.....	186-2	7,800	185-7	6,600	185-6	6,400	186-2	7,800	191-7	34,200	200-6	126,000
11.....	186-2	7,800	185-6	6,400	185-6	6,400	186-3	8,100	192-0	36,200	200-7	128,000
12.....	186-3	8,100	185-6	6,400	185-6	6,400	186-4	8,400	192-3	38,300	200-8	130,000
13.....	186-2	7,800	185-5	6,300	185-6	6,400	186-8	9,600	192-3	38,300	200-7	128,000
14.....	186-0	7,200	185-3	6,100	185-6	6,400	187-0	10,200	192-6	40,400	200-8	130,000
15.....	186-0	7,200	185-3	6,100	185-7	6,600	187-2	11,000	192-7	41,100	201-3	137,000
16.....	186-0	7,200	185-6	6,400	185-7	6,600	187-6	12,600	192-8	41,800	201-0	132,000
17.....	186-0	7,200	185-6	6,400	185-6	6,400	187-9	13,800	193-0	43,200	200-0	118,000
18.....	185-8	6,800	185-6	6,400	185-8	6,800	188-3	15,400	193-2	44,600	200-4	124,000
19.....	186-0	7,200	185-6	6,400	185-1	5,900	188-7	17,400	193-3	45,300	200-3	122,000
20.....	185-7	6,600	185-7	6,600	185-8	6,800	189-2	19,800	193-4	46,000	200-2	120,000
21.....	185-8	6,800	185-8	6,800	185-8	6,800	189-5	21,400	193-3	45,300	200-1	119,000
22.....	185-8	6,800	185-5	6,300	185-7	6,600	189-8	22,900	193-4	46,000	200-0	118,000
23.....	185-7	6,600	185-8	6,800	186-0	7,200	190-0	24,000	193-5	46,700	199-7	113,000
24.....	185-8	6,800	185-6	6,400	185-8	6,800	189-4	20,800	193-8	48,800	199-3	108,000
25.....	185-8	6,800	185-6	6,400	185-9	7,000	190-6	27,600	194-2	52,000	199-4	109,000
26.....	185-8	6,800	185-6	6,400	186-0	7,200	190-8	28,800	194-4	53,600	199-2	107,000
27.....	185-8	6,800	185-5	6,300	185-8	6,800	191-2	31,200	194-9	58,100	199-1	106,000
28.....	186-3	8,100	185-4	6,200	185-9	7,000	191-3	31,800	195-5	63,500	198-8	101,000
29.....	186-0	7,200	.....	.....	185-9	7,000	191-4	32,400	196-0	68,000	198-7	99,500
30.....	186-0	7,200	.....	.....	186-0	7,200	191-4	32,400	196-5	73,000	198-5	96,500
31.....	186-0	7,200	.....	.....	186-0	7,200	.....	.....	197-1	80,000	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	198-3	94,000	194-0	50,400	191-2	31,200	189-3	20,300	188-0	14,200	181-7	13,000
2	198-2	93,000	193-8	48,800	191-1	30,600	189-2	19,800	188-2	15,000	187-7	13,000
3	198-1	92,000	193-7	48,100	190-9	29,400	189-2	19,800	188-0	14,200	187-7	13,000
4	197-9	89,500	193-3	45,300	190-9	29,400	189-1	19,300	188-0	14,200	187-7	13,000
5	197-7	86,500	193-3	45,300	191-0	30,000	189-1	19,300	188-0	14,200	187-5	12,200
6	197-6	85,000	193-3	45,300	191-0	30,000	189-2	19,800	187-8	13,400	187-6	12,600
7	197-4	83,000	193-0	43,200	191-0	30,000	189-2	19,800	187-7	13,000	187-6	12,600
8	197-4	83,000	193-0	43,200	191-0	30,000	189-0	18,800	187-7	13,000	187-3	11,400
9	197-2	81,000	192-8	41,800	191-0	30,000	188-9	18,300	187-8	13,400	187-4	11,800
10	197-0	79,000	193-0	43,200	191-0	30,000	188-8	17,900	187-8	13,400	187-4	11,800
11	196-8	76,000	192-8	41,800	191-0	30,000	188-9	18,300	188-0	14,200	187-2	11,000
12	196-9	77,000	192-7	41,100	190-8	28,800	188-9	18,300	187-7	13,000	187-2	11,000
13	196-8	76,000	192-8	41,800	190-8	28,800	188-8	17,900	187-7	13,000	187-2	11,000
14	196-5	73,000	192-7	41,100	190-7	28,200	188-7	17,400	187-7	13,000	187-3	11,400
15	196-3	71,000	192-5	39,700	190-6	27,600	188-8	17,900	187-6	12,600	186-8	9,600
16	196-2	70,000	192-3	38,300	190-6	27,600	188-7	17,400	187-8	13,400	186-8	9,600
17	196-0	68,000	192-3	38,300	190-5	27,000	188-7	17,400	187-8	13,400	186-7	9,300
18	195-7	65,300	192-2	37,600	190-3	25,800	188-7	17,400	187-8	13,400	186-7	9,300
19	195-6	64,400	192-0	36,200	190-0	24,000	188-8	17,900	187-2	11,000	186-6	9,000
20	195-4	62,600	191-9	35,500	190-0	24,000	188-7	17,400	187-8	13,400	186-5	8,700
21	195-1	59,900	191-8	34,800	190-2	25,200	188-5	16,400	187-8	13,400	186-5	8,700
22	195-0	59,000	191-6	33,600	190-2	25,200	188-6	16,900	187-8	13,400	186-4	8,400
23	195-0	59,000	191-6	33,600	190-0	24,000	188-3	15,400	187-8	13,400	186-3	8,100
24	194-9	58,100	191-5	33,000	190-0	24,000	188-4	15,900	187-8	13,400	186-3	8,100
25	194-6	55,400	191-3	31,800	189-9	23,400	188-3	15,400	187-7	13,000	186-6	9,000
26	194-6	55,400	191-5	33,000	189-7	22,400	188-7	17,400	187-7	13,000	186-5	8,700
27	194-4	53,600	191-3	31,800	189-6	21,900	188-4	15,900	187-7	13,000	186-2	7,800
28	194-3	52,800	191-3	31,800	189-6	21,900	188-4	15,900	187-7	13,000	186-2	7,800
29	194-2	52,000	191-2	31,200	189-4	20,800	188-3	15,400	187-8	13,400	186-3	8,100
30	194-2	52,000	191-2	31,200	189-3	20,300	188-3	15,400	187-7	13,000	186-3	8,100
31	194-0	50,400	191-2	31,200	.....	.....	188-1	14,600	.....	.....	186-2	7,800

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1913.

(Drainage Area 17,800 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January	9,000	6,600	7,490	0-42	0-48	461,000
February	7,000	6,100	6,490	0-36	0-38	360,000
March	7,200	5,900	6,610	0-37	0-43	406,000
April	32,400	7,200	15,800	0-89	0-99	940,000
May	80,000	32,400	44,600	2-51	2-89	2,740,000
June	137,000	84,000	114,000	6-40	7-14	6,780,000
July	94,000	50,400	70,200	3-94	4-54	4,320,000
August	50,400	31,200	38,800	2-18	2-5	2,390,000
September	31,200	20,300	26,700	1-50	1-67	1,590,000
October	20,300	14,600	17,600	0-99	1-14	1,080,000
November	15,000	11,000	13,300	0-75	0-84	791,000
December	13,000	7,800	10,200	0-57	0-66	627,000

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914.

Day	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	186-2	7,800	186-7	9,300	186-2	7,800	187-4	11,800	192-2	37,600	196-8	76,000
2	186-3	8,100	186-7	9,300	186-1	7,500	187-4	11,800	192-3	38,300	196-8	76,000
3	186-2	7,800	186-6	9,000	186-3	8,100	187-4	11,800	192-4	39,000	196-8	76,000
4	186-3	8,100	186-5	8,700	186-2	7,800	187-4	11,800	192-8	41,800	197-1	80,000
5	186-3	8,100	186-7	9,300	186-7	9,300	187-4	11,800	192-9	42,500	197-3	82,000
6	186-3	8,100	186-5	8,700	186-3	8,100	187-4	11,800	193-2	44,600	197-5	84,000
7	186-7	9,300	186-4	8,400	186-2	7,800	187-5	12,200	193-4	46,000	197-5	84,000
8	187-0	10,200	186-7	9,300	186-3	8,100	187-8	13,400	193-5	46,700	197-6	85,000
9	187-0	10,200	186-5	8,700	186-2	7,800	187-9	13,800	193-7	48,100	197-6	85,000
10	187-2	11,000	186-4	8,400	186-1	7,500	188-1	14,600	193-9	49,600	197-6	85,000
11	187-3	11,400	186-4	8,400	186-1	7,500	188-3	15,400	194-1	51,200	197-4	83,000
12	187-4	11,800	186-3	8,100	186-1	7,500	188-5	16,400	194-2	52,000	197-3	82,000
13	187-3	11,400	186-3	8,100	186-2	7,800	188-6	16,900	194-3	52,800	197-2	81,000
14	187-3	11,400	186-3	8,100	186-2	7,800	189-0	18,800	194-6	55,400	197-2	81,000
15	187-4	11,800	186-4	8,400	186-4	8,400	189-3	20,300	194-8	57,200	197-3	82,000
16	187-7	13,000	186-3	8,100	186-3	8,100	189-6	21,900	195-0	59,000	197-1	80,000
17	187-7	13,000	186-3	8,100	186-3	8,100	189-8	22,900	195-3	61,700	197-2	81,000
18	187-3	11,400	186-2	7,800	186-6	9,000	190-0	24,000	195-6	64,400	197-3	82,000
19	187-3	11,400	186-1	7,500	186-8	9,600	190-4	26,400	195-8	66,200	197-5	84,000
20	187-3	11,400	186-1	7,500	186-8	9,600	190-7	28,200	195-9	67,100	197-7	86,500
21	187-3	11,400	186-3	8,100	186-8	9,600	190-8	28,900	196-2	70,000	197-8	88,000
22	187-3	11,400	186-2	7,800	186-9	9,900	191-0	30,000	196-3	71,000	197-8	88,000
23	187-0	10,200	186-2	7,800	187-3	11,400	191-3	31,800	196-3	71,000	197-8	88,000
24	187-0	10,200	186-1	7,500	187-3	11,400	191-3	31,800	196-5	73,000	197-7	86,500
25	187-0	10,200	186-2	7,800	187-3	11,400	191-6	33,600	196-7	75,000	197-8	88,000
26	187-0	10,200	186-0	7,200	187-4	11,800	191-8	34,800	196-8	76,000	197-8	88,000
27	187-0	10,200	185-9	7,000	187-4	11,800	191-8	34,800	196-8	76,000	197-6	85,000
28	186-8	9,600	186-3	8,100	187-4	11,800	192-0	36,200	196-7	75,000	197-4	83,000
29	186-8	9,600	.....	.....	187-5	12,200	192-0	36,200	196-9	77,000	197-4	83,000
30	186-8	9,600	187-3	11,400	192-1	36,900	197-0	79,000	197-3	82,000
31	186-8	9,600	187-2	11,000	196-8	76,000

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914—Concluded.

DAY.	July.		August	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	197-2	81,000	194-2	52,000
2.....	197-2	81,000	194-0	50,400
3.....	197-3	82,000	193-8	48,800
4.....	197-1	80,000	193-6	47,400
5.....	197-2	81,000	193-4	46,000
6.....	197-3	82,000	193-3	45,300
7.....	197-2	81,000	193-2	44,600
8.....	197-1	80,000	193-1	43,900
9.....	197-3	82,000	193-0	43,200
10.....	197-2	81,000	192-7	41,100
11.....	197-1	80,000	192-4	39,600
12.....	197-1	80,000	192-3	38,300
13.....	197-1	80,000	192-2	37,600
14.....	197-0	79,000	192-0	36,200
15.....	197-0	79,000	192-0	36,200
16.....	196-9	77,000	191-8	34,800
17.....	196-8	76,000	191-7	34,200
18.....	196-8	76,000	191-5	33,000
19.....	196-6	74,000	191-5	33,000
20.....	196-3	71,000	191-3	31,800
21.....	196-3	71,000	191-2	31,200
22.....	196-2	70,000	191-1	30,600
23.....	196-0	68,000	191-1	90,600
24.....	195-8	66,200	190-9	23,400
25.....	195-5	63,500	190-8	28,800
26.....	195-5	63,500	190-7	28,200
27.....	195-2	60,800	190-7	28,200
28.....	194-8	57,200	190-5	27,000
29.....	194-8	57,200	190-3	25,800
30.....	194-5	54,500	190-2	25,200
31.....	194-3	52,800	190-2	25,200

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1914.

(Drainage area, 17,800 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	11,800	7,800	10,300	0-58	0-67	633,000
February.....	9,300	7,000	8,230	0-46	0-48	457,000
March.....	12,200	7,500	9,250	0-32	0-60	569,000
April.....	36,900	11,800	22,400	1-26	1-41	1,330,000
May.....	79,000	37,600	59,400	3-33	3-84	3,650,000
June.....	88,000	76,000	23,100	4-66	5-20	4,940,000
July.....	82,000	52,800	73,000	4-10	4-73	4,490,000
August.....	52,000	25,200	36,300	2-03	2-34	2,230,000

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KOOTENAY RIVER NEAR BONNINGTON POOL (3076).

Location.—At the upper end of Bonnington or Slocan pool, one quarter mile from South Slocan, 12 miles from Nelson, and about 13 miles from the mouth. Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson.)

Gauge.—Three vertical staff gauges, 10 feet long, have been used and read by Mr. John Anderson of South Slocan.

Method of Compilation.—Bonnington pool is above the mouth of Slocan river, and the same method of compilation is used as on Kootenay river at Bonnington falls, q.v. For more complete information see report in part 2 called "Compilation of data on Kootenay river between Kootenay lake and the mouth."

Accuracy.—These results should be within 15 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

DAY.	June.	
	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.
1	14.5	77,200
2	14.6	77,900
3	14.8	79,500
4	14.9	80,200
5	15.0	81,000
6	15.1	81,700
7	15.3	83,200
8	15.4	84,000
9	15.5	84,700
10	15.5	84,700
11	15.4	84,000
12	15.3	83,200
13	15.1	81,700
14	15.3	83,200
15	15.6	85,400
16	15.8	86,900
17	16.0	88,400
18	16.1	89,200
19	16.3	90,700
20	16.5	92,200
21	16.4	91,400
22	16.3	90,700
23	16.2	89,900
24	16.1	89,200
25	16.0	88,400
26	16.0	88,400
27	15.9	87,700
28	15.8	86,900
29	15.7	86,200
30	15.6	85,400

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	15-5	84,700	10-8	51,500	6-04	23,500	5-14	19,000	4-94	18,100	4-94	18,100
2	15-4	84,000	10-6	50,200	5-94	23,000	5-14	19,000	4-95	18,100	4-94	18,100
3	15-3	83,200	10-4	48,800	5-74	22,000	5-14	19,000	4-97	18,200	4-89	17,800
4	15-2	82,500	10-2	47,500	5-64	21,500	5-14	19,000	4-98	18,400	4-84	17,600
5	15-3	83,200	10-0	46,200	5-44	20,500	5-14	19,000	5-54	21,000	4-79	17,400
6	15-5	84,700	9-8	44,900	5-44	20,500	5-14	19,000	5-64	21,500	4-74	17,100
7	15-5	84,700	9-6	43,600	5-44	20,500	5-09	18,800	5-69	21,800	4-74	17,100
8	15-5	84,700	9-4	42,400	5-44	20,500	5-04	18,600	5-74	22,000	4-64	16,600
9	15-4	84,000	9-2	41,200	5-44	20,500	5-04	18,600	5-79	22,200	4-51	16,100
10	15-3	83,200	9-0	40,000	5-44	20,500	4-99	18,400	5-94	23,000	4-49	15,800
11	15-2	82,500	8-8	38,800	5-44	20,500	4-94	18,100	5-94	23,000	4-34	15,100
12	15-1	81,700	8-6	37,600	5-34	20,000	4-89	17,900	5-89	22,800	4-29	14,800
13	15-1	81,700	8-24	35,500	5-34	20,000	4-85	17,600	5-84	22,500	4-14	14,100
14	15-0	81,000	8-14	35,000	5-24	19,500	4-85	17,600	5-84	22,500	4-09	13,800
15	15-0	81,000	7-94	33,800	5-24	19,500	4-80	17,400	5-89	22,800	4-04	13,600
16	14-9	80,200	7-94	33,800	5-24	19,500	4-75	17,100	5-79	22,200	3-94	13,200
17	14-9	80,200	7-84	33,300	5-14	19,000	4-75	17,100	5-79	22,200	3-78	12,400
18	14-8	79,500	7-74	32,700	5-04	18,600	4-84	17,600	5-64	21,500	.....	12,000
19	14-6	77,900	7-54	31,600	5-04	18,600	4-94	18,100	5-59	21,200	.....	12,000
20	14-2	75,000	7-44	31,000	5-04	18,600	4-95	18,100	5-54	21,000	3-53	11,200
21	13-8	72,100	7-34	30,500	5-04	18,600	4-95	18,100	5-44	20,500	3-43	10,800
22	13-6	70,700	7-24	29,900	5-09	18,800	4-95	18,100	5-34	20,000	3-43	10,800
23	13-3	68,600	7-44	31,000	5-09	18,800	4-95	18,100	5-24	19,500	3-33	10,400
24	13-0	66,500	7-24	29,900	5-09	18,800	4-95	18,100	5-19	19,200	3-33	10,400
25	12-7	64,400	7-04	28,800	5-14	19,000	4-94	18,100	5-14	19,000	3-33	10,400
26	12-3	61,500	6-84	27,700	5-14	19,000	4-94	18,100	5-14	19,000	3-33	10,400
27	12-0	59,400	6-64	26,600	5-14	19,000	4-89	17,900	5-14	19,000	3-23	10,100
28	11-8	58,000	6-54	26,100	5-15	19,000	4-89	17,900	5-09	18,800	3-23	10,100
29	11-5	56,000	6-44	25,500	5-15	19,000	4-84	17,600	4-94	18,100	3-23	10,100
30	11-2	54,100	6-34	25,000	5-14	19,000	4-84	17,600	4-89	17,900	3-23	10,100
31	11-2	54,100	6-14	24,000	.....	.....	4-84	17,600	.....	.....	3-13	9,800

MONTHLY DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

(Drainage area, 17,800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June	92,200	77,200	85,400	4-79	5-34	5,080,000	D
July	84,700	54,100	75,000	4-21	4-85	4,610,000	B
August	51,500	24,000	35,600	2-00	2-31	2,190,000	D
September	23,500	18,600	19,900	1-12	1-25	1,180,000	D
October	19,000	17,100	18,100	1-02	1-18	1,110,000	C
November	23,000	17,900	20,600	1-16	1-29	1,230,000	C
December	18,100	9,800	14,100	0-79	0-91	867,000	D

KOOTENAY RIVER NEAR NELSON (3077).

Location.—At Astley's wharf, Nelson, about 2 miles above the outlet of Kootenay lake, 25 miles from the mouth. Nelson District.

Records Available.—1913 and 1914.

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Climatic Conditions.—The precipitation at Nelson, from December 1, 1913, to November 30, 1914, was 27.6 inches. This may be considered slightly less than usual. Considerable rain generally falls from spring till the end of June. July and August, and sometimes September, are usually dry months. October and November are generally unsettled, but not cold. The winters are mild. The thermometer seldom goes below zero, and then possibly only for one night during the winter. The average temperature throughout the winter is about 30° F. The precipitation through the winter months is fairly heavy, sometimes snow, sometimes rain. The lake no doubt has an effect on the climate. One effect of the lake is very apparent in that the river below the lake seldom, if ever, freezes. The main lake never freezes, and the west arm, on which Nelson is situated, only occasionally.

Gauge.—The gauge is a vertical staff, 20 feet long, situated on Astley's wharf, and read daily by Mr. F. A. Lidgate of Nelson.

Method of Compilation.—As in the case of Kootenay river at Bonnington falls and at Bonnington pool, discharges for the Nelson gauge are determined by subtracting the discharges of Slocan river from discharges of Kootenay river near Glade. To compensate for the inflow to Kootenay river below the outlet of the lake and above Glade, the discharge is reduced by 1 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE OF Kootenay River near Nelson, for 1913.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	7,600	0-60	6,550	0-50	6,350	.....	8,250	6-1	31,500	.....	.....	86,300
2	7,800	.....	6,520	.....	6,350	.....	8,710	6-1	31,500	.....	15-1	92,300
3	8,000	.....	6,490	.....	6,350	.....	9,180	6-1	31,500	.....	15-8	97,700
4	1-15	8,200	6,460	.....	6,350	.....	9,640	.....	31,300	.....	16-6	104,000
5	.....	8,000	6,430	.....	6,350	.....	1-70	10,100	6-0	31,000	17-3	110,000
6	.....	7,800	.....	6,400	.....	6,350	.....	10,100	6-0	31,000	17-9	114,000
7	.....	7,610	.....	6,380	.....	6,350	.....	10,100	5-9	30,400	18-3	118,000
8	.....	7,420	0-50	6,350	0-50	6,350	1-70	10,100	5-9	30,400	.....	122,000
9	.....	7,230	.....	6,340	.....	6,400	1-70	10,100	6-1	31,000	19-3	126,000
10	.....	7,040	.....	6,330	.....	6,450	1-75	10,300	6-3	32,600	19-5	127,000
11	0-70	6,850	.....	6,315	.....	6,500	1-85	10,700	.....	34,000	19-9	130,000
12	.....	6,850	.....	6,300	.....	6,550	1-95	11,100	6-8	35,500	20-1	132,000
13	.....	6,850	.....	6,290	.....	6,600	.....	12,100	7-0	36,700	20-3	134,000
14	.....	6,850	.....	6,280	.....	6,650	2-40	13,000	7-4	39,100	20-25	133,000
15	.....	6,850	0-40	6,270	0-65	6,700	2-90	15,400	7-6	40,300	.....	132,000
16	.....	6,850	.....	6,280	.....	6,760	3-20	16,800	7-7	40,900	20-0	131,000
17	.....	6,850	.....	6,290	.....	6,830	3-40	17,800	7-8	41,500	19-7	129,000
18	0-70	6,850	.....	6,300	.....	6,900	3-70	19,200	.....	42,100	19-2	125,000
19	.....	6,810	.....	6,315	.....	6,960	4-0	20,700	8-0	42,700	18-9	122,000
20	.....	6,775	.....	6,330	.....	7,020	.....	22,600	8-1	43,300	18-7	121,000
21	.....	6,730	.....	6,340	.....	7,080	4-8	24,600	8-1	43,300	18-35	118,000
22	.....	6,685	0-50	6,350	0-80	7,150	5-0	25,700	8-3	44,500	.....	115,000
23	.....	6,640	.....	6,350	.....	7,100	5-2	26,700	8-5	45,800	17-5	111,000
24	.....	6,595	.....	6,350	.....	7,060	5-3	27,200	8-9	46,300	17-4	110,000
25	0-60	6,550	.....	6,350	.....	7,020	5-4	27,700	.....	51,600	17-1	108,000
26	.....	6,550	.....	6,350	.....	6,980	5-5	28,300	9-9	54,900	17-0	107,000
27	.....	6,550	.....	6,350	.....	6,940	.....	29,200	10-6	59,700	16-6	104,000
28	.....	6,550	.....	6,350	.....	6,900	5-85	30,100	11-4	65,300	16-3	102,000
29	.....	6,550	.....	.....	0-70	6,850	6-0	31,000	12-1	70,200	.....	100,000
30	.....	6,550	.....	.....	.....	7,320	6-1	31,500	12-8	75,200	15-85	98,000
31	.....	6,550	.....	.....	.....	7,780	.....	.....	13-5	80,300	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE OF KOOTENAY RIVER near Nelson, for 1913.—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	15-6	96,100	8-7	47,000	5-6	28,800	4-0	20,700	2-8	14,900	1-95	11,100
2	15-4	94,600	8-6	46,400	5-6	28,800	3-9	20,200	.....	14,900	1-95	11,100
3	15-2	93,100	.....	45,500	5-5	28,300	3-8	19,700	2-8	14,900	1-9	10,900
4	15-0	91,600	8-3	44,500	5-5	28,300	3-7	19,200	2-8	14,900	1-9	10,900
5	14-65	88,800	8-2	43,900	5-6	28,800	.....	18,900	2-8	14,900	1-85	10,700
6	.....	86,800	8-05	43,000	5-7	29,300	3-6	18,700	2-7	14,400	1-85	10,700
7	14-1	84,700	8-0	42,700	.....	29,300	3-6	18,700	2-7	14,499	.....	10,700
8	13-9	83,200	7-9	42,100	5-7	29,300	3-6	18,700	2-6	13,900	1-85	10,700
9	13-6	81,000	7-8	41,500	5-7	29,300	3-5	18,300	.....	13,400	1-85	10,700
10	13-5	80,300	.....	40,900	5-7	29,300	3-5	18,300	2-4	13,000	1-85	10,700
11	13-2	78,100	7-6	40,300	5-6	28,800	3-45	18,000	2-3	12,600	1-8	10,500
12	13-0	76,700	7-5	39,700	5-5	28,300	.....	17,300	2-2	12,200	1-8	10,500
13	.....	74,500	7-4	39,100	5-4	27,700	3-4	17,800	2-1	11,800	1-7	10,100
14	12-4	72,300	7-3	38,500	.....	27,300	3-3	17,300	2-1	11,800	.....	9,900
15	12-2	70,900	7-3	38,500	5-2	26,700	3-3	17,300	2-1	11,800	1-6	9,700
16	11-7	67,400	7-2	37,900	5-1	26,200	3-3	17,300	.....	11,800	1-6	9,700
17	11-45	65,600	.....	37,900	5-0	25,700	3-3	17,300	2-1	11,800	1-6	9,700
18	11-05	62,800	7-0	36,700	5-0	25,700	3-2	16,800	2-1	11,800	1-6	9,700
19	10-85	61,400	6-8	35,500	4-9	25,100	.....	16,800	2-1	11,800	1-55	9,500
20	.....	59,800	6-7	34,900	4-8	24,600	3-2	16,800	2-05	11,600	1-55	9,500
21	10-4	58,300	6-6	34,300	.....	24,100	3-2	16,800	2-05	11,600	.....	9,400
22	10-2	56,900	6-5	33,800	4-6	23,600	3-2	16,800	2-05	11,600	1-5	9,300
23	10-1	56,200	6-4	33,200	4-6	23,600	3-2	16,800	.....	11,600	1-45	9,100
24	10-0	55,600	.....	32,400	4-5	23,100	3-2	16,800	2-05	11,600	1-4	8,950
25	9-55	54,600	6-1	31,500	4-5	23,100	3-1	16,300	2-05	11,600	1-3	8,650
26	9-8	54,200	6-0	31,000	4-4	22,600	.....	16,300	2-1	11,800	1-25	8,500
27	.....	52,900	6-0	31,000	4-3	22,100	3-1	16,300	2-05	11,600	1-2	8,350
28	9-4	51,600	6-0	31,000	.....	21,600	3-0	15,900	2-05	11,600	.....	8,200
29	9-3	50,900	5-9	30,400	4-1	21,100	3-0	15,900	2-0	11,400	1-1	8,050
30	9-1	49,600	5-8	29,800	4-0	20,700	3-0	15,900	.....	11,200	1-1	8,050
31	8-9	48,300	.....	29,800	.....	.....	2-9	15,400	.....	.....	1-1	8,050

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1913.

(Drainage area, 77,700 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	8,200	6,550	7,020	0-40	0-43	432,000
February	6,550	6,270	6,360	0-36	0-38	353,000
March	7,750	6,350	6,750	0-38	0-44	415,000
April	31,500	8,250	17,900	1-01	1-13	1,060,000
May	80,300	30,400	43,500	2-46	2-84	2,675,000
June	134,000	86,300	115,000	6-50	7-25	6,840,000
July	96,100	48,300	69,700	3-94	4-54	4,286,000
August	47,000	29,800	37,500	1-12	2-44	2,310,000
September	29,300	20,700	26,000	2-17	1-64	1,550,000
October	20,700	15,400	17,500	0-99	1-14	1,080,000
November	14,900	11,200	12,600	0-71	0-79	750,000
December	11,100	8,650	9,730	0-55	0-63	598,000

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson,
for 1914.

Day.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-1	8,050	1-6	9,700	0-9	7,450	1-9	10,900	6-90	36,100	13-00	76,700
2.....	1-1	8,050	1-5	9,300	0-9	7,450	1-9	10,900	7-10	37,300	13-15	77,700
3.....	1-1	8,050	1-3	8,650	0-9	7,450	2-0	11,400	7-50	39,700	13-15	77,700
4.....	1-1	8,050	1-2	8,350	0-9	7,450	2-0	11,400	7-90	42,100	13-70	81,700
5.....	1-1	8,050	1-1	8,050	0-95	7,600	2-04	11,600	8-10	43,300	13-90	83,200
6.....	1-2	8,350	1-0	7,750	0-95	7,600	2-10	11,900	8-20	43,900	14-00	84,000
7.....	1-4	8,950	1-0	7,750	0-95	7,600	2-20	12,200	8-40	45,100	14-10	84,700
8.....	1-5	9,300	1-0	7,750	0-98	7,690	2-45	13,200	8-70	47,000	14-10	84,700
9.....	1-7	10,100	1-0	7,750	1-0	7,750	2-55	13,700	8-90	48,300	14-10	84,700
10.....	1-9	10,900	1-0	7,750	1-0	7,750	2-60	13,900	9-05	49,300	14-00	84,000
11.....	1-95	11,100	1-0	7,750	1-0	7,750	2-90	15,400	9-20	50,200	13-90	83,200
12.....	2-0	11,400	1-0	7,750	1-0	7,750	3-00	15,900	9-40	51,600	13-80	82,400
13.....	2-0	11,400	1-0	7,750	1-0	7,750	3-10	16,300	9-70	53,500	13-70	81,700
14.....	2-0	11,400	1-0	7,750	1-0	7,750	3-50	18,300	9-90	54,900	13-70	81,700
15.....	2-0	11,400	0-95	7,600	1-1	8,050	4-00	20,700	10-40	58,300	13-80	82,400
16.....	2-0	11,400	0-9	7,450	1-2	8,350	4-40	22,600	10-70	60,400	13-80	82,400
17.....	2-0	11,400	0-9	7,450	1-3	8,650	4-60	23,600	11-05	62,800	13-95	83,600
18.....	2-0	11,400	0-9	7,450	1-4	8,950	4-80	24,600	11-40	65,300	14-15	85,000
19.....	2-1	11,800	0-9	7,450	1-5	9,300	5-10	26,200	11-80	68,100	14-45	87,400
20.....	2-0	11,400	0-8	7,150	1-6	9,700	5-40	27,700	12-00	69,500	14-60	88,500
21.....	1-9	10,900	0-8	7,150	1-7	10,100	5-60	28,800	12-20	70,900	14-60	88,500
22.....	1-9	10,900	0-8	7,150	1-75	10,300	5-80	29,800	12-40	72,300	14-70	89,200
23.....	1-8	10,500	0-8	7,150	1-8	10,500	6-00	31,000	12-60	73,800	14-70	89,200
24.....	1-7	10,100	0-8	7,150	1-8	10,500	6-20	32,000	12-80	75,200	14-60	88,500
25.....	1-7	10,100	0-8	7,150	1-85	10,700	6-30	32,600	13-00	76,700	14-50	87,800
26.....	1-7	10,100	0-9	7,450	1-9	10,900	6-40	33,200	13-20	78,100	14-40	87,000
27.....	1-7	10,100	0-9	7,450	2-0	11,400	6-50	33,800	13-20	78,100	14-20	85,400
28.....	1-8	10,500	0-9	7,450	2-0	11,400	6-60	34,300	13-25	78,400	14-10	84,700
29.....	1-75	10,300	.....	.....	1-95	11,100	6-70	34,900	13-25	78,400	13-90	83,200
30.....	1-7	10,100	.....	.....	1-9	10,900	6-80	35,500	13-20	78,100	13-90	83,200
31.....	1-7	10,100	.....	.....	1-9	10,900	.....	.....	13-10	77,400	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	13-70	81,700	9-25	50,500	4-70	24,100	3-65	18,900	3-30	17,300	3-45	18,000
2	13-70	81,700	9-00	49,000	4-60	23,600	3-65	18,900	3-40	17,800	3-40	17,800
3	13-70	81,700	8-80	47,600	4-55	23,300	3-60	18,700	3-55	18,500	3-35	17,500
4	13-70	81,700	8-60	46,400	4-50	23,100	3-55	18,500	3-70	19,200	3-35	17,500
5	13-80	82,400	8-40	45,100	4-40	22,600	3-60	18,700	3-90	20,200	3-25	17,000
6	13-80	82,400	8-20	43,900	4-25	21,800	3-55	18,500	4-05	20,900	3-20	16,800
7	13-80	82,400	8-00	42,700	4-10	21,100	3-50	18,300	4-15	21,300	3-15	16,500
8	13-80	82,400	7-90	42,100	4-05	20,900	3-45	18,000	4-25	21,800	3-10	16,300
9	13-80	82,400	7-60	40,300	4-00	20,700	3-45	18,000	4-30	22,100	3-00	15,900
10	13-80	82,400	7-50	39,700	4-00	20,700	3-40	17,800	4-35	22,300	2-85	15,100
11	13-80	82,400	7-30	38,500	3-90	20,200	3-40	17,800	4-40	22,600	2-70	14,400
12	13-70	81,700	7-10	37,300	3-85	19,900	3-35	17,500	4-40	22,600	2-60	13,900
13	13-60	81,000	6-90	36,100	3-75	19,400	3-35	17,500	4-35	22,300	2-45	13,200
14	13-50	80,300	6-60	34,300	3-65	18,900	3-30	17,300	4-40	22,600	2-35	12,800
15	13-40	79,500	6-40	33,200	3-55	18,500	3-25	17,000	4-40	22,600	2-25	12,400
16	13-30	78,800	6-20	32,000	3-60	18,700	3-25	17,000	4-35	22,300	2-20	12,200
17	13-15	77,700	6-10	31,500	3-55	18,500	3-20	16,800	4-30	22,100	2-10	11,800
18	13-00	76,700	6-10	31,500	3-50	18,300	3-25	17,000	4-25	21,800	2-05	11,600
19	12-85	75,500	6-00	31,000	3-55	18,500	3-30	17,300	4-15	21,300	1-90	10,900
20	12-65	74,100	5-90	30,400	3-60	18,700	3-35	17,500	4-05	20,900	1-80	10,500
21	12-45	72,700	5-80	29,800	3-60	18,700	3-40	17,800	3-95	20,400	1-70	10,100
22	12-15	70,500	5-70	29,300	3-65	18,900	3-40	17,800	3-90	20,200	1-70	10,100
23	11-85	68,400	5-60	28,800	3-65	18,900	3-45	18,000	3-80	19,700	1-61	9,740
24	11-55	66,300	5-50	28,300	3-60	18,700	3-40	17,800	3-75	19,400	1-61	9,740
25	11-15	63,500	5-40	27,700	3-65	18,900	3-40	17,800	3-70	19,200	1-61	9,740
26	10-90	61,800	5-30	27,200	3-55	18,500	3-35	17,500	3-70	19,200	1-60	9,700
27	10-60	59,700	5-20	26,700	3-60	18,700	3-30	17,300	3-65	18,900	1-55	9,500
28	10-30	57,600	5-10	26,200	3-65	18,900	3-30	17,300	3-55	18,500	1-55	9,500
29	9-95	55,200	5-00	25,700	3-65	18,900	3-25	17,000	3-50	18,300	1-55	9,500
30	9-65	53,200	4-90	25,100	3-60	18,700	3-20	16,800	3-50	18,300	1-50	9,300
31	9-45	51,900	4-80	24,600	.....	.....	3-25	17,000	.....	.....	1-50	9,300

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1914.

(Drainage area, 17,700 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	11,800	8,050	10,200	6-58	0-67	627,000	.....
February	9,700	7,150	7,730	0-44	0-46	42,960	.....
March	11,400	7,450	9,010	0-51	0-59	554,000	.....
April	35,500	10,900	21,900	1-24	1-38	1,300,000	C
May	78,400	36,100	60,100	3-40	3-92	3,700,000	B
June	89,200	76,700	84,100	4-75	5-30	5,000,000	B
July	82,400	51,900	73,900	4-18	4-82	4,540,000	B
August	50,500	24,600	34,000	1-92	2-21	2,090,000	C
September	24,100	18,300	20,000	1-13	1-26	1,190,000	C
October	18,900	16,800	17,700	1-00	1-15	1,090,000	C
November	22,600	17,300	20,500	1-16	1-29	1,220,000	C
December	18,000	9,300	12,500	0-71	0-82	769,000	C

SESSIONAL PAPER No. 25e

KOOTENAY RIVER NEAR GLADE (3014).

Location.—Ten miles from the mouth below the mouth of Slovan river; 16 miles from Nelson at the ferry cable near Glade B.C. Nelson district.

Records Available.—July, 1913, to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson. (See Kootenay river near Nelson.) The river is open all the year round.

Gauge.—Four 5-foot gauges reading from 0 to 5 feet, 5 to 10 feet 10 to 15 feet and 15 to 20 feet are used and read twice daily by F. Striloiff of Glade.

Channel.—The channel is straight for one half mile above and below section and very uniform. There are riffles 1,000 yards above and below the section which is ideal for metering purposes.

Discharge Measurements.—Seven measurements in 1913 and seven in 1914 were made from a cable car used on the ferry cable.

Accuracy.—Accurate gauge readings are obtained, accurate measurements were taken and the gauge height-discharge curve is very satisfactory. The results at this station are considered to be within 5 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-55	8,700	2-25	11,400	1-55	8,700	2-7	13,100	8-10	43,200	13-4	88,600
2	1-55	8,700	2-25	11,400	1-45	8,330	2-7	13,100	8-40	45,400	13-6	90,600
3	1-55	8,700	2-35	11,800	1-45	8,330	2-7	13,100	8-80	48,400	14-1	95,600
4	1-65	9,100	2-35	11,800	1-55	8,700	2-8	13,500	8-95	49,500	14-2	96,600
5	1-65	9,100	2-15	11,000	1-55	8,700	2-7	13,100	9-35	52,600	14-2	96,600
6	1-85	9,900	2-05	10,700	1-55	8,700	2-95	14,200	9-50	53,800	14-2	96,600
7	2-35	11,800	1-85	9,900	1-55	8,700	3-25	15,400	9-5	53,800	14-1	95,600
8	2-50	12,300	1-85	9,900	1-55	8,700	3-45	16,200	9-85	56,600	14-0	94,600
9	2-45	12,100	1-75	9,500	1-60	8,900	3-55	16,600	10-1	58,600	13-9	93,600
10	2-50	12,300	1-75	9,500	1-60	8,900	3-8	17,700	10-3	60,300	13-95	94,100
11	2-65	12,900	1-75	9,500	1-60	8,900	3-95	18,400	10-4	61,100	13-8	92,600
12	2-65	12,900	1-65	9,100	1-60	8,900	4-15	19,250	10-6	62,800	13-75	92,100
13	2-65	12,900	1-65	9,100	1-60	8,900	4-50	20,900	10-8	64,500	13-75	92,100
14	2-65	12,900	1-65	9,100	1-60	8,900	4-85	22,600	11-05	66,600	13-85	93,100
15	2-65	12,900	1-65	9,100	1-70	9,300	5-35	25,500	11-35	69,400	14-05	95,100
16	2-70	13,100	1-65	9,100	1-80	9,700	5-75	27,800	11-75	73,000	14-2	96,600
17	2-75	13,400	1-55	8,700	1-80	9,700	5-90	28,700	11-95	74,900	14-4	98,600
18	2-65	12,900	1-55	8,700	2-10	10,900	6-10	29,900	12-15	76,800	14-55	100,000
19	2-55	12,500	1-55	8,700	2-10	10,900	6-30	31,200	12-30	78,200	14-7	102,000
20	2-55	12,500	1-55	8,700	2-30	11,600	6-80	34,300	12-50	80,100	14-7	102,000
21	2-65	12,900	1-55	8,700	2-30	11,600	6-80	34,300	12-7	81,900	14-65	102,000
22	2-55	12,500	1-55	8,700	2-36	11,800	6-90	35,000	12-9	83,800	14-6	101,000
23	2-45	12,200	1-45	8,330	2-40	12,000	7-20	37,000	13-05	85,200	14-5	99,600
24	2-45	12,200	1-45	8,330	2-50	12,300	7-40	38,300	13-3	87,600	14-4	98,600
25	2-45	12,200	1-45	8,330	2-60	12,700	7-50	39,000	13-45	89,100	14-3	97,600
26	2-35	11,800	1-45	8,330	2-70	13,100	7-80	41,100	13-5	89,600	14-3	97,600
27	2-35	11,800	1-45	8,330	2-70	13,100	7-80	41,100	13-45	89,100	14-2	96,600
28	2-25	11,400	1-45	8,330	2-70	13,100	7-80	41,100	13-45	89,100	14-05	95,100
29	2-25	11,400	.....	.....	2-70	13,100	7-90	41,800	13-35	88,100	13-95	94,100
30	2-15	11,000	.....	.....	2-60	12,700	8-00	42,500	13-25	87,200	13-85	93,100
31	2-15	11,000	.....	.....	2-60	12,700	.....	.....	13-2	86,700	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	13-85	93,100	9-95	57,400	5-5	26,400	4-4	20,400	4-15	19,200	4-2	19,500
2.....	13-8	92,600	9-8	56,200	5-4	25,800	4-4	20,400	4-25	19,800	4-1	19,000
3.....	13-85	93,100	9-6	54,600	5-3	25,200	4-35	20,200	4-35	20,200	4-1	19,000
4.....	13-85	93,100	9-4	53,000	5-2	24,600	4-3	20,000	4-45	20,600	4-1	19,000
5.....	13-85	93,100	9-2	51,400	5-1	24,100	4-3	20,000	4-75	22,200	4-0	18,600
6.....	13-85	93,100	9-0	49,900	5-0	23,500	4-3	20,000	4-9	22,900	4-0	18,600
7.....	13-9	93,600	8-8	48,400	4-9	22,900	4-25	19,800	5-0	23,500	4-0	18,600
8.....	13-85	93,100	8-7	47,600	4-8	22,400	4-20	19,500	5-2	24,600	3-8	17,700
9.....	13-75	92,100	8-6	46,800	4-7	21,900	4-20	19,500	5-1	24,100	3-7	17,900
10.....	13-7	91,600	8-4	45,400	4-6	21,400	4-20	19,500	5-3	25,200	3-6	16,900
11.....	13-65	91,100	8-2	43,900	4-5	20,900	4-2	19,500	5-3	25,200	3-5	16,400
12.....	13-5	89,600	8-0	42,500	4-5	20,900	4-1	19,000	5-3	25,200	3-3	15,600
13.....	13-5	89,600	7-9	41,800	4-4	20,400	4-0	18,600	5-4	25,800	3-1	14,800
14.....	13-45	89,100	7-7	40,400	4-2	19,500	4-0	18,600	5-3	25,200	3-0	14,400
15.....	13-4	88,600	7-5	39,000	4-2	19,500	4-0	18,600	5-3	25,200	2-9	14,000
16.....	13-35	88,100	7-3	37,700	4-2	19,500	4-0	18,600	5-3	25,200	2-8	13,500
17.....	13-15	86,200	7-1	36,300	4-2	19,500	3-9	18,100	5-2	24,600	2-7	13,100
18.....	13-0	84,700	7-0	35,700	4-25	18,800	4-1	19,000	5-1	24,100	2-6	12,700
19.....	12-85	83,300	7-0	35,700	4-35	20,200	4-2	19,500	5-0	23,500	2-6	12,700
20.....	12-6	81,000	6-7	33,400	4-35	20,200	4-1	19,000	4-85	22,600	2-4	12,000
21.....	12-4	79,100	6-5	32,400	4-30	20,000	4-2	19,500	4-7	21,900	2-3	11,600
22.....	12-15	76,800	6-4	31,800	4-3	20,000	4-2	19,500	4-7	21,900	2-3	11,600
23.....	12-0	75,400	6-4	31,800	4-3	20,000	4-2	19,500	4-55	21,200	2-2	11,200
24.....	11-75	73,000	6-4	31,800	4-3	20,000	4-2	19,500	4-5	20,900	2-2	11,200
25.....	11-35	69,400	6-3	31,200	4-35	20,200	4-15	19,200	4-4	20,400	2-2	11,200
26.....	11-3	68,900	6-1	29,900	4-4	20,400	4-1	19,000	4-4	20,400	2-2	11,200
27.....	11-1	67,100	6-0	29,300	4-4	20,400	4-1	19,000	4-4	20,400	2-15	11,000
28.....	10-35	60,700	5-9	28,700	4-4	20,400	4-1	19,000	4-25	19,800	2-10	10,900
29.....	10-3	60,300	5-8	28,100	4-45	20,600	4-1	19,000	4-3	20,000	2-1	10,900
30.....	10-3	60,300	5-7	27,500	4-4	20,400	4-1	19,000	4-3	20,000	2-0	10,500
31.....	10-65	58,200	5-6	26,900	.....	.....	4-0	18,600	.....	.....	2-0	10,500

DISCHARGE MEASUREMENTS of Kootenay River near Glade, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
Jan. 13.....	C. E. Webb.....	1,048	549	4,580	2-82	2-52	12,900
Mar. 9.....	C. E. R.....	1,672	530	4,000	2-22	1-57	8,900
June 1.....	J. A. E.....	1,909	696	11,370	7-79	13-35	88,600
July 20.....	J. A. E., G. K. B.....	1,909	685	10,800	7-54	12-60	81,400
Aug. 11.....	C. E. R., D. O'B. G.....	1,929	640	7,916	5-46	8-22	43,200
Aug. 13.....	D. O'B. G., Lawley.....	1,929	630	7,700	5-25	7-80	40,400
Dec. 11.....	J. A. E., G. K. B.....	1,909	556	5,020	3-42	3-45	17,200

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Kootenay River near Glade, for 1914.

(Drainage area, 19,100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January.....	13,400	8,700	11,700	0.61	0.70	719,000	A
February.....	11,800	8,330	9,430	0.49	0.51	524,000	A
March.....	13,100	8,330	10,400	0.54	0.62	640,000	A
April.....	42,500	13,100	26,500	1.39	1.55	1,380,000	A
May.....	89,600	43,200	70,600	3.70	4.27	4,340,000	A
June.....	102,000	88,600	96,100	5.03	5.61	5,720,000	A
July.....	93,600	58,200	82,300	4.31	4.97	5,060,000	A
August.....	57,400	26,900	39,600	2.07	2.39	2,430,000	C
September.....	26,400	19,500	21,400	1.12	1.25	1,270,000	A
October.....	20,400	18,100	19,300	1.01	1.16	1,190,000	A
November.....	25,800	19,200	22,500	1.18	1.32	1,340,000	A
December.....	19,500	10,500	14,400	0.75	0.86	885,000	A

NAKUSP CREEK NEAR NAKUSP (3021.)

Location.—Station is located west of Brouse and near R. H. Baird's ranch, about 2 miles from Nakusp. Nelson district.

Records Available.—March 20th to December 31, 1914.

Climatic Conditions.—Similar to Kooskanax creek, q.v.

Gauge.—Vertical staff enamel gauge, about 40 feet below measuring section. Read twice a week. March to December, 1914, by Mr. R. H. Baird.

Channel.—Sandy, with vegetation, and subject to shift. Beaver dams of recent construction above the section have a marked effect on the channel.

Accuracy.—Beavers were working in the vicinity of the gauge. The gauge readings are infrequent. Although results are probably within 20 per cent, they are not guaranteed.

General.—Nakusp creek rises on the west slope of the Goat mountains and flows westward, emptying into Upper Arrow lakes about 1 mile below Nakusp. This creek drains an area of approximately 40 square miles. The probable future use of Nakusp creek waters is irrigation and domestic supply.

DISCHARGE MEASUREMENTS of Nakusp Creek near Nakusp, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 20.....	C. E. Webb.....	1048	20.5	13.9	2.25	1.8	31.3
June 13.....	G. K. B.....	1927	16.0	12.6	4.28	2.2	54.0
" 21.....	G. K. B.....	1927	16.0	11.4	4.01	2.2	45.8
" 29.....	J. A. E.....	1909	15.0	12.1	3.77	1.9	45.6
Aug. 12.....	J. A. E.....	1909	15.0	8.35	2.53	1.5	21.2
Sept. 3.....	J. A. E. and C. E. R.....	1927	17.0	14.7	0.87	1.38	12.9
Oct. 28.....	J. A. E.....	1909	14.5	6.72	3.13	1.65	21.0
Nov. 21.....	J. A. E., O. J. B.....	1909	15.0	9.85	2.82	1.8	28.7

DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp,
for 1914.

Day.	March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				29.4		69.0	2.3	55.3
2			1.8	30.0		77.0		53.0
3				30.7	2.8	85.4		51.0
4				31.4		82.0	2.2	49.9
5			1.85	32.2		79.0		49.9
6				35.3		76.0		49.9
7				38.4	2.6	73.0	2.2	49.9
8				41.5		75.0		49.9
9			2.1	44.5		77.0		49.9
10				49.9	2.7	79.0		49.9
11				49.9		77.0	2.2	49.9
12			2.3	55.3		75.0		49.9
13				57.6	2.6	73.0		49.9
14				59.0		71.0	2.2	49.9
15			2.4	61.0		70.0		48.5
16				69.0		68.0		47.0
17				77.0	2.5	67.0		46.0
18				84.5		64.0	2.1	44.5
19			2.9	91.9		61.0		47.0
20	1.8	30.0		89.8		58.0		48.5
21		30.0		87.6	2.3	55.3	2.2	49.9
22		30.0	2.8	85.4		55.3		48.0
23		30.0		82.0		55.3		47.0
24	1.8	30.0		79.0	2.3	55.3		46.0
25		29.4		76.0		57.0	1.9	34.5
26		28.5	2.6	73.0		58.0		34.5
27	1.75	27.8		70.0		59.0		34.5
28		27.8		67.0	2.4	61.0	1.9	34.5
29		1.75	27.8	64.0		59.0	1.9	34.5
30		28.3	2.4	61.0		58.0	1.9	34.5
31		28.8				57.0		

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DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		34.5		21.2		14.9		27.0		30.0		30.0
2	1.9	34.5	1.6	21.2		14.1		24.1	1.8	30.0	1.8	30.0
3		34.5		21.2		13.4	1.60	21.2		30.0		28.9
4		34.5		21.2	1.38	12.7		22.6	1.8	30.0		27.7
5	1.9	34.5	1.6	21.2		15.5		22.6		30.0		26.6
6		34.5		21.2		18.4	1.70	25.5		30.0	1.7	25.5
7		34.5	1.6	21.2	1.6	21.2		24.4	1.8	30.0		25.5
8		34.5	1.6	21.2		22.1		23.4		30.0		25.5
9	1.9	34.5		20.2		22.9		22.3		33.1		25.5
10		34.5		19.1		23.8	1.60	21.2		36.3	1.7	25.5
11		34.5		18.1		24.6		22.3	2.0	39.4		25.0
12		34.5	1.5	17.1	1.7	25.5		23.4		39.4		25.0
13	1.9	34.5		16.5	1.7	25.5		24.4		39.4	2.4	25.0
14		33.0		16.0		25.5	1.7	25.5		39.4		24.0
15		32.0		15.5		25.5		24.4	2.0	39.4		24.0
16		31.0		15.0	1.7	25.5		23.4		36.3		23.0
17	1.8	30.0		14.5	1.75	27.8		22.3		33.1	2.2	23.0
18		28.0		14.0		28.0	1.6	21.2	1.8	30.0		24.0
19		27.0	1.4	13.4		29.0		22.3		30.0	2.0	24.0
20	1.7	25.5		13.4		30.0		23.4		30.0		25.0
21		23.4		13.4	1.8	30.0		24.4	1.8	30.0		25.0
22	1.6	21.2	1.4	13.4		27.0	1.7	25.5		30.0		25.0
23		21.2		13.9		24.1		25.5		30.0	1.7	25.5
24		21.2		14.3	1.60	21.2		25.5		30.0		26.0
25		21.2		14.7		19.2	1.7	25.5	1.8	30.0		27.0
26	1.6	21.2	1.45	15.2	1.50	17.1		25.5		30.0		28.0
27		21.2		15.8		20.0	1.7	25.5		30.0		29.0
28		21.2		16.5		23.0		26.0		30.0	1.8	30.0
29	1.6	21.2	1.5	17.1		26.0		27.0	1.8	30.0		30.0
30		21.2		16.4	1.80	30.0		28.0		30.0		30.0
31		21.2		15.6				29.0				30.0

MONTHLY DISCHARGE of Nakusp Creek near Nakusp. for 1914.

(Drainage area, 40 square miles.)

	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	91.9	29.4	60.1	1.50	1.67	3,580
May	85.4	55.3	67.3	1.68	1.94	4,140
June	55.3	34.5	46.3	1.16	1.29	2,760
July	34.5	21.2	28.7	0.72	0.83	1,760
August	21.2	13.4	17.1	0.43	0.50	1,050
September	30.0	12.7	22.8	0.37	0.44	1,360
October	20.0	21.2	24.3	0.61	0.70	1,430
November	30.4	30.0	32.2	0.81	0.90	1,920
December	30.0		26.4	0.66	0.76	1,620

PEND D'OREILLE RIVER NEAR WANETA (3017).

Location.—The gauging section is located 9 miles above the mouth at Waneta, near Mr. A. G. Lang's ranch.

Records Available.—May, 1913, to December, 1914.

Climatic Conditions.—The precipitation is light over practically the whole Pend d'Oreille drainage. At the mouth (Waneta), from December 1, 1913, to November 30, 1914, the precipitation was 27.2 inches. The summers are hot and fairly dry. The winters are mild, the temperature seldom going below zero. The river in Canada seldom freezes over, and frazil ice is not often a serious factor.

Gauge.—Staff gauges are used and read two or three times a week, except during high water, when they are read daily, by Mr. A. C. Lang.

Channel.—The Pend d'Oreille, during its course through Canada, is very torrentuous, and there is no favourable metering section. The section chosen is very fast in high water, satisfactory at low water stages, and appears to have a permanent control.

Discharge Measurements.—Five measurements were made in 1914, and twelve in 1912 and 1913.

Accuracy.—The gauge readings are somewhat infrequent; the stream is flashy during May and June. The measurements, except at low water, are only surface measurements. The results in May and June cannot be guaranteed closer than 15 per cent and, during the other months, 10 per cent.

DISCHARGE MEASUREMENTS of Pend D'Oreille River near Waneta B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
June 11.....	C. E. R., W. J. B.....	1048	440	12,400	10.37	26.8	128,300
Nov. 6.....	C. E. R., C. N. W.....	1048	260	3,350	3.32	3.2	11,200
1914.							
April 18.....	C. E. W., D. O'B. G.....	1048	284	4,380	4.66	6.05	20,200
June 3.....	J. A. R., G. K. B.....	1909	380	9,260	3.52	18.95	78,900
July 18.....	J. A. R., D. O'B. G.....	1909	310	6,350	6.08	10.6	38,600
Nov. 12.....	J. A. R., G. K. B.....	1909	285	4,860	4.63	5.6	22,500

(All areas recomputed from soundings of January and February, 1915.)

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DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-1	10,600	2-9	11,900	.....	12,100	.....	18,000	12-2	44,000	.....	75,800
2	2-1	10,600	.....	11,600	.....	12,300	.....	17,000	.....	44,300	18-6	76,000
3	2-1	10,600	2-5	11,300	3-1	12,600	5-1	17,900	.....	44,600	18-9	77,800
4	2-3	10,900	.....	10,800	.....	12,800	.....	18,400	.....	44,900	.....	76,800
5	2-5	11,300	.....	10,300	.....	12,900	.....	18,900	12-5	45,200	.....	75,900
6	2-8	11,960	1-7	9,800	3-3	13,000	.....	19,400	.....	46,300	18-4	75,000
7	2-9	12,100	.....	10,000	.....	13,100	5-8	20,000	.....	47,400	.....	75,000
8	3-1	12,600	.....	10,200	3-4	13,200	.....	20,800	13-2	48,500	.....	75,000
9	3-3	13,000	.....	10,400	.....	13,300	.....	21,600	.....	49,500	18-4	75,000
10	3-3	13,000	2-2	10,700	3-5	13,400	.....	22,500	.....	50,500	.....	74,200
11	3-3	13,000	.....	10,800	.....	13,500	6-9	23,400	.....	51,500	.....	73,500
12	3-3	13,000	.....	10,900	.....	13,600	7-0	23,800	14-1	52,600	.....	72,800
13	3-3	13,000	.....	11,000	.....	13,600	.....	25,200	.....	55,200	17-9	72,100
14	3-3	13,000	2-4	11,100	.....	13,700	7-8	26,600	.....	57,800	.....	71,500
15	3-3	13,000	.....	11,200	.....	13,800	.....	27,700	15-7	60,500	.....	71,000
16	3-2	12,800	2-5	11,300	3-7	13,900	.....	28,800	.....	61,300	.....	70,500
17	3-2	12,800	.....	11,300	.....	14,400	.....	30,000	.....	62,100	17-5	70,000
18	3-2	12,800	.....	11,200	.....	15,900	9-1	31,200	.....	62,900	.....	68,500
19	3-2	12,800	.....	11,100	.....	15,500	.....	32,000	.....	63,700	.....	67,000
20	3-2	12,800	2-4	11,100	4-5	16,100	.....	32,800	16-5	64,500	16-7	65,600
21	3-1	12,600	.....	11,100	.....	16,500	9-7	33,600	.....	66,500	.....	64,500
22	3-1	12,600	.....	11,200	.....	16,900	.....	34,500	.....	68,500	.....	63,500
23	3-1	12,600	.....	11,300	4-9	17,300	.....	35,400	17-6	70,600	16-1	62,500
24	3-1	12,600	2-5	11,300	.....	17,600	.....	36,300	.....	71,300	.....	61,700
25	3-1	12,600	.....	11,300	.....	18,000	10-6	37,200	.....	72,000	.....	60,900
26	3-1	12,600	.....	11,500	.....	18,400	.....	38,000	18-0	72,700	.....	60,200
27	3-1	12,600	.....	11,700	5-4	18,800	.....	38,800	.....	73,100	15-5	59,500
28	3-0	12,300	2-8	11,900	.....	18,600	11-2	39,600	.....	73,500	.....	58,500
29	3-0	12,300	.....	.....	.....	18,400	.....	41,000	.....	74,000	.....	57,500
30	3-0	12,300	.....	.....	5-21	18,200	.....	42,500	18-3	74,500	.....	56,500
31	3-0	12,300	.....	.....	.....	18,100	.....	.....	18-5	75,500	14-7	55,500

DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		54,700	7-5	25,600		12,800		11,300		16,000	6-0	20,600
2		54,000		24,000	3-1	12,600		11,430	4-8	17,000		20,500
3		53,300		24,430		12,300	2-6	11,500		17,300		20,400
4	14-1	52,600	7-0	23,800		12,100	2-6	11,500		17,600	5-9	20,300
5		51,900		23,300	2-8	11,900		11,500		18,000		20,000
6		49,500		22,800		11,800		11,500		18,400		19,700
7	13-1	48,000		22,300		11,800	2-6	11,500	5-4	18,800	5-6	19,400
8		47,000	6-4	21,800	2-7	11,700		11,500		18,900		19,200
9		46,000		21,100		11,500		11,600		19,000		19,000
10		45,000		20,400		11,300	2-7	11,700	5-5	19,100	5-4	18,800
11	12-2	44,000	5-7	19,700		11,100		11,800		19,200		17,900
12		43,000		19,100	2-3	10,900		11,900		19,300		17,000
13		42,100		18,600		10,900	2-9	12,100		19,500	4-5	16,100
14	11-6	41,200		18,100		11,000		12,100		19,700		15,500
15		40,200	5-0	17,600	2-4	11,100		12,200	5-7	20,000		14,900
16		39,200		17,100		11,300		12,300		20,300		14,400
17		38,200		16,600		11,500	3-0	12,300		20,600	3-7	13,900
18	10-6	37,200	4-5	16,100		11,700		12,600	6-1	20,900		13,700
19		36,100		15,800	2-8	11,900		13,000		21,100		13,500
20		35,000		15,500		11,900	3-5	13,400		21,300		13,300
21	9-8	34,000		15,200		11,800		13,500	6-3	21,500	3-4	13,200
22		33,200	4-1	15,000	2-7	11,700		13,700		21,400		13,100
23		32,400		14,700		11,700	3-7	13,900		21,300		13,000
24		31,600		14,400		11,600		14,100	6-2	21,200		12,900
25	9-0	30,800		14,100		11,500		14,300		21,100	5-2	12,800
26		29,900	3-7	13,900	2-6	11,500		14,500		21,000		12,800
27		29,000		13,600		11,500	3-9	14,500	6-1	20,900		12,700
28	8-3	28,100	3-5	13,400		11,400		14,600		20,800		12,600
29		27,400		13,300		11,300		14,700		20,700	3-1	12,600
30		26,800	3-4	13,200	2-5	11,300		14,800		20,600		12,600
31		26,200		13,000			4-1	15,000				12,600

MONTHLY DISCHARGE of Pend D'Oreille River near Waneta, for 1914.

(Drainage area, 26,600 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	13,000	10,600	12,400	0-47	0-54	762,000
February	11,900	9,800	11,000	0-41	0-43	611,000
March	18,800	12,100	15,100	0-57	0-66	925,000
April	42,500	17,900	28,500	1-07	1-19	1,700,000
May	75,500	44,000	59,700	2-25	2-59	3,670,000
June	77,800	55,500	70,700	2-66	2-97	4,210,000
July	54,700	26,200	39,600	1-49	1-72	2,430,000
August	25,600	13,000	18,000	0-68	0-78	1,110,000
September	12,800	10,900	11,600	0-44	0-49	690,000
October	15,000	11,300	12,800	0-48	0-55	787,000
November	21,500	16,000	19,800	0-74	0-83	1,180,000
December	20,600	12,600	15,800	0-59	0-68	972,000

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SAWMILL CREEK NEAR NEW DENVER (3025).

Location.—Station is at bridge at mouth. Nelson district.

Records Available.—April to December, 1914.

Climatic Conditions.—The summers are hot and fairly dry, though sometimes the precipitation is heavy. The winters are quite mild, the thermometer seldom going below zero. (Slightly colder than Nelson.) The creek freezes over for a week or so at a time during a cold spell.

Gauge.—Vertical staff enamel gauge, read daily from April to December, 1914, by Mr. G. R. Nicol, of the Steelite Powder Company, Ltd.

Channel.—Very rocky. Not liable to shift.

Discharge Measurements.—Six measurements were made in 1914.

Accuracy.—The 1914 results should be within 15 per cent.

General.—Saw-mill creek rises on the slopes of the Valhalla and Ruby Mountains, and flows eastward, emptying into Slocan lake at a point directly opposite New Denver. It drains a well-timbered area of about 21 square miles. It has been utilized for power for a saw-mill at its mouth, and may in future be used to generate power for the Steelite Powder Company's plant, situated at the mouth.

DISCHARGE MEASUREMENTS of Saw-mill Creek near Slocan Lake opposite New Denver, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914							
April 16	C. E. W., D. O'B. G.	1,048	23.5	29.9	2.24	0.93	67.0
May 13	J. A. E., G. K. B.	1,672	24.0	37.6	3.68	1.40	138.0
June 16	G. K. B.	1,927	24.0	55.8	5.72	2.05	319.0
July 8	J. A. E., D. O'B. G.	1,929	24.0	43.5	4.45	1.45	195.0
Aug. 17	D. O'B. G.	1,929	24.0	27.4	1.67	0.6	43.9
Nov. 4	J. A. E., G. K. B.	1,909	24.0	18.6	1.9	0.3	35.4

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DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near
New Denver, B.C., for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			1-10	99	1-85	216
2.....			1-20	114	2-05	330
3.....			1-3	133	2-55	482
4.....			1-25	124	2-30	405
5.....			1-15	106	1-85	270
6.....			1-1	99	1-60	202
7.....			1-1	99	1-42	158
8.....			1-15	106	1-28	129
9.....			1-3	133	1-28	129
10.....			1-3	133	1-24	122
11.....			1-3	133	1-28	129
12.....			1-35	143	1-36	145
13.....			1-45	165	1-59	200
14.....			1-56	192	1-91	288
15.....			1-71	232	2-07	336
16.....			1-8	256	2-2	375
17.....			1-7	229	2-3	405
18.....			1-66	218	2-17	366
19.....	0-9	71	1-54	187	1-95	300
20.....	0-9	71	1-52	182	1-65	216
21.....	0-85	66	1-53	184	1-5	177
22.....	0-85	66	1-62	207	1-37	147
23.....	0-9	71	1-71	232	1-27	127
24.....	0-85	66	1-78	251	1-22	118
25.....	0-9	71	1-72	234	1-28	129
26.....	0-9	71	1-58	197	1-47	170
27.....	0-9	71	1-44	163	1-48	172
28.....	0-85	66	1-32	137	1-44	161
29.....	0-85	66	1-28	129	1-52	182
30.....	0-95	77.5	1-30	133	1-53	185
31.....			1-40	153		

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near
New Denver, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-7	229	0-92	73-6	0-34	25-4	0-60	43-0	0-41	29-7	0-2	17-0
2.....	1-77	248	0-87	68-0	0-32	24-2	0-57	40-9	0-42	36-4	0-17	15-5
3.....	1-88	279	0-86	67-0	0-33	24-8	0-54	38-8	0-40	29-0	0-2	17-0
4.....	1-83	265	0-89	70-0	0-35	26-0	0-5	36-0	0-37	27-2	0-17	15-5
5.....	1-78	251	0-78	59-0	0-32	24-2	0-45	32-5	0-41	29-7	0-17	15-5
6.....	1-72	234	0-79	60-0	0-32	24-2	0-4	29-0	0-40	29-0	0-16	15-0
7.....	1-62	207	0-83	64-0	0-30	23-0	0-4	29-0	0-37	27-2	0-15	14-5
8.....	1-52	182	0-74	55-0	0-33	24-8	0-4	29-0	0-37	27-2	0-10	12-0
9.....	1-48	172	0-62	44-6	0-31	23-6	0-37	27-2	0-35	26-0	0-15	14-5
10.....	1-42	158	0-59	42-3	0-35	26-0	0-37	27-2	0-35	26-0	Frozen	13-0
11.....	1-43	160	0-58	41-6	0-45	32-5	0-35	26-0	0-33	24-8	.....	12-0
12.....	1-47	170	0-61	43-8	0-38	27-8	0-33	24-8	0-35	26-0	.....	11-0
13.....	1-5	177	0-62	44-6	0-33	24-8	0-33	24-8	0-35	26-0	.....	10-0
14.....	1-49	175	0-58	41-6	0-30	23-0	0-3	23-0	0-3	23-0	.....	10-0
15.....	1-51	180	0-6	43-0	0-36	26-6	0-3	23-0	0-3	23-0	.....	10-0
16.....	1-25	125	0-58	41-6	0-30	23-0	0-3	23-0	0-25	20-0	.....	10-0
17.....	1-22	118	0-62	44-6	0-34	25-4	0-48	34-6	0-27	21-2	.....	10-0
18.....	1-2	114	0-58	41-6	0-71	52-0	0-5	36-0	0-27	21-2	.....	10-0
19.....	1-17	110	0-57	40-9	0-83	64-0	0-51	36-7	0-24	19-4	.....	10-0
20.....	1-20	114	0-55	39-5	0-62	44-6	0-5	36-0	0-25	20-0	.....	10-0
21.....	1-12	102	0-57	49-0	0-56	40-2	0-45	32-5	0-23	18-8	.....	10-0
22.....	1-02	87	0-56	40-2	0-54	38-8	0-42	30-4	0-2	19-0	.....	10-0
23.....	1-02	87	0-53	38-1	0-59	42-3	0-38	27-8	0-2	19-0	.....	10-0
24.....	1-02	87	0-48	34-6	0-62	44-6	0-37	27-2	0-2	19-0	.....	10-0
25.....	1-02	87	0-43	31-1	0-64	46-2	0-35	25-0	0-2	19-0	.....	10-0
26.....	0-95	77-5	0-43	31-1	0-80	61-0	0-34	25-4	0-23	18-8	.....	10-0
27.....	0-9	71	0-43	31-1	0-91	72-3	0-33	24-8	0-2	19-0	.....	10-0
28.....	0-87	68	0-44	31-8	0-76	57-0	0-30	23-0	0-23	18-8	.....	10-0
29.....	0-92	73-6	0-44	31-8	0-68	49-4	0-30	23-0	0-23	18-8	.....	10-0
30.....	0-85	66	0-43	31-1	0-62	44-6	0-36	26-6	0-20	17-0	.....	10-0
31.....	0-9	71	0-39	28-4	.....	.....	0-37	27-2	.....	.....	.....	10-0

MONTHLY DISCHARGE of Saw-mill Creek, near New Denver, for 1914.

(Drainage area, 21 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	482	118	226	10-8	12-0	13,400	D
July.....	279	66	147	6-96	8-02	9,040	D
August.....	73-6	28-4	45	2-14	2-47	2,770	C
September.....	72-3	23-0	36-2	1-72	1-92	3,150	C
October.....	43-0	23-0	29-5	1-40	1-61	1,810	C
November.....	30-4	17-0	22-8	1-08	1-20	1,360	C
December.....	17-0	.....	11-7	0-56	0-65	719	C

SLOCAN RIVER NEAR CRESCENT VALLEY (3017).

Location.—In Slocan Junction precinct, Nelson Water district, about 1 mile from the mouth on the highway bridge near Crescent Valley.

Records Available.—1913 and 1914.

Climatic Conditions.—Similar to Nelson. (See Kootenay river, near Nelson.)

Gauge.—Vertical staff gauge fastened to the bridge cribbing and read daily by Mr. Paul Peterson of Crescent Valley.

Channel.—Straight above and below the section and inclined to shift. One side of the channel is generally filled with logs during the summer. The control is not satisfactory.

Discharge Measurements.—Seven measurements were made in 1913 and five in 1914.

Accuracy.—The results during medium and low stages should be within 10 per cent or 15 per cent, but the high water results cannot be guaranteed.

General.—By subtracting the discharge of Slocan river from the discharge of Kootenay river near Glade, the discharge of Kootenay river at Bonnington pool and Bonnington falls is obtained. By subtracting 1 per cent of the discharges at Bonnington pool or Bonnington falls the discharge of Kootenay river near Nelson is obtained.

DISCHARGE MEASUREMENTS of Slocan River, near Crescent Valley, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Nov. 8.....	C. E. W., C. E. R.....	1048	237	652	2.47	4.4	1,600
1914.							
Mar. 6.....	C. E. R., A. J. V.....	1672	210	470	1.91	3.45	897
May. 30.....	J. A. E.....	1909	219	1,470	5.43	8.10	7,980
Aug. 13.....	C. E. R., G. K. B.....	1928	224	845	3.01	5.1	2,540
Nov. 10.....	J. A. E.....	1909	132	579	4.11	4.82	2,380
Dec. 9.....	J. A. E., G. K. B.....	1929	128	468	2.62	3.95	1,230

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Slocan River near Crescent Valley,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	3-4	850	3-8	1,100	3-6	970	4-1	1,340	6-4	3,980	9-05	7,290
2.....	3-5	900	3-8	1,100	3-6	970	4-1	1,340	7-2	4,950	9-40	7,770
3.....	3-5	900	4-0	1,240	3-6	970	4-1	1,340	7-7	5,370	11-40	10,830
4.....	3-6	970	3-9	1,170	3-5	900	4-1	1,340	7-6	5,450	11-85	11,700
5.....	3-7	1,040	3-8	1,100	3-5	900	4-2	1,440	7-3	5,070	11-00	10,100
6.....	4-0	1,240	3-9	1,170	3-5	900	4-3	1,550	7-05	4,760	10-20	8,900
7.....	4-8	2,090	3-9	1,170	3-5	900	5-1	2,440	7-0	4,700	10-00	8,600
8.....	4-7	1,980	3-9	1,170	3-2	750	5-2	2,550	7-2	4,950	9-7	8,190
9.....	4-5	1,750	3-9	1,170	3-2	750	5-2	2,550	7-6	5,450	9-25	7,570
10.....	4-4	1,650	3-9	1,170	3-2	750	5-3	2,670	8-1	6,080	9-40	7,770
11.....	4-3	1,550	3-8	1,100	3-2	750	5-3	2,570	7-75	5,630	9-15	7,430
12.....	4-2	1,440	3-7	1,040	3-3	800	5-4	2,780	7-8	5,670	9-10	7,500
13.....	4-1	1,340	3-6	970	3-3	800	6-0	3,500	8-1	6,080	9-25	7,570
14.....	4-1	1,340	3-6	970	3-3	800	6-2	3,740	8-3	6,330	9-65	8,120
15.....	4-1	1,340	3-6	970	3-3	800	6-70	4,340	8-65	6,770	10-00	8,600
16.....	4-0	1,240	3-6	970	3-4	850	7-2	4,950	9-3	7,630	10-35	9,110
17.....	4-0	1,240	3-7	1,040	3-4	850	7-05	4,760	9-3	7,630	10-7	9,640
18.....	4-0	1,240	3-6	970	4-0	1,240	6-70	4,340	9-1	7,360	10-55	9,410
19.....	4-0	1,240	3-6	970	4-0	1,240	7-1	4,820	9-1	7,360	10-5	9,340
20.....	4-0	1,240	3-6	970	4-0	1,240	7-2	4,950	9-0	7,220	10-0	8,600
21.....	4-0	1,240	3-6	970	4-0	1,240	7-0	4,700	9-0	7,220	9-7	8,190
22.....	4-0	1,240	3-6	970	4-0	1,240	6-4	3,980	9-1	7,360	9-25	7,560
23.....	3-9	1,170	3-7	1,040	4-0	1,240	6-3	3,860	9-1	7,360	9-0	7,220
24.....	3-7	1,040	3-6	970	4-1	1,340	6-3	3,860	9-2	7,500	8-7	6,840
25.....	3-8	1,100	3-6	970	4-1	1,340	6-3	3,860	9-65	8,120	8-35	6,390
26.....	3-9	1,170	3-6	970	4-0	1,240	6-3	3,860	9-2	7,500	8-75	6,900
27.....	3-9	1,170	3-6	970	4-0	1,240	6-3	3,860	9-1	7,360	8-75	6,900
28.....	3-8	1,170	3-6	970	4-0	1,240	6-2	3,760	8-75	6,900	8-75	6,900
29.....	3-6	970	.....	.....	4-1	1,340	6-1	3,620	8-2	6,200	8-8	6,960
30.....	3-7	1,040	.....	.....	4-1	1,340	6-2	3,740	8-2	6,200	9-1	7,360
31.....	3-8	1,100	.....	.....	4-1	1,340	.....	.....	8-6	6,710	.....	.....

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Slocan River near Crescent Valley, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Fis-charge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	9-15	7,420	5-4	2,780	4-1	1,340	4-4	1,650	5-0	2,320	4-2	1,440
2	9-20	7,500	5-4	2,780	4-1	1,340	4-4	1,650	5-2	2,550	4-2	1,440
3	9-55	7,980	5-4	2,780	4-0	1,240	4-4	1,650	5-1	2,440	4-2	1,440
4	9-65	8,120	5-3	2,670	4-0	1,240	4-4	1,650	5-1	2,440	4-1	1,340
5	9-65	8,120	5-3	2,670	4-0	1,240	4-3	1,550	5-1	2,440	4-1	1,340
6	9-65	8,120	5-3	2,670	4-0	1,240	4-3	1,550	5-1	2,440	4-1	1,340
7	9-65	8,120	5-2	2,550	4-0	1,240	4-3	1,550	5-1	2,440	4-0	1,240
8	9-6	8,050	5-4	2,780	4-0	1,240	4-2	1,440	5-0	2,320	4-0	1,240
9	9-3	7,630	5-3	2,670	4-0	1,240	4-2	1,440	5-0	2,320	4-0	1,240
10	9-3	7,630	5-3	2,670	4-0	1,240	4-2	1,440	5-0	2,320	4-0	1,240
11	9-3	7,630	5-2	2,550	4-0	1,240	4-2	1,440	4-4	1,650	4-0	1,240
12	9-3	7,630	5-2	2,550	4-0	1,240	4-2	1,440	4-4	1,650	4-0	1,240
13	9-3	7,630	5-2	2,550	4-0	1,240	4-2	1,440	5-0	2,320	3-4	850
14	9-2	7,500	5-1	2,440	4-0	1,240	4-2	1,440	4-4	1,650	3-4	850
15	9-2	7,500	5-0	2,320	4-0	1,240	4-2	1,440	4-4	1,650	3-3	800
16	8-7	6,840	4-4	1,650	4-0	1,240	4-2	1,440	4-4	1,650	3-3	800
17	8-25	6,260	4-4	1,650	4-0	1,240	4-2	1,440	4-3	1,550	3-3	800
18	8-15	6,140	4-4	1,650	4-1	1,340	4-3	1,550	4-3	1,550	3-2	750
19	8-05	6,010	4-4	1,650	4-25	1,490	4-4	1,650	4-3	1,550	3-2	750
20	7-35	5,130	4-3	1,550	4-3	1,550	5-0	2,320	4-3	1,550	3-2	750
21	7-15	4,880	4-3	1,550	4-3	1,550	5-0	2,320	4-3	1,550	3-2	750
22	7-05	4,700	4-3	1,550	4-3	1,550	4-4	1,650	4-2	1,440	3-2	750
23	6-7	4,240	4-3	1,550	4-3	1,550	4-4	1,650	4-2	1,440	3-2	750
24	6-7	4,240	4-2	1,440	4-3	1,550	4-3	1,550	4-2	1,440	3-2	750
25	6-3	3,860	4-2	1,440	4-3	1,550	4-3	1,550	4-2	1,440	3-2	750
26	6-2	3,740	4-2	1,440	4-3	1,550	4-3	1,550	4-2	1,440	3-3	800
27	6-1	3,620	4-2	1,440	4-4	1,650	4-3	1,550	4-2	1,440	3-3	800
28	6-0	3,500	4-2	1,440	4-4	1,650	4-3	1,550	4-2	1,440	3-3	800
29	6-05	3,500	4-2	1,440	4-4	1,650	4-3	1,550	4-2	1,440	3-3	800
30	6-1	3,620	4-1	1,340	4-4	1,650	4-4	1,650	4-2	1,440	3-3	800
31	5-75	3,500	4-1	1,340	.....	.....	4-4	1,650	.....	.....	3-3	800

MONTHLY DISCHARGE of Slocan River near Crescent Valley, for 1914.

(Drainage area, 1,300 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
January	2,090	850	1,260	0-97	1-12	77,500	C
February	1,240	970	1,050	0-81	0-84	58,300	C
March	1,340	750	1,040	0-80	0-92	64,000	C
April	4,950	1,340	3,280	2-52	2-81	195,000	D
May	8,120	3,980	6,360	4-89	5-64	391,000	.....
June	11,700	3,390	8,170	6-29	7-02	486,000	.....
July	8,120	3,500	6,150	4-73	5-45	378,000	.....
August	2,780	1,340	2,050	1-58	1-82	126,000	C
September	1,650	1,240	1,390	1-07	1-19	82,700	B
October	2,320	1,440	1,560	1-22	1-41	97,800	B
November	2,550	1,440	1,840	1-42	1-58	109,000	B
December	1,440	750	989	0-76	0-88	60,800	C

SESSIONAL PAPER No. 25e

AKOLKOLEX RIVER NEAR WIGWAM (3000).

Location.—Section 35, township 21, range 1, west 6th, about 1 mile from Wigwam, where the wagon road crosses the river just above the falls. Revelstoke District.

Records Available.—From May 1, 1913, to December 31, 1914.

Climatic Conditions.—Summers hot and moderately dry. Heavy snowfall during winters. Thermometer rarely goes below zero. Stream at section seldom freezes except for a day or two. Anchor ice seldom forms for more than one or two days at a time.

Gauge.—Chain gauge is used, referred to three bench-marks. From May to October inclusive, gauge readings are taken three times a week; during the rest of the year once a week, by J. A. Lewis, Wigwam.

Channel.—Straight for one hundred yards above and below section. Water is swift, and flows through a rock box canyon, for 150 yards above and below the section. The control is rock and appears very permanent.

Discharge Measurements.—Measurements are made from the upstream side of the wagon bridge. It is difficult to obtain accurate soundings in high water. In 1913 ten well-distributed measurements were made, and in 1914 seven measurements were made.

Accuracy.—Apparently accurate measurements were made, but due to the infrequency of readings, the mean monthly discharge cannot be guaranteed to within 10 per cent or 15 per cent. December gauge readings were at times affected by ice. Discharges below height 2.0 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Akolkolex River near Wigwam, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft
Mar. 18.	C. E. Webb.	1,048	30	121	1.48	1.35	179
May 19	J. A. Elliott.	1,672	36	275	4.95	5.30	1,360
June 26..	"	1,909	37	312	5.34	6.10	1,670
July 24	"	1,909	35	239	3.88	4.30	929
Aug. 10	"	1,909	37	190	2.82	3.10	537
Sept. 6	J. A. E., & C. E. R	1,927	40	171	2.18	2.40	373
Oct. 10..	"	1,909	37	150	2.18	2.20	329

DAILY GAUGE HEIGHT AND DISCHARGE of Akolkolex River near Wigwam, B.C.,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-3	177	1-3	177	1-1	150	1-24	168	4-45	1,020	7-25	2,405
2	1-3	177	1-3	177	1-13	154	1-25	169	5-1	1,300	8-2	2,950
3	1-4	193	1-3	177	1-13	154	1-27	172	4-9	1,210	7-6	2,600
4	1-4	193	1-25	169	1-13	154	1-29	175	4-7	1,130	7-0	2,270
5	1-5	210	1-25	169	1-13	154	1-3	177	4-4	1,000	6-4	1,940
6	1-5	210	1-25	169	1-13	154	1-61	228	4-4	1,000	6-1	1,790
7	1-6	226	1-25	169	1-13	154	1-92	277	4-5	1,040	5-8	1,640
8	1-6	226	1-25	169	1-13	154	2-24	338	4-6	1,080	5-5	1,490
9	1-6	226	1-25	169	1-13	154	2-33	336	4-7	1,130	5-1	1,300
10	1-5	210	1-2	162	1-13	154	2-44	378	4-9	1,210	5-35	1,415
11	1-5	210	1-2	162	1-13	154	2-57	405	5-2	1,350	5-6	1,540
12	1-5	210	1-2	162	1-13	154	2-78	455	5-4	1,440	5-9	1,690
13	1-4	193	1-2	162	1-13	154	2-99	509	5-61	1,545	6-2	1,840
14	1-4	193	1-2	162	1-3	177	3-2	370	5-82	1,650	6-7	2,100
15	1-4	193	1-2	162	1-3	177	3-27	591	6-03	1,755	7-1	2,320
16	1-4	193	1-15	156	1-4	193	3-34	613	6-23	1,855	7-6	2,600
17	1-4	193	1-15	156	1-5	210	3-4	632	5-92	1,700	7-85	2,750
18	1-3	177	1-15	156	1-5	210	3-38	625	5-61	1,545	8-1	2,890
19	1-3	177	1-13	154	1-5	210	3-36	619	5-3	1,390	7-4	2,490
20	1-3	177	1-13	154	1-5	210	3-34	613	5-6	1,540	6-7	2,100
21	1-3	177	1-13	154	1-5	210	3-3	600	5-9	1,690	6-1	1,790
22	1-3	177	1-13	154	1-5	210	3-3	600	6-2	1,840	5-7	1,590
23	1-3	177	1-13	154	1-5	210	3-3	600	6-4	1,940	5-3	1,390
24	1-3	177	1-12	152	1-5	210	3-3	600	6-2	1,840	4-89	1,206
25	1-3	177	1-12	152	1-5	210	3-31	603	6-0	1,740	5-49	1,485
26	1-3	177	1-12	152	1-4	193	3-32	606	5-8	1,640	6-1	1,790
27	1-3	177	1-1	150	1-4	193	3-34	613	5-3	1,390	6-15	1,815
28	1-3	177	1-1	150	1-3	177	3-49	662	4-8	1,170	6-2	1,840
29	1-3	177	1-3	177	3-64	714	4-4	1,000	6-5	2,000
30	1-3	177	1-3	177	3-8	770	5-35	1,415	6-8	2,150
31	1-3	177	1-3	177	6-3	1,890

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DAILY GAUGE HEIGHT AND DISCHARGE of Akolkolex River near Wigwam, B.C.,
for 1914.—*Concluded.*

DAY.	July.		August		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	7-0	2,270	5-03	1,265	2-35	360	2-9	485	3-1	540	2-0	290
2	7-45	2,520	5-01	1,255	2-4	370	2-85	472	3-1	540	1-95	282
3	7-9	2,780	5-0	1,250	2-75	447	2-8	460	3-0	512	1-9	274
4	7-85	2,750	4-75	1,150	3-1	540	2-68	430	3-0	512	1-85	266
5	7-8	2,720	4-5	1,040	2-75	447	2-56	403	2-9	485	1-8	258
6	7-5	2,550	3-6	700	2-4	370	2-45	380	2-8	460	1-75	250
7	7-2	2,380	3-5	665	2-59	410	2-39	368	2-6	412	1-6	226
8	6-89	2,204	3-4	632	2-78	455	2-33	356	2-6	412	1-5	210
9	7-17	2,362	3-3	600	2-78	455	2-27	344	2-55	401	1-4	193
10	7-45	2,520	3-1	540	2-8	460	2-2	330	2-55	401	1-2	162
11	7-37	2,472	3-55	682	2-8	460	2-17	324	2-5	390	1-2	162
12	7-3	2,430	4-0	845	2-6	412	2-14	318	2-45	380	1-1	150
13	7-05	2,295	4-1	885	2-4	370	2-1	310	2-4	370	1-1	150
14	6-8	2,150	4-2	925	2-1	310	2-3	350	2-3	350	1-2	162
15	6-56	2,030	3-9	805	2-0	290	2-5	390	2-2	330	1-3	177
16	6-03	1,755	3-6	700	1-9	274	2-7	435	2-1	310		150
17	5-5	1,490	3-3	600	2-28	346	2-9	485	2-0	290		150
18	5-55	1,515	3-3	600	2-67	428	2-8	460	2-0	290		150
19	5-6	1,540	3-3	600	2-58	407	2-7	435	2-0	290		150
20	5-33	1,405	3-6	700	2-49	388	2-6	412	2-0	290		150
21	5-06	1,280	3-9	805	2-4	370	2-51	392	2-0	290		150
22	4-78	1,162	3-6	700	2-45	380	2-42	374	2-0	290		150
23	4-54	1,056	3-3	600	2-5	390	2-33	356	2-0	290		150
24	4-3	963	2-9	485	2-6	412	2-25	340	1-95	282		150
25	4-3	963	3-0	512	2-7	435	2-2	330	1-95	282		150
26	4-2	925	3-1	540	2-8	460	2-17	324	2-0	290		150
27	4-2	925	3-44	645	2-95	498	2-14	318	2-05	300		150
28	4-16	909	3-78	763	3-1	540	2-1	310	2-1	310		150
29	4-12	893	3-29	597	2-8	460	2-3	350	2-05	300		150
30	4-58	1,072	2-8	460	2-95	498	2-5	390	2-0	290		150
31	5-05	1,275	2-3	350			2-8	460				150

MONTHLY DISCHARGE of Akolkolex River near Wigwam, B.C., for 1914.

(Drainage area, 105 square miles.)

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet	
January	226	177	191	1-81	2-07	11,700	D
February	177	150	161	1-53	1-59	8,940	D
March	240	150	178	1-70	1-96	10,900	D
April	770	108	481	4-58	5-11	28,600	C
May	1,890	1,000	1,330	13-6	15-7	87,900	C
June	2,950	1,300	1,970	18-8	21-0	117,000	
July	2,780	833	1,790	17-0	19-0	110,000	C
August	1,260	350	739	7-04	8-12	45,400	B
September	540	271	415	3-95	4-11	24,700	B
October	485	310	384	3-66	4-22	23,600	B
November	540	282	363	3-46	3-86	21,600	B
December	290	150	181	1-72	1-98	11,100	

BEAVER RIVER NEAR SIX-MILE CREEK (3001).

Location.—Township 29, range 25, west 5th, mer. 4 miles from mouth, about 150 yards from the railway station at Six-mile creek, on downstream side of the lumber company's bridge. Revelstoke district.

Records Available.—May 24 to November 1, 1913; April 1 to December 31, 1914.

Climatic Conditions.—Summers hot and fairly dry. Winters severe (30°F.) with heavy snowfall. Ice conditions exist generally from the end of November till the end of March. Frazil ice is to be contended with.

Gauge.—Chain gauge used is referred to three bench-marks. Mr. Wm. McCreary reads the gauge daily at 5 p.m., at which time during the summer freshet, the river is considered to be at a mean height for the day.

Channel.—Straight for 100 yards above and below the section. The river is very swift during high water, and accurate soundings can only be made at low water. During the freshet in June, July, and August, water flows through two or three small side channels. The control is not very permanent.

Discharge Measurements.—Measurements are made from the downstream side of the bridge. In 1913 ten discharge measurements were made, one of which was made under ice conditions on December 3, giving a discharge of 330 c.f.s.

Accuracy.—The gauge-height-discharge curve shows a fairly close accuracy, though the section does not appear to be good. The fact that during the summer the river varies greatly on a warm day depreciates the accuracy of the gauge reading. The 1914 data are guaranteed to be within 20 per cent only, with the exception of December, which are not guaranteed at all.

DISCHARGE MEASUREMENTS of Beaver River at Six-Mile Creek, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 22.....	J. A. E.....	1,909	140	390	6.30	3.21	2,440
" 10.....	"	1,909	140	489.7	5.87	3.35	2,870
Sept. 8.....	"	1,927	140	373	5.62	2.70	2,100
Oct 24.....	"	1,909	51	157	4.26	1.0	670

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DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile, Creek,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.
1.....		900	2.6	1,940	3.55	3,240
2.....		900	3.3	2,840	4.60	5,380
3.....		900	3.3	2,840	5.1	6,710
4.....		900	2.85	2,220	4.5	5,140
5.....		900	2.6	1,940	4.1	4,260
6.....		900	2.5	1,840	3.9	3,860
7.....		900	2.45	1,790	3.6	3,330
8.....		900	2.6	1,940	3.3	2,840
9.....		900	2.8	2,160	3.3	2,840
10.....		900	2.8	2,160	3.4	2,990
11.....		900	2.9	2,290	3.7	3,500
12.....		900	2.9	2,290	4.0	4,050
13.....		900	3.2	2,700	4.2	4,460
14.....		900	3.35	2,910	4.6	5,380
15.....		900	3.4	2,990	5.0	6,430
16.....		900	3.5	3,160	5.1	6,710
17.....		900	3.4	2,990	5.2	6,980
18.....		920	3.2	2,700	4.7	5,640
19.....		1,130	3.1	2,560	4.6	5,380
20.....		1,130	3.3	2,840	4.5	5,140
21.....	1.6	1,060	3.1	2,560	3.6	3,500
22.....	1.5	985	3.4	2,990	3.5	3,160
23.....	1.5	985	3.65	3,410	3.2	2,700
24.....	1.7	1,130	3.7	3,500	3.2	2,700
25.....	1.6	1,060	3.2	2,700	3.7	3,500
26.....	1.6	1,060	3.1	2,560	3.8	3,680
27.....	1.75	1,165	2.9	2,290	4.0	4,050
28.....	1.8	1,200	2.8	2,160	3.9	3,860
29.....	1.8	1,200	2.7	2,040	4.2	4,460
30.....	2.1	1,460	2.9	2,290	4.8	5,880
31.....			3.0	2,420		

DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile Creek,
for 1914—Concluded.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	5-1	6,710	4-5	5,140	2-90	2,290	2-0	1,370	1-1	735	0-9	615
2.	5-2	6,980	5-1	6,710	2-80	2,160	1-8	1,200	1-2	785	0-9	615
3.	5-5	7,860	4-9	6,160	3-30	2,840	1-6	1,060	1-1	735	0-9	615
4.	5-3	7,280	4-4	4,920	3-00	2,420	1-5	985	1-1	735	0-8	550
5.	5-2	6,980	4-1	4,260	3-10	2,560	1-2	785	1-0	670	0-8	550
6.	5-1	6,710	4-0	4,050	3-00	2,420	1-3	860	1-0	670	0-8	550
7.	4-9	6,160	3-6	3,330	2-90	2,290	1-2	785	1-1	735	0-8	550
8.	4-8	5,880	3-3	2,840	2-90	2,290	1-25	823	1-0	670	0-9	615
9.	4-8	5,880	3-8	3,680	2-20	1,550	1-3	860	1-1	735	0-9	615
10.	5-0	6,430	3-4	2,990	2-30	1,640	1-2	785	1-2	785	0-9	615
11.	5-2	6,980	3-3	2,840	2-70	1,740	1-3	860	1-1	735	0-9	615
12.	5-3	7,280	3-4	2,990	2-20	1,550	1-2	785	1-2	785	0-9	615
13.	5-4	7,560	3-5	3,160	2-40	1,740	1-1	735	1-1	735	1-0	670
14.	5-2	6,980	3-3	2,840	2-30	1,640	1-2	785	1-1	735	1-1	735
15.	4-8	5,880	3-4	2,990	2-20	1,550	1-2	785	1-1	735	0-9	615
16.	3-9	3,860	3-7	3,500	2-00	1,370	1-4	920	1-0	670	0-9	615
17.	4-5	5,140	3-7	3,500	2-10	1,460	1-5	985	1-1	735	0-9	615
18.	5-0	6,430	3-9	3,860	2-20	1,550	1-3	860	1-1	735	0-8	550
19.	5-3	7,280	3-8	3,680	2-20	1,550	1-0	670	1-0	670	0-8	550
20.	4-7	5,640	4-0	4,050	2-40	1,740	1-1	735	1-1	735	0-8	550
21.	3-7	3,500	3-6	3,330	2-10	1,460	1-0	670	1-1	735	0-8	550
22.	3-5	3,160	3-7	3,500	1-90	1,280	1-1	735	1-1	735	0-8	550
23.	3-7	3,500	3-8	3,680	1-70	1,136	1-1	735	1-1	735	1-1	735
24.	3-8	3,680	3-5	3,160	1-60	1,060	1-0	670	1-1	735	1-4	920
25.	3-6	3,330	3-6	3,330	1-80	1,200	1-0	670	1-0	670	0-9	615
26.	3-7	3,500	3-4	2,990	2-30	1,640	0-95	643	1-0	670	0-8	550
27.	3-5	3,160	3-3	2,840	2-40	1,740	1-0	670	1-0	670	0-8	550
28.	3-3	2,840	3-2	2,700	2-20	1,550	0-9	615	1-0	670	0-8	550
29.	3-7	3,500	3-25	2,700	2-30	1,640	1-0	670	0-9	615	0-9	615
30.	4-3	4,680	3-20	2,700	2-10	1,460	1-1	735	0-9	615	0-8	550
31.	4-0	4,050	2-80	2,160			1-0	670			0-8	550

MONTHLY DISCHARGE of Beaver River near Six-mile Creek, for 1914.

Drainage area 400 square miles.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April.	1,460	.....	993	2-48	2-86	61,100
May.	3,500	1,790	2,520	6-30	7-26	155,000
June.	6,980	2,700	4,390	11-0	12-3	261,000
July.	7,860	2,840	5,450	13-6	15-7	335,000
August.	6,710	2,160	3,570	8-92	10-3	220,000
September.	2,840	1,060	1,750	4-38	4-89	104,000
October.	1,370	615	810	2-02	2-33	49,800
November.	785	615	712	1-78	1-99	42,400
December.	920	550	604	1-51	1-74	37,100

Accuracy "D."

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BLAEBERRY RIVER NEAR MOBERLY (3002).

Location.—SW. $\frac{1}{4}$ section 29, township 28, range 22, west 5th, 11 miles north of Golden, about one mile from mouth, on downstream side of C. P. R. bridge.

Records Available.—April 15, 1912, to November 14, 1912; June 1, 1913, to November 30, 1913; April 1, 1914, to November 30, 1914.

Climatic Conditions.—Summers hot and dry, with occasional heavy rains, causing large discharge. Winters severe (as low as -50°F), with light snowfall. Ice conditions exist generally from the middle of November to the 1st of April. Frazil ice.

Gauge.—Vertical staff gauge, used and read three times a week by Mr. R. M. Cooper, during the open season.

Channel.—Channel is straight for about 50 yards above and below the station. The water is swift and controlled by a sandbar about 100 yards downstream. This bar probably shifts. Exceedingly high water on the Columbia may affect the gauge readings.

Discharge Measurements.—Measurements are made from downstream side of the railway bridge. In 1912 eight meterings were made, one of which was made on the 21st of February under ice conditions, the discharge was 53 c.f.s. In 1913, nine meterings were made, which formed a gauge-height-discharge curve varying considerably from that of 1912. A new curve was plotted from five measurements made in 1914, due to shift of bar.

Accuracy.—Due to the infrequency of gauge readings and the apparent non-permanency of the control the results are considered only to be within 15 per cent.

DISCHARGE MEASUREMENTS of Blaeberry River near Blaeberry, C.P.R. Bridge, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
June 12	J. A. E.	1909	82	357	5-15	3-10	1,840
July 27	"	1909	78	323	3-96	2-60	2,180
Aug. 5	"	1909	78	322	4-53	2-80	1,460
Sept. 10	"	1927	78	230	2-50	1-75	573
Oct. 13	"	1909	66	188	2-19	1-3	412

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.6	505	2.0	730	3.0	1,720
2		550		730		1,980
3	1.8	600		600		2,440
4	1.4	425	1.9	660	3.8	2,940
5		442		695		3,020
6	1.5	460	2.0	730	3.9	3,120
7		425		660		2,360
8	1.3	390	1.8	600	3.0	1,720
9		390		642		1,480
10		425		681		1,360
11	1.4	425	2.0	730	2.6	1,260
12		407		765		1,720
13	1.3	390	2.1	800	3.4	2,290
14		390		880		2,680
15	1.3	390	2.3	965	3.9	3,120
16		390		1,040		3,120
17		355		1,160		2,940
18	1.2	355	2.6	1,260	3.8	2,940
19		355		1,160		2,850
20	1.2	355	2.4	1,060	3.7	2,760
21		355		1,110		2,060
22		390	2.5	1,160	2.8	1,480
23	1.3	390		1,100		1,600
24		372		1,010	3.0	1,720
25	1.2	355	2.3	965		1,660
26		407		922	2.9	1,600
27	1.5	460	2.2	880		1,660
28	1.6	505		922	3.0	1,720
29	1.7	550	2.3	965		2,210
30		630		1,310	3.7	2,760
31				1,310		

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DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden
for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		2,760	3-4	2,290	2-4	1,060	1-8	600	0-9	279	Frozen.	
2.	3-7	2,760		2,440		1,010		550		290		
3.		2,940	3-6	2,600	2-3	965	1-6	505	1-0	300		
4.	3-9	3,120		2,680		922		527		290		
5.		3,020	3-7	2,760	2-2	880	1-7	550	0-9	279		
6.	3-8	2,940		2,600		800		600		267		
7.		2,760	3-5	2,440	2-0	730	1-9	660	0-8	256		
8.	3-6	2,600		1,980		695		630		267		
9.		2,440	2-9	1,600	1-9	660	1-8	600	0-9	279		
10.	3-4	2,290		1,540		575		550		279		
11.		2,600	2-8	1,480	1-6	505		505	0-9	279		
12.		2,940		1,420		505		460		279		
13.	4-0	3,290	2-7	1,360		550	1-4	425		256		
14.		2,760		1,420	1-7	550	1-4	425	0-7	236		
15.	3-4	2,290	2-8	1,480		505		425		246		
16.		2,440		1,420	1-5	460	1-4	425	0-8	256		
17.	3-6	2,600	2-7	1,360		488		390		267		
18.		2,600		1,260	1-6	505	1-2	355	0-9	279		
19.		2,440	2-5	1,160		505		390		290		
20.	3-4	2,290		1,060		505	1-4	425	1-0	300		
21.		2,140	2-3	965	1-6	505		425		300		
22.	3-2	1,980		965	1-0	482		390		324		
23.		1,780		965	1-5	460	1-3	390	1-1	324		
24.	2-9	1,600	2-3	965		442		355		312		
25.		1,480		922	1-4	425		324	1-0	300		
26.		1,480	2-2	880		460	0-9	279		290		
27.	2-7	1,360		880		505		279	0-9	279		
28.		1,480		965	1-7	550	0-9	279		256		
29.	2-9	1,600	2-4	1,060		527		267	0-7	236		
30.		1,780		1,060	1-6	505	0-8	256		236		
31.	3-2	1,980		1,060				267				

MONTHLY DISCHARGE of Blaeberry River near Golden, for 1914.

(Drainage area 325 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
March.	600	355	428	1-32	1-47	25,500	D
April.	1,310	600	905	2-78	3-20	55,600	C
May.	3,120	1,260	2,210	6-80	7-59	132,000	C
June.	3,290	1,360	2,340	7-20	8-30	144,000	C
July.	2,760	880	1,520	4-08	5-40	93,500	C
August.	1,060	425	608	1-87	2-09	36,200	C
September.	660	256	422	1-30	1-50	25,900	C
October.	324	236	278	0-86	0-96	16,500	C

BUGABOO CREEK (3003).

Location.—About 3 miles southwest of Spillimacheen Landing, 40 miles south of Golden, on downstream side of highway bridge 1 mile from mouth. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913; April 1 to December 15, 1914.

Climatic Conditions.—Summers hot and dry. Winters severe as low as 40° F. with light snowfall. The creek usually freezes over in November and does not open again till April. Frazil ice.

Gauge.—Vertical staff gauge, fastened to pier of bridge, and read daily during the open season by Mr. Jas. Montgomery.

Channel.—Straight for 100 feet above and below the gauge, the water is swift during freshet, there is one channel in low water and there are two at high stages.

Discharge Measurements.—Meterings are taken from the downstream side of the bridge, four being taken in 1912, eight in 1913, and three in 1914. A new curve was plotted in 1914, using 1912, 1913, and 1914 measurements.

Accuracy.—The control is apparently permanent. Daily gauge readings are obtained, and the 1914 curve appears reliable. Above a gauge height of 1.4 the results should be within 10 per cent and below 1.4, 15 per cent and 20 per cent.

DISCHARGE MEASUREMENTS of Bugaboo Creek near Spillimacheen Landing, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 17.....	J. A. Elliott.....	1,909	60	187	10.21	3.00	1,910
July 31.....	".....	1,909	60	151	6.40	2.35	970
Oct. 23.....	".....	1,909	34	96	1.71	1.10	164

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DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-45	58	1-5	310	2-1	690
2	0-45	58	1-72	415	2-3	915
3	0-5	60	1-95	560	2-9	1,760
4	0-52	62	1-72	415	3-0	1,910
5	0-6	72	1-63	370	2-45	1,105
6	0-7	86	1-52	319	2-25	856
7	0-8	100	1-5	310	2-12	712
8	0-72	89	1-52	319	2-1	690
9	0-77	96	1-75	430	2-02	618
10	0-72	89	1-8	455	2-05	600
11	0-73	91	1-9	520	2-15	745
12	0-8	100	1-87	500	2-3	915
13	0-9	120	1-82	468	2-4	1,040
14	1-0	140	1-85	487	2-7	1,460
15	1-0	140	2-1	690	3-0	1,910
16	1-1	170	2-2	800	3-25	2,285
17	1-1	170	2-15	745	3-1	2,060
18	1-05	155	2-05	645	3-4	2,510
19	1-07	161	1-95	560	3-05	1,985
20	1-2	200	1-9	520	2-75	1,535
21	1-13	179	1-9	520	2-6	1,315
22	1-15	185	1-92	536	2-32	938
23	1-15	185	2-05	645	2-2	800
24	1-17	191	2-2	800	2-12	712
25	1-22	206	2-25	856	2-23	834
26	1-17	191	2-1	690	2-4	1,040
27	1-2	200	1-95	560	2-38	1,015
28	1-2	200	1-87	500	2-42	1,066
29	1-23	209	1-77	440	2-5	1,170
30	1-3	230	1-72	415	2-6	1,315
31			1-85	487		

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DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	2-75	1,540	2-5	1,170	1-80	455	1-55	333	1-27	221	1-05	155
2.	3-0	1,910	2-5	1,170	1-75	430	1-50	310	1-35	250	1-1	170
3.	3-45	2,580	2-42	1,066	1-80	455	1-50	310	1-25	215	1-0	140
4.	3-1	2,060	2-4	1,040	1-80	455	1-40	270	1-2	200	0-95	130
5.	3-1	2,060	2-25	856	1-85	488	1-40	270	1-2	200	1-05	155
6.	3-25	2,280	2-25	856	1-70	405	1-55	250	1-1	170	1-15	185
7.	3-1	2,060	2-4	1,040	1-70	405	1-38	262	1-1	170	1-2	200
8.	2-95	1,840	2-1	690	1-80	455	1-38	262	1-07	161	1-3	230
9.	2-9	1,760	2-0	600	1-70	405	1-35	250	1-07	161	1-25	215
10.	2-77	1,560	1-95	560	1-60	355	1-30	230	1-1	170	1-15	185
11.	2-85	1,680	1-9	520	1-70	405	1-30	230	1-1	170	0-95	130
12.	3-1	2,060	2-05	645	1-55	333	1-30	230	1-1	170	0-95	130
13.	3-0	1,910	2-1	690	1-40	270	1-30	230	1-0	140	0-85	110
14.	3-15	2,140	2-1	690	1-40	270	1-30	230	0-9	120	0-75	93
15.	2-9	1,760	2-15	745	1-40	270	1-27	221	0-9	120	0-7	86
16.	2-67	1,410	2-05	645	1-30	230	1-25	215	0-8	100	Frozen.	
17.	2-47	1,130	2-15	745	1-30	230	1-25	215	0-75	93		
18.	2-6	1,320	2-0	600	1-50	310	1-35	250	0-65	79		
19.	2-72	1,490	1-95	560	2-00	600	1-32	238	0-75	93		
20.	2-70	1,460	2-05	645	1-65	380	1-3	230	1-0	140		
21.	2-40	1,040	2-1	690	1-50	310	1-22	206	1-05	155		
22.	2-20	800	2-1	690	1-40	270	1-15	185	1-0	140		
23.	2-20	800	1-95	560	1-50	310	1-1	170	1-0	140		
24.	2-30	915	1-85	488	1-50	310	1-1	170	1-1	170		
25.	2-40	1,040	1-82	468	1-55	333	1-0	140	1-15	185		
26.	2-3	910	1-85	488	1-85	488	1-1	170	1-0	140		
27.	2-2	800	2-00	600	1-95	560	1-1	170	0-95	130		
28.	2-3	920	2-00	600	1-75	430	1-1	170	1-0	140		
29.	2-2	800	1-90	520	1-60	355	1-1	170	1-0	140		
30.	2-3	920	1-95	560	1-50	310	1-15	185	1-15	185		
31.	2-45	1,100	1-85	488			1-35	250				

MONTHLY DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

(Drainage area, 190 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.	
April	856	310	525	2-76	3-18	32,300	B.
May	2,510	600	1,217	6-40	7-14	72,400	B.
June	2,385	800	1,486	7-82	9-02	91,400	B.
July	1,170	468	700	3-68	4-24	43,000	B.
August	560	230	375	1-97	2-20	22,300	B.
September	333	140	226	1-19	1-37	13,900	B.
October	250	79	156	0-82	0-92	9,300	D.

CANYON CREEK (3051).

Location.—Township 26, range 22, west 5th, mer. about one-half mile from Columbia river, and 6 miles from Golden. The spillways and the sluice of Columbia River Lumber Company's dam are used as weirs. Revelstoke district.

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Records Available.—June 15 to December 30, 1914.

Climatic Conditions.—Summers hot and little rainfall. Winters severe, as low as -50° F., with 10 to 15 feet of snow. (See Columbia River, Golden.)

NOTE.—It was intended to publish the "Records Available" in this result but, through an oversight, this is impossible. The results however, will be available at this office after April 1, 1915.

COLUMBIA RIVER, GOLDEN (3005.)

Location.—SW. $\frac{1}{4}$ sec. 12, township 27, range 22, west 5th, mer. above mouth of Kicking Horse river, one mile from Golden, B.C., 100 yards below the Columbia River Lumber Company's mill.

Records Available.—During the open season from 1903-14. Gauge heights from 1903-11 were obtained through the courtesy of the Columbia River Lumber Company. One ice measurement made in February, 1912, gave a discharge of 795 c.f.s., and one made in February, 1914, gave a discharge of 894 c.f.s.

Climatic Conditions.—In 1914 the precipitation amounted to 14.19 inches of which about 3 or 4 feet was snow. The summers are warm and fairly dry. The winters are very severe, as low as 50° F., during some winters, with a fairly heavy snowfall. Ice conditions generally exist from the middle of November till the end of March. Frazil ice may be expected.

Gauge.—Vertical staff gauge, referred to three bench-marks, and read daily by Mr. Jas. T. Wood during the open season.

Channel.—The section is located in the middle of a straight stretch of river of 1,500 feet. At low water there is a pronounced riffle 300 yards below the gauge, but at high water this riffle disappears.

Discharge Measurements.—Measurements are made from boat held by temporary cable about 100 yards below mill. Eight discharge measurements were made in 1912, five in 1913, and three in 1914.

Accuracy.—The gauge readings are good. Great difficulty is encountered in metering river at high water, and during June and July accuracy is not guaranteed to within 20 per cent, but in the remaining months it is probably within 15 per cent.

DISCHARGE MEASUREMENTS of Columbia River at Golden, B.C., 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft per sec	Feet.	Sec-ft
Mar. 2	C. E. W., W. J. G.	1,048	175	616	1.45		894 ¹
July 30	J. A. Elliott	1,909	390	2,540	4.09	7.95	10,400
Oct. 14	"	1,909	200	855	2.65	2.48	2,260

¹Ice conditions.

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C.
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		1,900	3-15	3,020	6-15	7,120
2.		1,900	4-00	4,060	7-85	10,020
3.		1,900	4-05	4,120	7-50	9,350
4.		1,990	4-08	4,160	7-40	9,160
5.	2-10	1,920	4-12	4,220	7-20	8,800
6.	2-10	1,920	4-15	4,250	7-10	8,630
7.	2-10	1,920	4-20	4,320	7-25	8,890
8.	2-10	1,920	4-22	4,350	7-38	9,130
9.	2-12	1,940	4-30	4,460	7-40	9,160
10.	2-20	2,000	4-05	4,120	7-40	9,160
11.	2-30	2,100	5-65	6,360	7-28	8,940
12.	2-20	2,000	5-42	6,020	7-20	8,800
13.	2-15	1,960	5-30	5,845	7-20	8,800
14.	2-05	1,880	5-10	5,560	7-30	8,980
15.	2-30	2,100	5-00	5,420	7-10	8,630
16.	2-75	2,560	6-85	8,230	8-65	11,850
17.	3-70	3,680	6-58	7,860	8-20	10,700
18.	3-60	3,560	6-48	7,640	9-75	15,800
19.	3-60	3,560	6-28	7,320	9-55	15,000
20.	3-60	3,560	6-20	7,190	9-50	14,800
21.	3-70	3,680	6-25	7,190	9-50	14,800
22.	3-72	3,700	6-20	7,190	9-50	14,800
23.	3-72	3,700	6-25	7,270	9-45	14,600
24.	3-70	3,680	6-20	7,190	9-40	14,400
25.	3-70	3,680	6-15	7,120	9-40	14,400
26.	3-60	3,560	6-02	6,920	9-40	14,400
27.	3-60	3,560	6-00	6,890	9-45	14,600
28.	3-50	3,440	6-00	6,890	9-50	14,800
29.	3-50	3,440	6-02	6,920	9-50	14,800
30.	3-40	3,320	6-10	7,040	9-50	14,800
31.			6-30	7,350		

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C.,
for 1914—Concluded.

Day.	July.		August.		September.		October.		November.	
	Gauge Height.	Discharge	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	9-45	14,600	7-80	9,920	5-30	5,840	3-8	3,800	2-1	1,920
2.	9-40	14,400	7-70	9,730	5-25	5,770	3-7	3,680	2-32	2,120
3.	9-48	14,720	7-70	9,730	5-25	5,770	3-6	3,560	2-4	2,200
4.	9-25	13,800	7-65	9,640	5-10	5,560	3-47	3,400	2-4	2,200
5.	9-32	14,080	7-65	9,640	4-95	5,350	3-35	3,260	2-4	2,200
6.	9-52	14,880	7-65	9,640	4-80	5,140	3-0	2,840	2-3	2,100
7.	9-65	15,400	7-65	9,640	4-70	5,000	3-0	2,840	2-25	2,050
8.	10-25	18,050	7-60	9,540	4-65	4,930	2-9	2,730	2-2	2,000
9.	10-42	18,900	7-55	9,440	4-60	4,860	2-85	2,670	2-15	1,960
10.	10-60	19,800	7-40	9,160	4-55	4,790	2-8	2,620	2-10	1,920
11.	10-65	19,950	7-20	8,800	4-55	4,790	2-8	2,620	2-1	1,920
12.	10-60	19,800	7-25	8,890	4-45	4,660	2-7	2,510	2-05	1,880
13.	10-50	19,300	7-0	8,470	4-10	4,190	2-6	2,400	2-0	1,840
14.	10-50	19,300	6-80	8,150	3-70	3,680	2-5	2,300	1-90	1,760
15.	10-60	19,800	6-65	7,910	3-30	3,200	2-4	2,200	1-90	1,760
16.	10-50	19,300	6-45	7,590	3-00	2,840	2-4	2,200	1-90	1,760
17.	10-50	19,300	6-30	7,350	3-00	2,840	2-35	2,150	Frozen.	1,700
18.	10-55	19,350	6-30	7,350	3-10	2,960	2-3	2,100	.....	1,700
19.	10-10	17,300	6-25	7,270	3-20	3,080	2-3	2,100	.....	1,680
20.	9-90	16,400	6-25	7,270	3-70	3,680	2-27	2,070	.....	1,680
21.	9-70	15,600	6-26	7,270	3-80	3,800	2-25	2,050	.....	1,600
22.	9-50	14,800	6-25	7,270	3-60	3,560	2-25	2,050	.....	1,600
23.	9-30	14,000	6-20	7,190	3-50	3,440	2-2	2,000	.....	1,600
24.	9-10	13,300	6-00	6,890	3-50	3,440	2-2	2,000	.....	1,600
25.	8-80	12,300	5-85	6,670	3-32	3,220	2-2	2,000	.....	1,600
26.	8-65	11,850	5-80	6,590	3-20	3,080	2-15	1,960	.....	1,600
27.	8-45	11,320	5-75	6,510	3-50	3,440	2-15	1,960	.....	1,600
28.	8-20	10,700	5-60	6,290	3-80	3,800	2-15	1,960	.....	1,700
29.	8-05	10,400	5-40	5,990	.....	3,800	2-1	1,920	.....	1,700
30.	7-90	10,110	4-40	5,990	.....	3,800	2-1	1,920	.....	1,700
31.	7-85	10,020	5-35	5,920	.....	.....	2-1	1,920	.....	.....

MONTHLY DISCHARGE of Columbia River at Golden, B.C., for 1914.

(Drainage area, 2,500 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April	3,700	1,900	2,731	1,092	1-218	182,450	C
May	8,230	3,020	6,014	2-405	2-773	369,700	D
June	15,800	7,120	11,604	4-642	5-170	691,200	C
July	10,050	10,020	15,582	6-233	7-180	953,000	C
August	9,920	5,920	7,991	3-196	3-685	491,680	D
September	5,840	2,840	4,110	1-66	1-85	246,000	C
October	3,800	1,920	2,440	0-98	1-13	150,000	C
November	2,200	.....	1,820	0-73	0-81	108,000	.....

COLUMBIA RIVER NEAR TRAIL (3008).

Location.—Fifteen miles above international boundary, above mouth of Pend d'Oreille river, below mouth of Kootenay, at the highway bridge near Trail, B.C., Nelson district.

Records Available.—May, 1913, to December, 1914.

Climatic Conditions.—The climate at Trail is similar to Nelson, but a little more extreme, i.e., a little hotter in summer and colder in winter. The total precipitation is about the same. See Kootenay river near Nelson.

Gauge.—A chain gauge, 60.8 feet long, is read daily by Mr. C. A. Broderick.

Channel.—The river winds from the left (looking downstream), about 100 yards above the bridge; below, the river is straight for 400 yards. The control, a pronounced riffle 100 yards below the bridge, appears permanent.

Discharge Measurements.—Measurements are made from the upstream side of the traffic bridge. Eighteen well-distributed measurements have been made.

Accuracy.—Daily gauge readings have been obtained. Reliable measurements were made throughout the year. The gauge-height-discharge curve appears to be very good. The results should be within 10 per cent.



Nelson District (I)—Highway Bridge on Columbia river near Trail, showing metering section on upstream side of bridge.

DISCHARGE MEASUREMENTS of Columbia River near Trail, B.C., for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Jan. 15	C. E. Webb	1048	485	6,250	3-57	9-50	22,300
April 17	D. O. B. G., C. E. W.	1048	493	7,120	3-51	10-50	25,000
June 2	J. A. E., G. K. B.	1909	61C	15,600	9-68	28-3	151,090
July 17	D. O. B. G., J. A. E.	1909	640	19,200	11-09	33-70	213,000
Nov. 11	J. A. E., G. K. B.	1909	515	9,110	5-43	14-6	49,000
1915.							
Jan. 4	do	1929	475	6,834	3-42	10-0	23,400

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Trail, B.C.,
for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	9.7	22,000	8.9	18,600	8.0	15,500	10.2	24,250	17.9	71,300	28.4	163,500
2.....	9.6	21,500	8.9	18,600	8.0	15,500	10.1	23,750	18.3	74,400	28.3	163,000
3.....	9.6	21,500	8.8	18,300	8.0	15,500	10.2	24,250	18.8	78,400	28.5	165,000
4.....	9.6	21,500	8.8	18,300	8.0	15,500	10.3	24,750	19.4	83,200	28.9	169,000
5.....	9.5	21,000	8.7	17,900	8.0	15,500	10.4	25,250	19.8	86,400	29.4	174,000
6.....	9.5	21,000	8.7	17,900	8.0	15,500	10.5	25,750	20.3	90,400	29.8	178,000
7.....	9.5	21,000	8.6	17,600	8.0	15,500	10.7	26,800	20.6	92,800	30.1	182,000
8.....	9.5	21,000	8.6	17,600	8.1	15,800	10.9	27,800	21.1	96,800	30.4	184,500
9.....	9.4	20,600	8.5	17,200	8.2	16,200	11.3	29,300	21.5	100,000	30.4	185,000
10.....	9.5	21,000	8.5	17,200	8.2	16,200	11.5	30,500	21.9	104,000	30.2	183,000
11.....	9.5	21,000	8.4	16,900	8.2	16,200	11.7	31,550	22.1	104,000	30.0	181,000
12.....	9.5	21,000	8.4	16,900	8.2	16,200	11.9	32,600	22.4	107,000	29.9	179,000
13.....	9.6	21,500	8.4	16,900	8.2	16,200	12.3	34,750	22.8	110,000	29.8	178,000
14.....	9.6	21,500	8.3	16,500	8.3	16,500	12.7	36,950	23.4	115,500	30.0	181,000
15.....	9.6	21,500	8.3	16,500	8.3	16,500	13.2	40,200	23.9	120,500	30.5	186,000
16.....	9.5	21,000	8.2	16,200	8.3	16,500	13.8	43,500	24.6	126,000	30.9	190,000
17.....	9.5	21,000	8.2	16,200	8.3	16,500	14.1	45,600	25.2	132,000	31.3	195,000
18.....	9.5	21,000	8.2	16,200	8.4	16,900	14.5	47,850	25.7	137,000	32.1	204,000
19.....	9.4	20,600	8.2	16,200	8.6	17,600	15.0	51,300	26.4	144,000	32.7	210,600
20.....	9.4	20,600	8.2	16,200	8.5	17,200	15.5	54,800	26.7	146,500	33.4	218,000
21.....	9.4	20,600	8.2	16,200	8.7	17,900	15.8	56,700	26.9	149,000	33.4	218,000
22.....	9.3	20,200	8.1	15,800	8.8	18,300	16.1	58,800	27.2	152,000	33.6	220,000
23.....	9.3	20,200	8.1	15,800	8.9	18,600	16.3	60,000	27.4	153,500	33.4	218,000
24.....	9.3	20,200	8.1	15,800	9.1	19,400	16.6	62,100	27.7	157,000	32.7	210,000
25.....	9.2	19,800	8.1	15,800	9.3	20,200	16.8	63,400	28.0	160,000	31.0	192,000
26.....	9.2	19,800	8.1	15,800	9.5	21,000	17.0	64,800	28.2	162,000	31.8	200,000
27.....	9.2	19,800	8.0	15,500	9.7	22,000	17.2	66,200	28.4	164,000	31.7	199,000
28.....	9.1	19,400	8.0	15,500	9.9	23,000	17.4	67,600	28.6	166,000	31.6	197,500
29.....	9.1	19,400	.....	.....	10.0	23,500	17.5	68,400	28.7	167,000	31.4	195,500
30.....	9.0	19,000	10.1	24,000	17.6	69,100	28.6	166,000	31.3	194,500
31.....	9.0	19,000	10.2	24,500	28.5	165,000

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River, near Trail, B.C.,
for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	31-3	195,000	26-0	140,500	19-7	85,200	15-2	52,500	13-8	43,800	13-0	39,000
2	31-4	196,000	25-8	138,000	19-5	84,000	15-2	52,800	13-7	43,200	12-9	38,400
3	31-6	197,500	25-7	137,000	19-3	82,000	15-3	53,400	13-8	43,800	12-9	38,400
4	32-1	203,500	25-0	135,500	19-1	80,400	15-3	53,400	13-9	44,400	12-8	37,800
5	32-7	209,500	25-5	134,500	18-9	78,800	15-4	54,100	14-0	45,000	12-8	37,800
6	33-1	215,000	25-4	133,500	18-7	77,200	15-3	53,400	14-2	46,200	12-7	37,200
7	33-7	220,500	25-2	132,000	18-5	75,600	15-2	52,800	14-4	47,500	12-7	37,200
8	33-7	221,000	25-1	130,500	18-3	74,000	15-2	52,800	14-7	49,400	12-6	36,700
9	33-6	220,000	24-9	128,500	18-1	72,400	15-1	52,200	14-9	50,800	12-5	36,200
10	33-7	220,500	24-5	125,000	17-9	71,650	15-0	51,500	15-0	51,500	12-4	35,600
11	33-7	221,000	24-0	121,000	17-9	70,950	15-0	51,500	14-9	50,800	12-2	34,500
12	33-6	219,500	23-6	117,000	17-7	69,450	14-9	50,800	14-8	50,100	12-1	34,000
13	33-6	220,000	23-2	114,000	17-5	68,000	14-9	50,800	14-8	50,100	11-9	32,900
14	33-7	221,000	22-9	111,000	17-3	66,550	14-8	50,100	14-8	50,100	11-7	31,800
15	33-7	221,500	22-6	109,000	17-1	65,500	14-7	49,400	14-7	49,400	11-5	30,800
16	33-8	222,000	22-4	105,500	16-9	63,750	14-5	48,200	14-6	48,800	11-3	29,600
17	33-7	221,000	22-2	104,500	16-7	62,400	14-4	47,500	14-6	48,800	11-1	28,500
18	33-6	220,000	21-9	104,000	16-5	61,050	14-3	46,800	14-5	48,200	10-9	27,600
19	33-3	217,000	21-8	102,500	16-3	59,700	14-3	46,800	14-4	47,500	10-6	26,700
20	33-0	214,000	21-6	101,000	16-1	58,450	14-4	47,500	14-3	46,800	10-6	26,400
21	32-5	207,500	21-5	100,000	15-9	57,050	14-4	47,150	14-1	45,600	10-5	26,000
22	31-9	200,500	21-4	99,200	15-8	56,350	14-3	46,800	13-9	44,400	10-4	25,500
23	31-2	194,000	21-3	98,400	15-7	55,700	14-3	46,800	13-7	43,200	10-4	25,500
24	30-5	186,000	21-2	97,600	15-6	55,100	14-4	47,500	13-6	42,600	10-3	25,000
25	29-9	180,000	21-1	96,800	15-5	54,450	14-4	47,500	13-5	42,000	10-3	25,000
26	29-4	173,500	20-9	94,800	15-4	53,750	14-3	46,800	13-4	41,400	10-2	24,500
27	28-7	167,000	20-7	93,200	15-3	53,400	14-3	46,800	13-3	40,800	10-2	24,500
28	28-2	161,500	20-5	91,600	15-2	52,800	14-2	46,200	13-2	40,200	10-1	24,000
29	27-6	155,500	20-3	90,000	15-2	52,800	14-1	45,600	13-1	39,600	10-0	23,500
30	26-9	149,000	20-1	88,400	15-1	52,200	14-0	45,000	13-1	39,600	9-9	23,000
31	26-4	144,000	19-9	87,200	.....	.....	13-9	44,400	.....	.....	9-8	22,500

MONTHLY DISCHARGE of Columbia River, near Trail, for 1914.

(Drainage area, 34,000 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
January.....	22,000	19,000	20,700	0-61	0-70	1,270,000
February.....	18,600	15,500	16,800	0-49	0-51	933,000
March.....	24,500	15,500	17,800	0-52	0-60	1,090,000
April.....	69,100	23,700	43,900	1-24	1-38	2,610,000
May.....	167,000	71,300	125,000	3-68	4-24	7,690,000
June.....	220,000	163,000	190,000	5-60	6-25	11,300,000
July.....	222,000	144,000	200,000	5-89	6-79	12,300,000
August.....	140,000	87,200	112,000	3-29	3-79	6,890,000
September.....	85,200	52,200	65,700	1-93	2-15	3,910,000
October.....	54,100	44,400	46,300	1-36	1-57	2,850,000
November.....	51,500	39,600	45,900	1-35	1-51	2,730,000
December.....	39,000	22,500	30,500	0-89	1-03	1,880,000

Accuracy "B".

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DUTCH CREEK, NEAR FAIRMONT SPRINGS (3035).

Location.—At highway bridge of Golden to Cranbrook road, half a mile from the mouth, which is almost at the outlet of Columbia lake. Revelstoke district.

Records Available.—April to August, 1914.

Climatic Conditions.—Summers, hot days, generally cool at nights, with very little rain. Winters, severe, as low as -40°F. , with a light snowfall. Frazil ice. The precipitation at the mouth is similar to that at Athalmer, q.v. Toby creek.

Gauge.—Vertical staff gauges were used throughout 1914. Gauge was changed owing to shifts in channel. Gauge was read by Mr. W. Magurn, an engineer on construction, Kootenay Central railway.

Channel.—The channel is wide, sandy, and shifting.

Discharge Measurements.—Measurements are made from highway bridge at mouth. In 1914, seven measurements were made.

Co-operation.—The station was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

Accuracy.—Owing to a large shift, due to high water in June, results after May are not guaranteed.

General.—Dutch creek rises on the easterly slope of the Selkirk range, and drains an area of about 250 square miles. It empties into Columbia lake, just above the outlet, and is the first large tributary of the Columbia river.

At present there is no development of power on Dutch creek, and the probable use of the water will be irrigation.

DISCHARGE MEASUREMENTS of Dutch Creek, near Fairmont Springs, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 8	D. O'B. G.	1,048	42.5	120	2.54	1.20	305
April 10.	O. J. B. (Prov.)	1,048		122	0.86	0.40	104
May 19	"	1,048		214	3.36	1.70	719
June 18..	J. A. Elliott.	1,909	93	386	7.16	3.00	2,760
Aug. 1	"	1,909	70	146	3.60	1.58	525
Sept. 22	O. J. B. (Prov.)			91	2.4	0.98	217
Oct. 20..	J. A. E..		34	90.6	2.04	0.98	221

DAILY GAUGE HEIGHT AND DISCHARGE of Dutch Creek near Fairmont Springs'
B.C., for 1914.

DAY.	April.		May.		June.		July.		August.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-2	85	0-98	220	1-95	1,020	2-6	2,050	1-48	499
2	0-2	85	1-25	340	2-05	1,160	2-65	2,140	1-38	421
3	0-2	85	1-4	435	2-45	1,790	2-85	2,490	1-63	638
4	0-3	95	1-3	365	2-7	2,220	2-8	2,400	1-33	386
5	0-3	95	1-3	365	2-7	2,220	2-53	1,940	1-28	355
6	0-3	95	1-2	315	2-4	1,700	1-93	991	1-08	249
7	0-35	100	1-1	265	2-0	1,080	2-13	1,280	1-08	249
8	0-4	105	1-1	265	1-7	715	2-08	1,210	1-08	249
9	0-4	105	1-3	365	1-6	605	2-23	1,430	1-08	249
10	0-45	110	1-35	400	1-6	605	.....	1,350	1-03	234
11	0-5	115	1-4	435	1-6	605	.....	1,300	1-08	249
12	0-53	118	1-4	435	1-7	715	.....	1,200	1-18	305
13	0-53	118	1-45	475	2-0	1,080	.....	1,150	1-33	386
14	0-55	120	1-5	515	2-35	1,620	.....	1,100	1-28	355
15	0-58	122	1-7	715	2-7	2,220	.....	1,050	1-23	330
16	0-58	122	1-8	825	2-85	2,490	.....	1,000	1-33	386
17	0-58	122	1-85	887	2-9	2,580	1-88	925	1-28	355
18	0-58	122	1-7	715	3-05	2,850	1-93	991	1-38	421
19	0-63	133	1-7	715	3-1	2,940	1-98	1,060	1-33	386
20	0-64	135	1-75	770	3-1	2,940	1-93	991	1-38	421
21	0-63	133	1-75	770	2-7	2,220	1-78	803	1-18	305
22	0-68	145	1-8	825	2-25	1,460	1-83	863	0-98	220
23	0-68	145	1-78	803	2-0	1,080	1-78	803	0-88	195
24	0-7	150	1-7	715	2-05	1,160	1-43	459	.....	175
25	0-75	162	1-75	770	2-25	1,460	1-58	587	.....	160
26	0-7	150	1-80	825	2-2	1,380	1-48	499	.....	160
27	0-7	150	1-75	770	2-3	1,540	1-43	459	.....	150
28	0-7	150	1-55	560	2-3	1,540	1-53	542	.....	150
29	0-7	150	1-5	515	2-35	1,620	1-53	542	.....	130
30	0-8	175	1-75	770	2-4	1,700	1-53	542	.....	130
31	.....	.....	1-9	950	.....	.....	1-48	499	.....	120

MONTHLY DISCHARGE of Dutch Creek near Fairmont Springs, B.C., for 1914.

(Drainage area, 250 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	175	85	123-0	0-49	0-55	7,320
May	950	220	584-0	2-34	2-70	36,000
June	2,940	605	1,610-0	6-45	7-20	95,800
July	2,490	459	1,120-0	4-48	5-16	68,900
August	638	.....	291-0	1-16	1-34	17,900

Accuracy "C".

FIELD SPRINGS, 1, 2, and 3 (3062, 3063, and 3064).

Location.—In township 28-18-5, about one-quarter mile east of the C.P.R. hotel at Field. Revelstoke district.

Records Available.—October 16 to December 31, 1914.

Climatic Conditions.—Summers: the days are generally hot and the nights cool; June is generally a wet month, but some years July and August are

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very dry, and at the end of August the springs may be very low. Winters: snow generally falls in October or November and remains till April, but the snowfall is not nearly as great as at Glacier; the temperature however, at times goes very low ($-50^{\circ}\text{F}.$).

Discharge Measurements.—Discharges are obtained on the two largest springs and a little creek (carrying practically all the water which comes to the surface) by means of weirs. Weir No. 1 is on a small creek immediately beyond the springs (starting from the hotel). This weir is located near the foot of a 25-foot fall on this creek. Weir No. 3 is on the smaller of the two springs gauged, as it shows that during extreme cold weather this spring ceases to flow. Weir No. 2 is immediately below the confluence of two or three small springs. Weir No. 2 is a rectangular weir 1.6 feet wide. Weirs Nos. 1 and 3 are triangle weirs, with a 90° .

These weirs were established to determine if there was sufficient water for a water supply for Field and also for the C.P.R. shops at Field.

DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 1, of Field Springs near Field, B.C., for 1914.

DAY.	October.		November.		December.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0-26	0-088	0-2	0-044
2			0-26	0-088	0-2	0-044
3			0-24	0-071	0-2	0-044
4			0-25	0-079	0-2	0-044
5			0-26	0-088	0-2	0-044
6			0-24	0-075	0-17	0-030
7			0-25	0-079	0-17	0-030
8			0-24	0-071	0-17	0-030
9			0-24	0-071	0-17	0-030
10			0-25	0-079	0-16	0-026
11			0-24	0-071	0-16	0-026
12			0-21	0-071	0-16	0-026
13			0-24	0-071	0-13	0-015
14			0-24	0-071	0-13	0-015
15			0-22	0-056	0-12	0-014
16		0-28	0-106	0-24	0-071	0-13
17		0-29	0-115	0-23	0-064	0-13
18		0-29	0-115	0-23	0-064	0-13
19		0-29	0-120	0-24	0-071	0-13
20		0-29	0-115	0-24	0-071	0-12
21		0-28	0-106	0-22	0-056	0-12
22		0-27	0-097	0-21	0-050	0-12
23		0-27	0-097	0-21	0-050	0-10
24		0-27	0-097	0-21	0-050	0-10
25		0-27	0-097	0-23	0-064	0-09
26		0-27	0-097	0-21	0-050	0-09
27		0-26	0-093	0-21	0-050	0-08
28		0-26	0-088	0-21	0-050	0-09
29		0-26	0-088	0-2	0-044	0-08
30		0-26	0-088	0-2	0-044	0-08
31		0-28	0-106		0-08	0-005

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MONTHLY DISCHARGE of Field Springs at No. 1 Weir, Field, B.C., for 1914.

MONTH.	DISCHARGE IN GALLONS.			
	Maximum daily flow.	Minimum daily flow.	Mean.	Mean daily flow.
October.....	64,600	47,400	.101	54,400
November.....	47,400	23,700	.066	35,530
December.....	23,700	2,690	.020	10,770

DAILY GAUGE HEIGHT AND DISCHARGE, Weir No. 2, Field Springs, near Field, B.C., for 1914.

DAY.	October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....				.280	0.16	.340
2.....				.280	0.16	.340
3.....			0.14	.280	0.16	.340
4.....			0.14	.280	0.16	.340
5.....			0.13	.251	0.16	.340
6.....			0.15	.310	0.15	.310
7.....			0.14	.280	0.15	.310
8.....			0.14	.280	0.15	.310
9.....			0.14	.280	0.15	.310
10.....			0.15	.310	0.15	.310
11.....			0.15	.310	0.15	.310
12.....			0.15	.310	0.15	.310
13.....			0.14	.280	0.13	.251
14.....			0.14	.280	0.14	.280
15.....			0.13	.251	0.15	.310
16.....	0.25	.666	0.13	.251	0.15	.310
17.....	0.24	.627	0.13	.251	0.14	.280
18.....	0.26	.707	0.13	.251	0.14	.280
19.....	0.27	.748	0.14	.280	0.14	.280
20.....	0.26	.707	0.15	.310	0.16	.340
21.....	0.25	.666	0.14	.280	0.16	.340
22.....	0.245	.647	0.14	.280	0.16	.340
23.....	0.25	.666	0.15	.310	0.16	.340
24.....	0.245	.647	0.15	.310	0.16	.340
25.....			0.18	.466	0.16	.340
26.....			0.16	.340	0.16	.340
27.....			0.16	.340	0.16	.340
28.....			0.16	.340	0.15	.310
29.....			0.17	.372	0.15	.310
30.....			0.16	.340	0.16	.340
31.....					0.15	.310

MONTHLY DISCHARGE of Field Springs, No. 2 Weir, Field, B.C., for 1914.

MONTH.	DISCHARGE IN GALLONS.			
	Maximum daily flow.	Minimum daily flow.	Mean.	Mean daily flow.
November.....	218,000	135,000	0.297	159,900
December.....	183,000	135,000	0.302	163,000

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DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 3, Field Springs near Field, B.C., for 1914.

DAY.	October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0-23	0-064	0-19	0-038
2			0-22	0-056	0-19	0-038
3			0-19	0-038	0-19	0-038
4			0-19	0-038	0-19	0-038
5			0-2	0-044	0-19	0-038
6			0-19	0-038	0-19	0-038
7			0-18	0-034	0-19	0-038
8			0-18	0-034	0-21	0-050
9			0-18	0-034	0-21	0-050
10			0-19	0-038	0-21	0-050
11			0-19	0-038	0-2	0-044
12			0-18	0-034	0-2	0-044
13			0-18	0-034	0-16	0-026
14			0-18	0-036	0-12	0-012
15			0-18	0-034		
16		0-07	0-18	0-034		
17		0-16	0-026	0-19	0-038	No water flowing.
18		0-18	0-034	0-19	0-038	
19		0-19	0-042	0-18	0-034	
20		0-19	0-038	0-19	0-038	
21		0-18	0-036	0-19	0-038	
22		0-18	0-034	0-19	0-038	
23		0-19	0-038	0-19	0-038	
24		0-18	0-034	0-19	0-038	
25		0-18	0-034	0-22	0-056	
26		0-18	0-034	0-19	0-038	
27		0-18	0-034	0-19	0-038	
28		0-18	0-034	0-19	0-038	
29		0-18	0-034	0-19	0-038	
30		0-19	0-038	0-19	0-038	
31		0-22	0-056			

MONTHLY DISCHARGE of Field Springs at No. 3 Weir, Field, B.C., for 1914.

MONTH	DISCHARGE IN GALLONS.			
	Maximum daily flow	Minimum daily flow	Mean	Mean daily flow
	October	25,600	14,000	0-034	18,300
November	24,200	18,000	0-0304	21,000
December	26,000		0-017	9,150

MONTHLY DISCHARGE of Field Springs River near Field for Total Discharge from three weirs.

MONTH	GALLONS PER DAY
	Mean
October	72,700
November	216,000
December	183,100

NOTE—See miscellaneous measurements "Field Creek" Weir No. 2 not included

FINDLAY CREEK NEAR CANAL FLATS (3036).

Location.—At highway bridge, on Findlay creek road, about 15 miles from mouth and 7 miles from Thunder Hill, B.C. Revelstoke district.

Records Available.—April 1 to December 31, 1914.

Climatic Conditions.—Precipitation at section similar to Invermere. (See Toby Creek.) Summers hot and dry. Winters severe, as low as -40°F ., with light snowfall. Frazil ice.

Gauge.—Vertical staff gauge, near Mason's cabin, about $1\frac{1}{2}$ miles below measuring section. Gauge is read by Mr. Octave Mason.

Channel.—Rocky above and below section. Not liable to shift.

Discharge Measurements.—Six measurements, one of which was high water, were made from the highway bridge in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The result should be within 20 per cent.

General.—Findlay creek rises on the easterly slope of the Selkirk mountains, and flows into Kootenay river about 3 miles south of Canal Flats. Findlay creek drains an area of about 320 square miles. Up to the present this creek has been used for lumbering and placer mining.

DISCHARGE MEASUREMENTS of Findlay Creek at Canal Flats, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913							
Oct. 24.....	O. J. B. (Prov.).....			104.0	2.81	0.80	294.0
1914							
April 13.....	O. J. B. (Prov.).....			84.9	2.55	0.72	211.0
June 18.....	J. A. Elliott.....	1909	59	374.8	10.52	6.20	3,940.0
Aug. 1.....	".....	1909	49	184.0	5.77	2.70	1,060.0
Sept. 23.....	O. J. B. (Prov.).....			107.4	2.90	1.09	314.0
Oct. 20.....	J. A. E.....	1909	44	105.3	3.11	0.9	327.0

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DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats,
B.C., for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge..
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2.3	860	2.1	760	2.5	1,120
2.....	2.3	860	2.2	810	3.6	1,640
3.....	2.2	810	2.0	710	4.2	2,160
4.....	2.2	810	1.7	580	5.2	2,970
5.....	2.1	760	1.5	500	4.8	2,610
6.....	2.1	760	1.5	500	4.4	2,260
7.....	2.1	760	1.6	540	3.8	1,770
8.....	2.1	760	1.7	580	3.2	1,370
9.....	2.1	760	2.0	710	2.8	1,120
10.....	1.0	348	2.1	760	2.8	1,120
11.....	1.0	348	2.2	810	3.1	1,300
12.....	.....	327	2.1	760	3.4	1,510
13.....	0.8	306	2.2	810	3.6	1,640
14.....	0.8	306	2.7	1,060	4.6	2,430
15.....	0.9	325	3.3	1,440	4.9	2,700
16.....	0.9	325	3.8	1,770	5.7	3,460
17.....	0.8	306	3.5	1,570	5.4	3,160
18.....	0.7	288	3.4	1,510	6.2	3,950
19.....	1.1	372	3.3	1,440	5.6	3,360
20.....	1.2	400	3.0	1,240	4.8	2,610
21.....	0.8	306	3.0	1,240	4.1	2,010
22.....	0.8	306	3.0	1,240	3.4	1,510
23.....	0.8	306	3.0	1,240	3.1	1,300
24.....	0.8	306	3.3	1,440	2.9	1,180
25.....	0.8	306	3.5	1,570	3.4	1,510
26.....	0.7	288	3.2	1,370	3.7	1,700
27.....	0.7	288	2.8	1,120	3.6	1,640
28.....	0.8	306	2.6	1,010	3.6	1,640
29.....	0.8	306	2.4	910	3.6	1,640
30.....	0.8	306	2.4	910	3.8	1,770
31.....	.....	.....	.....	1,015	.....	.....

DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5-6	3,360	2-8	1,120	1-2	400	0-9	325	0-9	325	0-5	252
2	4-6	2,430		1,080	1-4	460	0-9	325	0-7	288	0-5	252
3	5-0	2,790		1,040	1-3	430	0-9	325	0-7	288	0-5	252
4	4-8	2,610		1,000	1-4	460	0-9	325	0-7	288	0-5	252
5	5-4	3,160		970	1-2	400	0-8	306	0-7	288	0-5	252
6	5-0	2,790		940		390	0-9	325	0-8	306	0-5	252
7	4-7	2,520		900		380	0-9	325	0-8	306	0-5	252
8	4-2	2,100		860		370	0-9	325	0-6	270	0-5	252
9	4-4	2,260		830		360	0-9	325	0-6	270	0-5	252
10	4-1	2,010		800		350	0-9	325	0-6	270	0-5	252
11	3-9	1,850		770		340	0-8	306	0-7	288	0-5	252
12	4-4	2,260		740	0-9	325	0-8	306	0-6	270	0-5	252
13	4-3	2,180		710	0-8	306	0-8	306	0-5	252	0-5	252
14	4-8	2,610		680	0-7	288	0-8	306	0-5	252	0-5	252
15	4-7	2,520		650	0-8	306	0-8	306	0-6	270	0-5	252
16	3-7	1,700	1-8	620	0-8	306	0-8	306	0-6	270	0-5	252
17	3-3	1,440	1-9	660	1-2	400	0-9	325	0-7	288	0-4	238
18	3-3	1,440	1-4	460	2-0	710	0-9	325	0-6	270	0-4	238
19	3-4	1,510	1-7	580	1-8	620	0-9	325	0-6	270	0-4	238
20	3-8	1,770		620	1-4	460	0-7	288	0-6	270	0-4	238
21	3-2	1,370	1-9	660	1-2	400	0-7	288	0-6	270	0-4	238
22	2-4	910	1-7	580	1-0	348	0-7	288	0-6	270	0-4	238
23	2-4	910	1-4	460	0-9	325	0-6	270	0-6	270	0-4	238
24	2-7	1,060	1-4	460	1-1	372	0-6	270	0-6	270	0-4	238
25	2-6	1,010	1-2	400	1-0	348	0-6	270	0-6	270	0-4	238
26	2-6	1,010	1-0	348		374	0-6	270	0-7	288	0-4	238
27	2-5	960	1-4	460	1-2	400	0-6	270	0-5	252	0-6	238
28	2-6	1,010	1-4	460	1-2	400	0-6	270	0-5	252	0-4	238
29	2-6	1,010	1-5	500	1-1	372	0-6	270	0-5	252	0-4	238
30	2-4	910	1-6	540	1-0	348	0-8	306	0-5	252	0-4	238
31	2-6	1,010	1-4	460			0-7	288			0-4	238

MONTHLY DISCHARGE of Findlay Creek at Canal Flats, for 1914.

(Drainage Area, 320 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	860	288	461	1-44	1-61	27,400
May	1,770	500	1,030	3-22	3-71	63,360
June	3,950	1,120	2,000	6-25	6-97	119,000
July	3,360	910	1,820	5-68	6-55	112,000
August	1,120	400	688	2-15	2-48	42,300
September	710	288	392	1-23	1-37	23,300
October	325	270	303	0-95	1-10	18,600
November	325	252	275	0-86	0-96	16,400
December	252		245	0-77	0-89	15,100

Accuracy "D."

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HORSETHIEF CREEK NEAR WILMER (3008).

Location.—On the east slope of the Selkirk mountains, on traffic bridge, 4 miles from Wilmer, and 1 mile from the mouth. Revelstoke district.

Records Available.—Open season, 1912-13-14; ice measurements, November, 1913, 147 c.f.s.

Climatic Conditions.—The precipitation at the mouth is similar to Wilmer, which, from December 1, 1913, to November 30, 1914, was 15.5 inches, of which about 3 feet was snow. The summers generally are hot in the days and cool in nights. The winters are severe, as low as -40° F., some seasons. Frazil ice is evident.

Gauge.—Vertical staff gauge, referred to three bench-marks, nailed to one bridge abutment. Capt. Ch. de Crespigny reads the gauge three times a week.

Channel.—The measuring section is not a desirable one. The control does not appear permanent, and there may be a backwater effect from the Columbia. Accurate measurements may not be obtained.

Discharge Measurements.—Meterings are taken from the bridge. Four measurements were made in 1912, and nine in 1913, and four in 1914.

Accuracy.—A big shift occurred in the early part of July, which made it impossible to publish results after July 15. The results before July 15 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage Area, 170 square miles.)

Date.	Hydrographer.	Meter No.	Width.		Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.				
May 4 . . .	D. O'B. G.	1048	85	166	2.17	1.55	361 ¹	
June 19 . . .	J. A. E.	1909	101	335	7.47	2.65	2,300	
Aug 2 . . .	"	1909	89	288	6.41	1.85	1,810 ¹	
Oct. 21 . . .	"	1909	62	51.1	4.49	0.9	230	

¹Flow in older channel affects gauge. Old gauge 0.5. Reading is no use.

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DAILY GAUGE HEIGHT AND DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

DAY.	April.		May.		June.		July.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		135	1.5	385		1,100		1,650
2	0.8	135		400		1,400		1,990
3		135		420		1,710	2.6	2,320
4	3.35	135		440	2.5	2,020		2,550
5	0.8	135	1.6	460	2.2	1,320		2,770
6		140	1.6	460		1,140	2.8	3,000
7		145		460	2.0	950	2.9	3,400
8	0.9	150	1.6	460		870		3,400
9		158		480	1.9	790	2.9	3,400
10		167		500		840		3,550
11	1.0	175		520		900		3,700
12		175	1.7	540	2.0	950	3.0	3,850
13		175		540		1,200	2.9	3,400
14	1.0	175		540		1,540	2.7	2,650
15		225	1.7	540		1,880		2,090
16		275		745	2.6	2,320		
17	1.4	325	2.0	950		2,320		
18		325	2.0	950	2.6	2,320		
19		325	2.0	950		2,070		
20		325		910		1,820		
21		325		870		1,570		
22		325		830	2.2	1,320		
23	1.4	325	1.9	790		1,270		
24		325		870		1,220		
25		325	2.0	950		1,170		
26		325	1.95	870	2.1	1,120		
27	1.4	325	1.9	790		1,120		
28		325		720		1,120		
29		325	1.8	650	2.1	1,120		
30		385		720	2.2	1,320		
31			1.9	790				

MONTHLY DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage area 170 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	385	135	240	1.41	1.57	14,300
May	950	385	650	3.85	4.44	40,000
June	2,320	790	1,390	8.20	9.15	82,700

HOSPITAL CREEK (Weir) (3053).

Location.—At dam above intake of old smelter flume, 1½ miles from Golden. Revelstoke district.

Records Available.—October to November, 1914. See miscellaneous measurements.

Climatic Conditions.—Similar to Golden. See Columbia river near Golden.

Weir.—Ten-foot Cippoletti weir.

Accuracy.—Readings are only made once a week by Mr. K. C. Robertson. Accuracy, 20 per cent.

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Co-operation.—The weir was established by Mr. O. J. Bergoust, Provincial Water Rights Branch. Mr. Bergoust kindly sends us copies of gauge readings.

General.—Hospital creek is a small stream flowing into Columbia river, a mile below Golden. Its only importance is in relation to its being a possible source of a water supply for Golden.

DAILY GAUGE HEIGHT AND DISCHARGE of Hospital Creek, near Golden, for 1914.

DAY.	October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.
	Inches.	Sec.-ft.	Inches.	Sec.-ft.	Inches.	Sec.-ft.
1		8.38	3.85	6.12		3.36
2		8.38		5.92		3.33
3		8.38		5.73		3.30
4		8.38		5.53		3.26
5		8.38		5.33		3.32
6	4.75	8.38		5.14	2.5	3.19
7		8.10		4.94		
8		7.90	3.25	4.74		
9		7.60		4.52		
10		7.30		4.30		
11	4.25	7.08		4.07		
12		7.03		3.85		
13		6.99		3.63		
14		6.95		3.41		
15		6.91	2.5	3.19		
16		6.87		3.30		
17		6.83		3.40		
18	4.12	6.79		3.50		
19		6.66		3.60		
20		6.53		3.70		
21		6.40		3.80		
22		6.27	2.85	3.90		
23		6.14		3.83		
24		6.01		3.76		
25	3.75	5.88		3.70		
26		5.91		3.63		
27		5.95		3.56		
28		5.98		3.49		
29		6.02	2.62	3.42		
30		6.05		3.39		
31		6.09				

MONTHLY DISCHARGE of Hospital Creek, at Golden, B.C., for 1914.

(Drainage area, 18 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre-feet
October	8.38	5.88	7.00	0.39	0.45	430
November	6.12	3.19	4.15	0.23	0.26	247

ILLECILLEWAET RIVER, NEAR GLACIER (3010.)

Location.—In township 26, range 26, west 5, at the foot-bridge immediately above the railway bridge, 200 yards from C.P.R. hotel, Glacier. Revelstoke district.

Records Available.—June to December, 1913; open season, 1914.

Climatic Conditions.—The precipitation from December 1, 1913 to November 30, 1914, was 56·2 inches. The snowfall during that period was about 30 feet. The maximum snowfall since 1880, as recorded by the C.P.R., occurred in the winter of 1912-13, when 45 feet 1 inch of snow fell. The winters are not very severe, being slightly colder than Revelstoke. Frazil ice is to be contended with. The summers are short and the thermometer seldom goes over 85° F.

Gauge.—Vertical staff, marked in feet and inches, was used till November, when it was replaced by an enamel gauge marked in feet and tenths.

Channel.—The bed is rocky, and, during freshet, the water is very swift. The control appears permanent.

Discharge Measurements.—Twelve were made in 1913, and five in 1914, from foot-bridge near hotel.

Accuracy.—These results, though probably within 20 per cent, are not guaranteed.

DISCHARGE MEASUREMENTS of Illecillewaet River near Glacier, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.		Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.				
June 10.....	J. A. E.....	1909	36	35	4.29	0.85	150	
July 25.....	do.....	1909	34	52.2	4.39	1.20	229	
Sept. 9.....	do.....	1927	34	35.2	3.50	0.97	123	
Oct. 12.....	do.....	1909	29	19.95	1.75	0.49	35	
Nov. 19.....	do.....	1909	16	10.5	2.64	0.3	27.7 ¹	

¹New gauge. (See notes).

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DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier, for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.			1-23	168	2-06	443
2.			1-31	188	2-56	693
3.			1-31	188	2-56	693
4.			1-23	168	1-23	168
5.			1-06	132	1-06	132
6.			1-06	132	1-06	132
7.			1-14	148	1-06	132
8.			1-31	188	0-98	117
9.			1-39	210	0-89	101
10.			1-39	210	1-06	132
11.			1-48	235	1-06	132
12.	0-64	65	1-64	285	1-39	210
13.	0-73	77	1-81	344	1-48	235
14.	0-64	65	1-81	344	1-48	235
15.	0-64	65	1-81	344	1-89	373
16.	0-64	65	1-81	344	1-89	373
17.	0-64	65	1-73	315	1-98	409
18.	0-64	65	1-73	315	1-73	315
19.	0-73	77	1-73	315	1-48	235
20.	0-64	65	1-73	315	1-23	168
21.	0-64	65	1-81	344	1-23	168
22.	0-64	65	1-81	344	1-23	168
23.	0-64	65	1-81	344	0-98	117
24.	0-73	77	1-89	373	0-98	117
25.	0-73	77	1-81	344	1-06	132
26.	0-73	77	1-56	260	1-14	148
27.	0-81	89	1-39	210	1-14	148
28.	0-81	89	1-39	210	1-31	188
29.	1-06	132	1-31	188	1-48	235
30.	1-06	132	1-56	260	1-73	315
31.			1-81	344		

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DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier,
for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	1-89	373	2-48	649	1-64	285	0-64	65		48	0-26	29
2.	2-06	443	2-48	649	1-56	260	0-56	56		48	0-26	29
3.	2-31	560	2-31	560	1-64	285	0-39	39		48	0-26	29
4.	2-23	520	2-06	443	1-56	260	0-64	65		47	0-26	29
5.	2-23	520	2-31	560	1-23	168	0-56	56		46	0-26	29
6.	2-31	560	2-23	520	1-48	235	0-56	56		45	0-26	29
7.	2-06	443	2-06	443	1-64	285	0-64	65		44	0-26	29
8.	1-98	409	1-48	235	1-23	168	0-64	65		43	0-26	29
9.	2-06	443	1-48	235	0-98	117	0-56	56		42		29
10.	2-31	560	1-56	260	0-98	117	0-56	56		41		29
11.	2-39	602	1-56	260	0-98	117	0-48	48		40		29
12.	2-39	602	1-39	210	1-06	132	0-56	56		40		29
13.	2-39	602	1-23	168	0-73	77	0-56	56		39		29
14.	2-23	520	1-48	235	0-73	77	0-64	65		39		29
15.	1-89	373	1-64	285	0-64	65	0-81	89	0-39	39		29
16.	1-48	235	1-64	285	0-56	56	0-73	77	0-39	39		29
17.	1-73	315	1-73	315	0-73	77	0-64	65	0-39	39		29
18.	2-23	520	1-73	315	1-06	132	0-64	65	0-39	39		29
19.	2-06	443	1-64	285	0-81	89	0-56	56	0-36	37		29
20.	1-73	315	1-64	285	0-56	56	0-56	56	0-36	37		29
21.	1-48	235	1-73	315	0-56	56	0-39	39	0-36	37	0-26	29
22.	1-48	235	1-56	260	0-64	65	0-39	39	0-36	37	0-26	29
23.	1-48	235	1-56	260	0-64	65	0-39	39	0-36	37	0-21	26
24.	1-39	210	1-64	285	0-98	117	0-39	39	0-36	37	0-26	29
25.	1-39	210	1-73	315	1-06	132	0-39	39	0-36	37	0-21	26
26.	1-31	188	1-56	260	0-89	101	0-39	39	0-36	37	0-26	29
27.	1-31	188	1-56	260	0-89	101	0-48	48	0-31	33	0-26	29
28.	1-89	373	1-64	285	0-56	56	0-48	48	0-31	33	0-21	26
29.	1-89	373	1-64	285	0-56	56	0-39	39	0-31	33	0-21	26
30.	2-31	560	1-64	285	0-64	65	0-39	39	0-26	29	0-16	23
31.	2-48	649	1-64	285			0-48	48			0-16	23

MONTHLY DISCHARGE of Illecillewaet River, near Glacier, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.		
	Maximum.	Minimum.	Mean.
	May.....	373	132	262
June.....	693	101	238
July.....	649	188	413
August.....	649	168	332
September.....	285	56	130
October.....	89	39	53-8
November.....	48	29	38-3
December.....	29	23	28-2

ILLECILLEWAET RIVER NEAR REVELSTOKE (3009).

Location.—This station is located within 1 mile of the city of Revelstoke, and 1 mile from the mouth of the river; the gauge is located on traffic bridge in SW. $\frac{1}{4}$ section 26, township 23, range 2, west 6th; the measuring section is located on traffic bridge in NE. $\frac{1}{4}$ section 22, township 23, range 2, west 6th.

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Records Available.—October to December, 1911; May to December, 1912; April to November, 1913; March to November, 1914; Ice measurement, on February 27th, 1912, gave discharge of 197 c.f.s.; on January, 7th, 1914, gave 500 c.f.s.

Gauge.—A chain gauge, referred to two bench-marks, is used and read by Miss S. Moran of Revelstoke.

Channel.—Measuring section is half a mile below gauge. The section at the gauge is very fast in high water, and at the measuring section there is a possibility of backwater from the Columbia during high water. The control at the gauge appears permanent.

Discharge Measurements.—Fourteen measurements were made in 1914, and a new curve was plotted.

Accuracy.—All measurements made this year are less than 10 per cent off the curve. Daily gauge readings are obtained but the chain gauge gives some trouble to the reader. The results should be within 15 per cent.

Climatic Conditions.—At Revelstoke the precipitation from December 1, 1913, to November 30, 1914, was approximately 40.5 inches. The snowfall was approximately 10 feet (C.P.R. records), and the precipitation during the months December to March was 18 inches, practically all of which would be snow at higher altitudes. The winters are not very severe, seldom below 10° F. Frazil ice may be expected. The summers are very hot, sometimes 95° and 100° F.

DISCHARGE MEASUREMENTS of Illecillewaet River, near Revelstoke, B.C.,
for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 17	C. E. Webb	1,048	120	290.5	1.64	1.57	478
May 18	J. A. Elliott	1,672	122	704	5.21	4.80	3,670
June 9	"	1,909	123	661	5.25	4.70	3,450
" 26	"	1,909	137	820	6.33	5.70	5,190
July 25	"	1,909	136	763	4.63	4.50	3,540
Aug. 11	"	1,909	125	556	3.71	3.75	2,060 ¹
" 11	"	1,909	92	658	3.87	3.75	2,500 ²
Sept 5	C. E. R., J. A. E	1,927	130	506	3.57	3.24	1,800 ¹
Oct 9	J. F. E	1,909	118	364	2.50	2.38	910
Sept. 5	J. A. P., C. E. R	1,927	107	682	3.64	3.39	2,080 ²
Oct. 26	R. G. S., G. E. W		147	325	2.49	1.95	809
" 9	J. A. E.	1,909	87	482	2.16	2.40	1,040 ²
" 26	"	1,909	95	400	1.76	1.95	705 ²
Nov. 17	"	1,909	115	316	2.27	1.73	718

¹ At regular measuring section.

² At gauge section

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DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

DAY.	March.		April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	400	400	1-7	520	3-8	2,460	5-2	4,350
2	400	400	1-6	460	4-35	3,140	5-85	5,360
3	400	400	1-5	400	4-7	3,620	6-75	6,900
4	400	400	1-5	400	4-75	3,690	6-30	6,120
5	400	400	2-1	790	4-8	3,760	5-60	4,960
6	1-6	460	2-3	935	4-8	3,760	5-00	4,050
7	1-6	460	2-8	1,370	4-7	3,620	4-80	3,760
8	1-6	460	2-85	1,420	4-5	3,340	4-5	3,340
9	1-5	400	2-95	1,520	4-5	3,340	4-7	3,620
10	1-6	460	3-0	1,570	4-4	3,210	5-35	4,580
11	1-5	400	2-7	1,270	4-2	2,950	5-35	4,580
12	2-3	935	2-95	1,520	4-2	2,950	5-6	4,960
13	1-6	460	3-2	1,770	5-05	4,120	5-9	5,450
14	1-6	460	3-4	1,990	5-2	4,350	6-50	6,460
15	2-0	720	3-4	1,990	5-25	4,420	6-50	6,460
16	2-9	1,470	3-4	1,990	5-10	4,200	6-60	6,630
17	1-8	585	3-35	1,940	5-05	4,120	6-70	6,810
18	1-65	490	3-5	2,100	4-75	3,690	6-70	6,810
19	1-75	552	3-2	1,770	4-85	3,830	6-40	6,290
20	1-85	618	3-1	1,670	4-65	3,550	6-30	6,120
21	1-85	618	3-1	1,670	5-1	4,200	5-50	4,800
22	1-8	585	3-1	1,670	5-25	4,425	4-95	3,980
23	1-8	585	3-1	1,670	5-5	4,800	4-70	3,620
24	1-7	520	3-2	1,770	5-35	4,880	4-60	3,480
25	1-7	520	3-35	1,940	5-50	4,800	4-70	3,620
26	1-7	520	3-35	1,940	5-20	4,350	5-70	5,120
27	1-7	520	3-45	2,040	5-00	4,050	5-50	4,800
28	1-7	520	3-45	2,040	4-80	3,760	5-50	4,800
29	1-7	520	3-5	2,100	4-45	3,280	5-50	4,800
30	1-7	520	3-65	2,280	4-15	3,880	5-90	5,450
31	1-7	520			4-50	3,340		

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DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5.9	5,450	4.9	3,900	3.40	1,990	2.9	1,470	2.4	1,010	1.30	290
2	6.45	6,380	4.75	3,690	3.25	1,820	2.8	1,370	2.4	1,010	1.40	340
3	6.8	6,990	5.05	4,120	3.25	1,820	2.6	1,180	2.2	860	1.40	340
4	6.9	7,170	4.6	3,480	3.45	2,040	2.40	1,010	2.4	1,010	1.50	400
5	6.95	7,260	4.6	3,480	3.70	2,340	2.30	935	2.4	1,010	1.40	340
6	6.5	6,460	4.6	3,480	3.45	2,040	2.25	900	2.15	825	1.6	460
7	6.25	6,040	4.4	3,210	3.25	1,820	2.20	860	2.2	860	1.6	460
8	5.75	5,200	3.65	2,280	3.40	1,990	2.30	935	2.4	1,010	Fro zen	
9	5.8	5,280	3.4	1,990	2.90	1,470	2.25	900	2.2	860		
10	5.95	5,540	3.6	2,220	2.70	1,270	2.30	935	2.1	790		
11	6.25	6,040	3.8	2,460	2.65	1,220	2.2	860	2.00	720		
12	6.4	6,290	4.0	2,700	2.70	1,270	2.2	860	2.00	720		
13	6.3	6,120	4.25	3,020	2.40	1,010	2.1	790	2.00	720		
14	6.4	6,290	4.0	2,700	2.30	935	2.1	790	1.90	650		
15	6.7	6,810	4.1	2,820	2.10	790	2.2	860	1.70	520		
16	5.4	4,650	4.05	2,760	2.10	790	2.1	790	1.90	650		
17	5.05	4,120	3.85	2,520	1.90	650	2.5	1,090	1.70	520		
18	5.3	4,500	4.05	2,760	2.30	1,090	2.3	935	1.70	520		
19	5.35	4,580	4.05	2,760	2.30	1,090	2.2	860	1.70	520		
20	5.45	4,720	3.90	2,580	2.10	790	2.1	790	1.90	650		
21	5.2	4,350	4.10	2,820	2.35	970	2.25	898	1.80	585		
22	4.45	3,280	4.10	2,820	2.40	1,010	2.1	790	1.80	585		
23	4.15	2,880	4.10	2,820	2.40	1,010	2.0	720	1.30	290		
24	4.4	3,210	3.55	2,160	2.65	1,220	2.1	790	1.65	490		
25	4.5	3,340	3.80	2,460	2.7	1,270	2.0	720	1.80	585		
26	4.1	2,820	3.90	2,580	2.9	1,470	1.7	520	1.90	650		
27	4.1	2,820	3.95	2,640	2.9	1,470	1.8	585	1.80	585		
28	4.15	2,880	3.80	2,460	2.9	1,470	1.8	585	1.80	585		
29	4.5	3,340	3.45	2,040	2.8	1,370	1.7	520	1.70	520		
30	4.5	3,340	3.50	2,100	2.8	1,090	1.7	520	1.70	520		
31	4.75	3,690	3.45	2,040			2.4	1,010				

MONTHLY DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

(Drainage area, 480 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum	Mean.	Per square mile.	Depth in inches on Drainage area	Total in acre-feet	
March	1,470		545	1.13	1.30	33,500	
April	2,280	400	1,550	3.23	3.60	92,200	C
May	4,880	2,460	3,790	7.90	9.11	233,000	B
June	6,900	3,340	5,100	10.6	11.8	303,000	B
July	7,200	2,820	4,900	10.2	11.8	301,000	B
August	4,120	1,990	2,770	5.77	6.65	170,000	B
September	2,340	650	1,350	2.81	3.14	80,300	B
October	1,470	520	807	1.80	2.08	53,300	B
November	1,010	290	694	1.45	1.62	41,300	B

INCOMAPPLEUX RIVER NEAR BEATON (ALSO CALLED FISH CREEK)
(3030).

Location.—Immediately outside the southern limit of the Railway Belt, 2 miles from the mouth, near Beaton, on the northeast arm, Arrow lakes, Revelstoke district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation is similar at the mouth to that of Revelstoke. The snowfall is very heavy in the hills. The river is glacial fed. The winters are not very severe, as low as 10° F. Frazil ice may be expected. The summers are hot.

Gauge.—A chain gauge located near his ranch is read daily by Mr. Jas. Burbridge.

Channel.—At the gauge the water is fast, the control has not been studied. The measuring section is satisfactory.

Discharge Measurements.—Six well-distributed measurements were made in 1914.

Accuracy.—The measurements should be fairly accurate, the gauge readings are daily but the gauge is not very reliable.

General.—The Incomappleux river is a stream about 42 miles long. It has its source in the Selkirks behind Glacier, from mountains 8,000 to 10,000 feet high. It flows through a heavily timbered country in which extensive limits are held by the Arrow Lake Lumber Company and the Dominion Saw-mills. There is practically no agricultural land in the whole valley. There are several mining claims, particularly around Cambourne, about 5 miles from the mouth. The stream is swift, from 50 to 100 feet wide, and from 3 feet to 10 feet in depth. The river is not navigable, but is suitable for logging purposes.

Incomappleux River.

General Power Possibilities.—There is a canyon on this river about 22 miles from the mouth. This canyon is about 3,000 feet long, and in it there is a fall of 100 feet. The width varies from 60 to 100 feet at the bottom, and the walls, which are of a broken rock formation, are high and steep.

There is very little natural storage, so, for a large development, artificial storage is required. By installing a very high dam (200 to 400 ft.) at a point in the canyon where the desired rock formation may be obtained, water could be penned back over a large flat on which lies the old townsite of Camborne. With a head of 300 feet and this storage, a probable 24-hour, 12-months development of 30,000 H.P. could be obtained. This would be an expensive installation.

Small summer industrial power of from 100 to 300 H.P. may be obtained on the following tributaries:—

Sable creek
Pool creek
Lexington creek
Boyd creek

The flow in each case is small but high heads may be obtained.

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DISCHARGE MEASUREMENTS of Incomappleux River, near Beaton, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of	Mean	Gauge	Discharge.
				Section.	Velocity.	Height.	
			Feet.	! Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 21.....	J./A. Elliott.....	1672	96	763	4.46	4.8	3,410
June 19.....	G./K. B.....	1927	96	973	5.41	6.1	5,360
June 27.....	J. A. E.....	1909	98	902	6.11	5.6	5,520
Sept. 4.....	".....	1927	98	752	4.01	4.15	3,020
Oct. 27.....	".....	1909	91	564	1.65	2.8	935
Nov. 20.....	".....	1909	92	490	1.57	2.6	768

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DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux River, near Beaton, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft./	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			4.2	2,750	5.65	4,030
2.....			4.8	3,630	5.80	5,340
3.....			5.25	4,370	6.90	7,360
4.....			4.45	3,100	6.70	6,980
5.....			4.25	2,820	5.70	5,160
6.....			4.05	2,540	5.15	4,200
7.....			4.0	2,470	4.70	3,470
8.....			4.0	2,470	4.45	3,100
9.....			4.5	3,170	4.50	3,170
10.....			4.45	3,100	4.65	3,390
11.....			4.5	3,170	4.90	3,790
12.....			4.7	3,470	5.30	4,460
13.....			4.9	3,790	5.65	5,070
14.....			5.2	4,290	6.30	6,240
15.....			5.2	4,290	6.75	7,070
16.....			5.3	4,460	6.7	6,980
17.....			5.1	4,120	6.95	7,460
18.....			4.85	3,710	7.0	7,560
19.....			4.65	3,390	6.55	6,680
20.....			4.55	3,240	5.95	5,610
21.....	3.6	1,930	4.75	3,550	5.35	4,540
22.....	3.55	1,860	5.05	4,030	5.05	4,030
23.....	3.5	1,800	5.35	4,540	4.75	3,550
24.....	3.6	1,930	5.45	4,710	4.65	3,390
25.....	3.65	2,000	5.35	4,540	4.90	3,790
26.....	3.60	1,930	4.05	3,870	5.50	4,800
27.....	3.65	2,000	4.55	3,240	5.55	4,890
28.....	3.7	2,060	4.3	2,890	5.45	4,710
29.....	3.7	2,060	4.1	2,610	5.50	4,800
30.....	3.9	2,330	4.1	2,610	5.90	5,520
31.....			4.35	2,960		

DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux, River near Beaton, for 1914—Concluded.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	6-4	6,420	5-8	5,340	3-80	2,190	3-85	2,260	3-35	1,620	2-5	690
2.	6-95	7,460	5-75	5,250	3-85	2,260	3-75	2,120	3-45	1,740	2-5	690
3.	7-45	8,430	5-75	5,250	4-10	2,610	3-50	1,800	3-3	1,560	2-4	595
4.	7-45	8,430	5-3	4,460	4-35	2,960	3-35	1,620	3-3	1,560	2-4	595
5.	7-55	8,630	4-95	3,870	3-95	2,400	3-25	1,500	3-25	1,500	2-4	595
6.	7-25	8,030	5-35	4,540	3-65	2,000	3-20	1,440	3-15	1,380	2-3	510
7.	6-9	7,360	5-15	4,200	3-85	2,260	3-20	1,440	3-1	1,320	2-2	435
8.	6-55	6,690	4-35	2,960	4-15	2,680	3-20	1,440	3-1	1,320	2-2	435
9.	6-35	6,330	4-0	2,470	3-65	2,000	3-15	1,380	3-05	1,260	2-1	375
10.	6-55	6,690	4-35	2,960	3-40	1,680	3-05	1,260	3-0	1,200	2-1	375
11.	6-75	7,070	4-14	2,680	3-75	2,120	3-05	1,260	3-0	1,200	2-0	325
12.	7-35	8,290	4-45	3,100	3-35	1,620	3-0	1,200	2-9	1,090	2-0	325
13.	7-25	8,030	4-65	3,390	3-15	1,380	2-95	1,140	2-9	1,090	1-9	320
14.	7-10	7,750	4-85	3,710	3-10	1,320	2-85	1,040	2-8	990	2-1	320
15.	7-55	8,630	4-9	3,790	3-05	1,260	2-9	1,090	2-8	990	Frozen.	320
16.	5-80	5,340	4-75	3,550	2-95	1,140	3-05	1,260	2-6	790		320
17.	5-35	4,540	4-8	3,630	2-90	1,090	3-5	1,800	2-6	790		320
18.	5-75	5,250	4-55	3,240	3-40	1,680	3-4	1,680	2-6	790		320
19.	6-15	5,970	4-65	3,390	3-90	2,330	3-35	1,620	2-6	790		320
20.	6-15	5,970	5-05	4,030	3-40	1,680	3-25	1,500	2-6	790		320
21.	5-05	4,030	4-9	3,790	3-25	1,500	3-05	1,260	2-6	790		320
22.	4-5	3,170	4-8	3,630	3-10	1,320	2-9	1,090	2-6	790		320
23.	4-45	3,100	4-10	2,610	3-15	1,380	2-9	1,090	2-6	790		320
24.	4-9	3,790	4-10	2,610	3-35	1,620	2-85	1,040	2-6	790		320
25.	4-85	3,710	4-10	2,610	3-45	1,740	2-8	990	2-6	790		320
26.	4-5	3,170	4-20	2,750	3-70	2,060	2-8	990	2-7	890		320
27.	4-4	3,030	4-30	2,890	4-35	2,960	2-8	990	2-7	890		320
28.	4-65	3,390	4-40	3,030	3-65	2,000	2-75	940	2-7	890		320
29.	4-55	3,240	4-20	2,750	3-45	1,740	2-7	890	2-6	790		320
30.	5-1	4,120	4-20	2,750	3-45	1,740	3-15	1,380	2-6	790		320
31.	5-65	5,070	3-85	2,260			3-25	1,500				320

MONTHLY DISCHARGE of Incomappleux River, near Beaton, for 1914.

(Drainage area 460 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	Accuracy.
May	4,710	2,470	3,480	7-56	8-72	214,000	B
June	7,560	3,100	5,040	10-9	12-2	300,000	C
July	8,630	3,030	5,840	12-7	14-6	359,000	C
August	5,340	2,260	3,470	7-54	8-69	213,000	B
September	2,960	1,090	1,890	4-10	4-57	112,000	B
October	2,260	890	1,360	2-96	3-41	85,600	B
November	1,740	790	1,060	2-30	2-57	63,100	B
December	690		400	0-87	1-00	24,600	

KICKING HORSE RIVER NEAR GOLDEN (3011).

Location.—In NE. $\frac{1}{4}$, section 12, township 27, range 22, west 5th, on traffic bridge, in the town of Golden, Revelstoke district.

Records Available.—Open season, 1912, 1913, and 1914. Metering under ice conditions, February 22, 1912, 172 c.f.s. Metering under ice conditions February 28, 1914, 276 c.f.s.

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Climatic Conditions.—The precipitation at Golden, from December 1, 1913, to November 30, 1914, amounted to about 14 inches. This may be considered lighter than usual. The snowfall was 3 or 4 feet. The summers are hot and quite dry, while the winters are very severe, the temperature, some seasons, going down to -50° F. for a night. Frazil ice will be found in the Kicking Horse at this point, as well as practically up to its source.

Gauge.—A vertical staff gauge is used, and read two or three times daily by Mr. W. Wenman, of Golden.

Channel.—Straight for 200 yards above and below the station. Control is a sand bar about 100 yards down stream from section.

Discharge Measurements.—Ten were made in 1911-12, five in 1913, and six in 1914.

Accuracy.—The channel has shifted slightly since 1913, and a new curve was plotted for 1914. The measurements are accurate, the curve only fair, and the gauge readings are very reliable. The results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Golden, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Feb. 28.....	C. E. Webb.....	1,048	126	283.6	0.98	.....	2,780 ¹
June 11.....	J. A. E.....	1,909	180	644.0	5.51	4.25	3,550
July 28.....	".....	1,909	155	605.0	5.12	4.10	3,100
Aug. 6.....	".....	1,909	155	692.0	5.94	4.50	4,110
Sept. 11.....	".....	1,927	98	391.0	3.30	2.9	1,290
Oct. 14.....	C. E. R.....	1,929	81	329.0	2.77	2.32	912

¹Not very reliable. Frazil ice.

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Golden,
for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			2-58	1,040	4-15	3,350
2			2-85	1,280	4-70	4,630
3			3-2	1,660	5-50	6,620
4			2-95	1,380	5-85	7,570
5			2-75	1,200	5-25	5,990
6			2-65	1,100	4-85	4,990
7			2-6	1,060	4-50	4,150
8			2-65	1,100	4-30	3,680
9			2-95	1,380	4-20	3,460
10			3-07	1,510	4-15	3,350
11			3-17	1,620	4-30	3,680
12			3-2	1,660	4-60	4,390
13			3-4	1,950	4-90	5,110
14			3-65	2,300	5-25	5,990
15			4-0	3,030	5-55	6,750
16	1-9	550	4-2	3,460	5-85	7,570
17	1-92	563	4-15	3,350	6-17	8,510
18	1-78	474	4-02	3,070	6-05	8,150
19	1-95	582	3-83	2,690	5-9	7,710
20	2-05	648	3-8	2,630	5-45	6,500
21	1-9	550	3-67	2,390	5-0	5,350
22	2-02	628	3-75	2,540	4-7	4,630
23	1-91	556	4-05	3,130	4-25	3,570
24	2-1	680	4-25	3,570	4-0	3,030
25	2-02	628	4-35	3,800	4-15	3,350
26	2-0	615	4-1	3,240	4-57	4,330
27	2-0	615	3-85	2,720	4-4	3,910
28	2-0	615	3-7	2,440	4-52	4,200
29	2-08	667	3-6	2,270	4-65	4,510
30	2-21	762	3-4	1,950	4-90	5,110
31			3-65	2,360		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Golden, for 1914—*Concluded.*

Day.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5.3	6,120	4.61	4,410	3.65	2,360	3.08	1,520	2.0	615	1.60	370
2	5.67	7,070	4.61	4,410	3.70	2,440	3.05	1,480	2.05	617	1.60	370
3	5.8	7,430	4.75	4,750	3.70	2,440	2.90	1,330	2.0	615	1.80	455
4	5.97	7,910	4.55	4,270	3.80	2,630	2.90	1,330	2.0	615	1.68	418
5	5.9	7,710	4.35	3,800	3.60	2,270	2.79	1,230	2.0	615	1.52	330
6	5.9	7,710	4.5	4,150	3.20	1,660	2.60	1,060	1.95	582	1.62	382
7	5.7	7,150	4.55	4,270	3.37	1,900	2.60	1,060	1.9	550	1.56	350
8	5.4	6,370	3.97	2,970	3.51	2,120	2.50	980	1.87	530	1.4	280
9	5.3	6,120	3.75	2,540	3.15	1,600	2.75	1,200	1.9	550	Ice.	250
10	5.2	5,860	3.57	2,220	2.80	1,240	2.70	1,150	1.85	517		230
11	5.35	6,240	3.6	2,270	2.80	1,240	2.5	980	1.85	517		210
12	5.35	6,240	3.82	2,670	2.77	1,210	2.52	996	1.85	517		200
13	5.75	7,290	4.02	3,070	2.57	1,040	2.4	900	1.8	483		200
14	5.67	7,070	4.2	3,460	2.50	980	2.35	865	1.72	441		200
15	5.65	7,020	3.9	2,820	2.45	940	2.35	865	1.45	300		200
16	5.07	5,520	3.94	2,900	2.40	900	2.35	865	1.14	185		200
17	4.85	4,990	3.96	2,950	2.30	830	2.35	865	1.35	260		200
18	4.95	5,230	3.9	2,820	2.45	940	2.35	865	1.5	320		200
19	4.89	5,090	3.8	2,630	3.35	1,880	2.35	865	1.5	320		200
20	5.2	5,860	4.1	3,240	2.85	1,280	2.35	865	1.5	320		200
21	4.78	4,820	4.14	3,330	2.45	940	2.31	837	1.6	370		200
22	4.27	3,610	4.27	3,610	2.50	980	2.10	680	1.75	458		200
23	4.05	3,140	4.00	3,030	2.50	980	2.10	680	1.75	458		200
24	4.25	3,570	3.75	2,540	2.52	996	2.07	660	1.75	458		200
25	4.27	3,610	3.50	2,100	2.70	1,150	2.02	628	1.67	412		200
26	4.1	3,240	3.75	2,540	3.05	1,480	2.0	615	1.65	400		200
27	4.02	3,070	3.94	2,900	3.60	2,270	2.0	615	1.65	400		200
28	4.02	3,070	3.88	2,780	3.25	1,730	1.95	582	1.65	400		200
29	4.27	3,610	4.00	3,030	3.20	1,660	1.94	576	1.62	382		200
30	4.25	3,570	3.88	2,780	2.95	1,380	1.92	563	1.62	382		200
31	4.46	4,110	3.75	2,540			2.0	615				200

MONTHLY DISCHARGE of Kicking Horse River, near Golden, for 1914.

(Drainage area, 700 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile	Depth in inches on Drainage Area	Total in Acre-feet
May		3,800	1,040	2,220	3.17	136,000
June		8,510	3,030	5,140	7.34	306,000
July		7,910	3,070	5,460	7.80	336,000
August		4,750	2,100	3,160	4.51	194,000
September		2,630	830	1,480	2.11	88,100
October		1,520	563	914	1.30	56,200
November		647	185	454	0.65	27,000
December		485		248	0.35	15,200

Accuracy "B".

KICKING HORSE RIVER, NEAR FIELD (3012).

Location.—In township 28, range 18, west 5th, below the mouth of Yoho river, on the first traffic bridge, $3\frac{1}{4}$ miles east of Field. Revelstoke district.

Records Available.—June to November, 1912 and 1913; June to December, 1914.

Climatic Conditions.—The precipitation at Field is considerably greater than at Golden, (see Kicking Horse, near Golden), but much less than at Glacier, (see Illecillewaet river, near Glacier). The summers are short, with some very hot days, and nights generally cool. The rainfall in the summer months varies greatly, but is generally much less in July and August than in June. The winters are cold, with occasional severe storms, as low as 50°F. some seasons. The river near Field is generally frozen for three or four months, and frazil ice is always to be contended with.

Gauge.—A chain gauge is used, and read three times a week by Mr. Alex. Stuart, of Field.

Channel.—The channel is straight for 50 yards above and below the station, the water is very swift during freshet, the control is fairly permanent, but shifted slightly in 1914.

Discharge Measurements.—Eight well-distributed measurements in 1912, eight in 1913, and five in 1914, were made from the traffic bridge above-mentioned.

Accuracy.—A slight shift in the channel was noted, but the 1912 curve was still used. The gauge is read only two or three times a week, and during the summer the data cannot be guaranteed within 20 per cent. Later in the fall the results should be within 15 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Field, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 14	J. A. E.	1,909	72	218	6.41	5.6	1,410
Sept. 21	C. E. R.	1,927	55	116	2.35	4.10	272
Oct. 16	J. A. E.	1,909	52	103	1.93	3.65	199
Sept. 12	"	1,927	60	137	2.84	4.3	390
July 29	"	1,909	75	227	6.49	5.5	1,470

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field,
for 1914.

DAY.	June.	
	Gauge Height.	Discharge.
	Feet.	Sec.-ft.
1		1,820
2		1,880
3		1,940
4	6-0	1,940
5	6-10	2,100
6		
7	6-0	1,940
8		1,880
9		1,820
10		1,760
11		1,700
12		1,650
13		1,590
14		1,530
15	5-7	1,470
16		1,745
17	6-15	2,180
18		2,120
19		2,080
20	6-05	2,020
21		1,510
22	5-45	y
23		1,110
24	4-9	838
25		560
26		580
27		600
28	5-0	625
29		668
30	5-1	710
31	5-7	1,090
		1,470

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field,
for 1914—(Con.)

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		1,860		2,530	5-50	1,180		260	3-4	140	3-1	110
2.	6-2	2,260	6-45	2,660	5-50	1,180		245		135		110
3.	6-55	2,840	6-2	2,260	5-55	1,250		230	3-3	130	3-1	110
4.	6-6	2,920	6-3	2,420	5-50	1,180	2-90	215		130		110
5.	6-45	2,660		2,260		1,020	3-90	215	3-3	130		110
6.	6-5	2,750	6-1	2,100	5-25	862		215	3-3	130		110
7.	6-55	2,840	5-9	1,780	5-45	1,110	3-90	215		130		110
8.	6-25	2,340		1,352		770	4-20	275	3-3	130		110
9.	6-25	2,340	5-3	925	4-65	425	4-15	265		130		110
10.	6-3	2,420		1,050	4-45	345		240	3-3	130		110
11.		2,700	5-5	1,180	4-40	330				125		110
12.		2,980	5-6	1,320		292	3-8	200	3-2	120		110
13.	6-8	3,260		1,630	4-10	255	3-75	192	3-2	120		110
14.	6-8	3,260	6-0	1,940	4-55	380		200		130		110
15.	6-7	3,099		1,700		298	3-85	208		139		110
16.		2,680	5-7	1,470	3-90	215	3-8	200	3-45	148		110
17.	6-2	2,260	5-7	1,470	3-75	192		192		144		110
18.		2,420	5-7	1,470	3-95	225	3-7	185	3-4	140		110
19.	6-4	2,580		1,660		220		178		135		110
20.	6-4	2,580	5-95	1,860		214	3-6	170	3-3	130		110
21.		1,950	5-9	1,780	3-85	208		159		125		110
22.	5-6	1,320		1,620	3-80	200	3-45	148	3-2	120		110
23.	5-4	1,050	5-7	1,470	3-80	200	3-45	148		115		110
24.	5-6	1,320	5-45	1,110	4-00	235		148	3-1	110		110
25.		1,250	5-55	1,250	4-20	275	3-45	148		110		110
26.	5-5	1,180		1,350		290	3-40	140	3-1	110	3-1	110
27.	5-5	1,180		1,450		300		135		110	3-0	100
28.	5-5	1,180	5-75	1,550	4-35	315		130	3-1	110		100
29.	5-8	1,620		1,450	4-30	300	3-25	125		110	3-0	100
30.	6-2	2,260		1,360	4-20	275	3-35	135		110		100
31.		2,400		1,270				138				100

MONTHLY DISCHARGE of Kicking Horse River at Field, for 1914.

(Drainage area, 130 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
June.....	2,180	560	1,500	11.5	12.8	89,300	
July.....	3,260	1,050	2,250	17.3	19.9	138,000	D
August.....	2,660	925	1,770	13.6	15.7	109,000	C
September.....	1,250	192	485	3.73	4.16	28,900	C
October.....	275	125	196	1.51	1.74	12,100	C
November.....	148	110	126	0.97	1.08	7,500	C
December.....	110	100	108	0.83	0.96	6,640	

KICKING HORSE RIVER NEAR NO. 2 TUNNEL (3013).

Location.—In township 28, range 18, west 5th, above mouth of Yoho river, immediately above C.P.R. bridge over the Kicking Horse between Nos. 1 and 2 tunnels, 5 miles east of Field. Revelstoke district.

Records Available.—July to October, 1912; April, 1913, to December, 1914.

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Climatic Conditions.—Similar to Field, with possibly a little more snow.

Gauge.—An enamel iron vertical staff gauge is used, and read twice daily by Mr. C. E. Hamilton, of Field. This gauge is situated immediately above C.P.R. bridge, between Nos. 1 and 2 tunnels.

Channel.—Channel is straight for 25 yards above and below the section. The control is not permanent.

Discharge Measurements.—Twelve measurements were made in 1912-13, and six in 1914. A shift occurred in 1914 and a new curve was plotted.

Accuracy.—The measuring section at high water is not very satisfactory. The control below the gauge is not permanent. The results, though probably within 20 to 25 per cent, are not guaranteed.

DISCHARGE MEASUREMENTS of Kicking Horse River, near No. 2 Tunnel, near Field, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 14.....	J. A. E.....	1,909	23	69	5.84	3.40	¹ 403
July 29.....	".....	1,909	20	51.1	5.16	1.95	¹ 264
Aug. 7.....	".....	1,909	18	57.8	5.16	2.15	¹ 300
Sept. 21.....	C. E. R.....	1,927	57	39.2	2.76	1.20	² 108
" 12.....	J. A. E.....	1,927	14	28.6	3.19	1.20	¹ 91.4
Oct. 16.....	".....	1,909	14	27.2	3.08	0.95	¹ 83.8

¹From C. P. R. bridge.

²Wading, different section.

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse, River near No. 2 Tunnel, near Field, B.C., for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	Gauge Height	Dis-charge.	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	0-8	23	0-8	23	0-7	15	0-7	15	1-4	90	2-25	216
2	0-8	23	0-8	23	0-7	15	0-7	15	1-4	90	2-55	266
2.	0-8	23	0-8	23	0-7	15	0-7	15		103	3-50	440
4	0-8	23	0-8	24	0-7	15	0-7	15	1-6	116	3-65	469
5	0-8	23	0-8	23	0-7	15	0-7	15	1-5	103	3-10	365
6	0-8	23	0-8	21	0-7	15	0-7	15	1-5	103	2 8	(2) 275
7	0-8	23	0-8	23	0-7	15	0-7	15	1-4	90	2-60	275
8	0-8	23	0-8	23	0-7	15	0-7	15	1-5	103	2-40	241
9	0-8	23	0-8	23	0-7	15	0-7	15	1-6	116	2-30	224
10	0-8	23	0-8	23	0-7	15	0-75	19	1-6	116	2-20	207
11	0-8	23	0-8	23	0-7	15	0-8	23	1-7	130	2-30	224
12	0-8	23	0-8	23	0-7	15	0-8	23	1-7	130	2-55	266
13	0-8	23	0-8	23	0-7	15	0-8	21	1-8	145	2-95	338
14	0-8	23	0-8	23	0-7	15	0-8	21	1-95	168	3-45	430
15	0-8	23	0-7	15	0-7	15	0-8	23	2-1	191	3-85	508
16	0-8	23	0-7	15	0-7	15	0-8	23	2-2	207	3-95	528
17	0-8	23	0-7	15	0-7	15	0-85	28	2-2	207	4-00	537
18	0-8	23	0-7	15	0-7	15	0-9	32	2-1	191	3-50	440
19	0-8	23	0-7	15	0-7	15	0-9	32	2-0	175	3-30	403
20	0-8	23	0-7	15	0-7	15	0-9	32	2-0	175	2-90	329
21	0-8	23	0-7	15	0-7	15	0-9	32	1-9	160	2-55	266
22	0-8	23	0-7	15	0-7	15	0-9	32	1-95	168	2-25	216
23	0-8	23	0-7	15	0-7	15	0-9	32	2-15	199	2-0	175
24	0-8	23	0-7	15	0-7	15	0-9	32	2-25	216	1-8	145
25	0-8	23	0-7	15	0-7	15	1-0	42	2-4	241	1-9	160
26	0-8	23	0-7	15	0-7	15	1-0	42	2-3	224	2-05	183
27	0-8	23	0-7	15	0-7	15	1-1	53	2-1	191	2-05	183
28	0-8	23	0-7	15	0-7	15	1-1	53	1-95	168	2-1	191
29	0-8	23	0-7	15	1-15	59	1-8	145	2-3	224
30	0-8	23	0-7	15	1-3	77	1-75	138	2-65	284
31	0-8	23	0-7	15	1-85	152

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near No. 2 Tunnel, Field, B.C., for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3-05	356	2-25	328	1-55	166	1-40	138	0-7	40	0-6	
2	3-3	403	2-35	356	1-45	147	1-40	138	0-7	40	0-6	31
3	3-5	440	2-35	356	1-45	147	1-30	121	0-7	49	0-6	31
4	3-5	440	2-4	367	1-45	147	1-30	121	0-7	40	0-6	31
5	3-25	394	2-1	290	1-45	147	1-20	105	0-7	40	0-6	31
6	3-2	384	2-1	290	1-30	121	1-20	105	0-7	49	0-6	31
7	3-1	365	2-15	362	1-30	121	1-15	98	0-6	31	0-6	31
8	2-9	329	1-65	254	1-30	121	1-25	113	0-6	31	0-6	31
9	2-85	320	1-7	197	1-30	121	1-30	121	0-6	31	0-6	31
10	3-05	356	1-55	166	1-20	105	1-25	113	0-6	31	0-6	31
11	3-05	356	1-6	176	1-25	113	1-1	90	0-6	31	0-6	31
12	3-2	384	1-6	176	1-20	105	1-1	90	0-6	31	0-6	31
13	3-4	421	1-7	197	1-10	90	1-1	90	0-6	31	0-6	31
14	3-35	412	1-8	219	1-10	90	1-0	76	0-6	31	0-6	31
15	3-35	412	1-8	219	1-00	76	1-0	76	0-6	31	0-6	31
16	2-75	302	1-75	208	1-00	76	1-0	76	0-6	31	0-6	31
17	2-45	250	1-75	208	0-90	63	1-0	76	0-6	31	0-6	31
18	2-45	250	1-75	208	0-90	63	1-0	76	0-6	31	0-6	31
19	2-65	284	1-75	208	1-20	105	1-0	76	0-6	31	0-6	31
20	3-00	347	1-85	230	1-25	113	0-9	63	0-6	31	0-5	24
21	2-40	367	1-9	242	1-25	113	0-9	63	0-6	31	0-5	24
22	2-65	278	2-1	290	1-20	105	0-8	51	0-6	31	0-4	19
23	1-85	230	1-9	242	1-15	98	0-8	51	0-6	31	0-4	19
24	1-90	242	1-75	208	1-30	121	0-8	51	0-6	31	0-4	19
25	2-00	265	1-7	197	1-30	121	0-8	51	0-6	31	0-4	19
26	1-95	254	1-7	197	1-45	147	0-8	51	0-6	31	0-4	19
27	1-85	230	1-7	197	1-85	230	0-8	51	0-6	31	0-4	19
28	1-9	242	1-7	197	1-65	186	0-7	40	0-6	31	0-4	19
29	1-95	254	1-7	197	1-45	147	0-7	40	0-6	31	0-4	19
30	1-95	254	1-70	197	1-40	138	0-7	40	0-6	31	0-4	19
31	2-25	328	1-65	186			0-7	40			0-4	19

MONTHLY DISCHARGE of Kicking Horse River, near Field, B.C., for 1914.

(Drainage area, 50 square miles.) No. 2 Tunnel.

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet
January	23	23	23-0	0-46	0-53	1,410
February	23	15	19-0	0-38	0-40	1,060
March	15	15	15-0	0-30	0-35	922
April	77	15	29-0	0-58	0-65	1,730
May	244	99	153-0	3-06	3-54	9,410
June	537	145	302	6-04	6-74	18,080
July	416	230	328	6-56	7-56	20,200
August	367	166	236	4-72	5-44	14,500
September	230	63	121	2-42	2-70	7,280
October	138	40	83-5	1-67	1-92	5,130
November	40	31	32-8	0-66	0-74	1,950
December	31	19	26-7	0-53	0-61	1,640

NO. 2 CREEK, NEAR FORSTER'S LANDING (3015).

Location.—No. 2 creek flows easterly into Columbia river from the Selkirk range, about 6 miles from Wilmer. The gauging station is located about 1 mile from the mouth, on the highway bridge on road from Wilmer to Forster's Landing.

Records Available.—June to October, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The precipitation at the mouth is similar to that at Wilmer, which from December 1, 1913, to November 30, 1914, was 15.5 inches. The summers are hot, cool nights, and very dry, almost semi-arid. The winters are about four and one-half months long, and, at times, very severe. In 1911 the temperature was as low as -33°F . Frazil ice is prevalent.

Gauge.—A staff gauge is used, and read by Mrs. Colin Mackay of Morinish Ranch, Wilmer.

Channel.—Not satisfactory. Water swift and broken. A new station has been established at the bridge on the upper road which will be used in 1915.

Discharge Measurements.—Four measurements were made in 1914, and thirteen in 1912 and 1913.

Accuracy.—Due to the poor section the measurements are not guaranteed.

DISCHARGE MEASUREMENTS of No. 2 Creeks, near Forsters' Landing, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 4	D. O. B. G.	1,048	35	69.8	5.25	0.25	366
June 19	J. A. E.	1,909	86.5	240	7.29	2.25	1,750
Aug 2	"	1,939	91.0	170	5.86	1.70	997
Oct. 22	"	1,939	33.0	79.2	2.07	1.0	164 ¹

¹New section.

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DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Forster's Landing,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....			0-0	216	0-8	530
2.....			0-1	252	1-0	620
3.....			0-3	328	1-6	967
4.....			0-2	290	2-0	1,380
5.....			0-2	290	1-5	895
6.....			0-1	252		760
7.....			0-2	290	1-0	620
8.....			0-1	252	-9	574
9.....			0-3	328	-8	530
10.....			0-3	328	-9	574
11.....			0-4	367	1-1	667
12.....			0-4	367	1-1	667
13.....			0-5	407	1-3	774
14.....			0-5	407	1-5	895
15.....			0-7	488	1-9	1,260
16.....			0-9	574	2-1	1,520
17.....	-0-2	145	0-8	530	2-4	1,980
18.....	-0-2	145	0-7	488	2-4	1,980
19.....	-0-2	145	0-7	488	2-0	1,380
20.....	-0-0	216	0-6	447	1-8	1,160
21.....	-0-1	180	0-6	447	1-6	967
22.....	-0-1	180	0-7	488	1-3	774
23.....	-0-1	180	0-7	488	1-1	667
24.....	-0-1	180	0-9	574	1-0	620
25.....	-0-1	180	1-0	620	1-3	774
26.....	-0-1	180	0-9	574	1-3	774
27.....	-0-1	180	0-7	488	1-3	774
28.....	-0-1	180	0-6	447	1-5	895
29.....	0-0	216	0-5	407	1-6	967
30.....	0-0	216	0-4	367	1-6	967
31.....			0-6	447		

DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Foster's Landing, for 1914.—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-7	1,060	1-7	1,060	0-7	488	0-3	328	0-1	252		
2	2-0	1,380	1-7	1,060	0-7	488	0-25	309	0-2	296		
3	2-3	1,820	1-8	1,160	0-8	530	0-2	290		290		
4	2-7	2,500	1-8	1,160	0-9	574		290	0-2	296		
5	2-75	2,590	1-5	895	0-8	530		290		270		
6	3-0	3,049	1-4	830	0-6	447	0-2	290	0-1	252		
7	2-4	1,980	1-9	1,260	0-7	488	0-2	290	0-1	252		
8	2-2	1,670	1-3	774	0-8	530		290	0-1	252		
9	2-2	1,670	1-0	620	0-5	467		290	0-0	216		
10	2-1	1,520	1-0	620	0-5	467		290		216		
11	2-1	1,520	1-1	667	0-5	407	0-2	290		216		
12	2-4	1,980	1-2	720	0-4	387	0-1	252	0-0	216		
13	2-8	2,680	1-1	667	0-5	407	0-2	290		216		
14	2-9	2,860	1-1	667	0-3	328	0-2	290		216		
15	3-1	3,220	1-1	667	0-3	328	0-1	252	0-0	216		
16	2-1	1,520	1-2	720	0-2	290	0-2	290		216		
17	2-0	1,380	1-0	620	0-4	367	0-2	290	0-0	216		
18	2-0	1,380	1-0	620	0-8	530	0-2	290	0-0	216		
19	2-0	1,380	1-05	646	0-4	367	0-2	290		200		
20	2-1	1,520	1-1	667	0-3	328	0-2	290		200		
21	1-8	1,160	1-0	620	0-3	328	0-1	252		190		
22	1-4	830	1-1	667	0-3	328	0-1	252		180		
23	1-4	830	0-9	574	0-3	328	0-1	252		170		
24	1-5	895	0-9	574	0-5	467	0-1	252		160		
25	1-5	895	0-8	530	0-5	467	0-1	252		150		
26	1-4	830	0-95	597	0-5	467	0-1	252		145		
27	1-4	830	0-9	574	0-5	467	0-1	252		145		
28	1-5	895	1-1	667	0-5	467	0-1	252		145		
29	1-4	830	0-9	574	0-5	467	0-1	252		145		
30	1-4	830	1-0	620	0-3	328	0-1	252		145		
31	1-7	1,060	0-8	530			0-2	290				

MONTHLY DISCHARGE of No. 2 Creek, near Forster's Landing, for 1914.

(Drainage area, 120 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
April	216		151	1-26	1-41	8,980
May	620	216	411	3-42	3-94	25,300
June	1,980	530	930	7-75	8-65	55,300
July	3,220	830	1,570	13-1	15-1	96,500
August	1,260	530	730	6-08	7-01	44,900
September	574	290	412	3-43	3-83	24,500
October	328	252	277	2-31	2-66	17,000
November	290		206	1-72	1-92	12,300

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SINCLAIR CREEK, NEAR SINCLAIR (3034).

Location.—At highway bridge on Golden to Windermere road. About 1 mile from mouth. Revelstoke district.

Records Available.—July 20 to December 31, 1914.

Climatic Conditions.—Summer is hot, with cool nights. Slightly more precipitation than at Invermere. The winter is of about four and one-half month's duration. Minimum temperature is as low as -40°F . The creek seldom freezes over.

Gauge.—Vertical staff gauge, read by Mr. J. A. McCullough.

Channel.—Sandy and shifting. Several shifts occurred from April to July, 1914.

Discharge Measurements.—Eight measurements were made in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—Owing to serious shifts in the channel the data cannot be guaranteed.

General.—Sinclair creek rises in the westerly slope of the Rockies and flows through Sinclair pass to Columbia river, into which it empties about 12 miles below Windermere lake. About $2\frac{1}{2}$ miles above the mouth it receives the waters of the Sinclair Hot Springs, which have a warming influence upon it. The use of the water of Sinclair creek is practically confined to irrigation. The drainage area is 30 square miles.

DISCHARGE MEASUREMENTS of Sinclair Creek, near Sinclair, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 18	O. J. B. (Prov.)		16-0	16-90	1-72	1-02	29-00
May 5	D. O. B. G.	1048	16-0	26-7	3-60	1-45	96-20
May 25	J. K. B. (Prov.)		16-0	27-54	4-93	1-70	135-80
June 25	J. A. E.	1939	18-0	34-0	4-21	2-45	143-00
July 21	O. J. B.		16-0	21-37	2-42	1-90	51-50
Aug. 3	J. A. E.	1969	16-0	18-90	2-07	1-80	30-30
Aug. 24	J. K. B. (Prov.)		16-0	16-72	1-80	1-62	30 10
Sept. 21	do do		16-7	17-84	2-04	1-74	36-40
Sept 28	O. J. B. (Prov.)		16-0	17-77	1-80	1-76	32-10

¹Marked shift in channel between April and July.

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DAILY GAUGE HEIGHT AND DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1-8	40-0	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3
2			1-7	33-2	1-6	27-0	1-7	33-2	1-67	31-5	1-5	21-3
3			1-8	40-0	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
4			1-8	40-0	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
5			1-8	40-0	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
6			1-7	33-2	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
7			1-8	40-0	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
8			1-8	40-0	1-6	27-0	1-7	33-2	1-67	31-5	1-5	21-3
9			1-7	33-2	1-6	27-0	1-7	33-2	1-67	31-5	1-5	21-3
10			1-7	33-2	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
11			1-7	33-2	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
12			1-7	33-2	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
13			1-7	33-2	1-5	21-3	1-7	33-2	1-67	31-5	1-5	21-3
14			1-7	33-2	1-5	21-3	1-7	33-2	1-65	30-1	1-5	21-3
15			1-7	33-2	1-5	21-3	1-7	33-2	1-65	30-1	1-5	21-3
16			1-7	33-2	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3
17			1-6	27-0	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3
18			1-6	27-0	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3
19	2-0	55-8	1-6	27-0	1-6	27-0	1-7	33-2	1-60	27-0	1-4	16-6
20	2-0	55-8	1-6	27-0	1-6	27-0	1-7	33-2	1-60	27-0	1-4	16-6
21	2-0	55-8	1-6	27-0	1-7	33-2	1-7	33-2	1-60	27-0	1-4	16-6
22	2-0	55-8	1-6	27-0	1-7	33-2	1-7	33-2	1-6	27-0	1-4	16-6
23	2-0	55-8	1-6	27-0	1-7	33-2	1-7	33-2	1-6	27-0	1-4	16-6
24	2-0	55-8	1-6	27-0	1-7	33-2	1-65	30-1	1-6	27-0	1-4	16-6
25	2-0	55-8	1-6	27-0	1-8	40-0	1-65	30-1	1-6	27-0	1-4	16-6
26	1-9	47-5	1-6	27-0	1-8	40-0	1-65	30-1	1-6	27-0	1-4	16-6
27	1-9	47-5	1-6	27-0	1-8	40-0	1-65	30-1	1-6	27-0	1-4	16-6
28	1-8	40-0	1-6	27-0	1-75	36-6	1-65	30-1	1-5	21-3	1-4	16-6
29	1-8	40-0	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3	1-4	16-6
30	1-8	40-0	1-6	27-0	1-7	33-2	1-65	30-1	1-5	21-3	1-4	16-6
31	1-8	40-0	1-6	27-0			1-65	30-1			1-4	16-6

MONTHLY DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

(Drainage area, 30 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
August	40	27	31-5	1-05	1-21	1,940
September	40	21-3	27-8	0-93	1-04	1,650
October	33-2	30-1	32-4	1-08	1-24	1,990
November	31-5	21-3	38-8	0-96	1-07	1,710
December	21-3	16-6	19-3	0-64	0-74	1,190

SPILLIMACHEEN RIVER, NEAR SPILLIMACHEEN (3019).

Location.—The station is located at highway bridge near mouth, about 4 miles from Spillimacheen. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913; April to December, 1914.

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Climatic Conditions.—The summer is generally hot and dry with cold nights. Winter is about four and a half months' duration, heavy snowfall and low temperatures (-40° F.). The river is generally frozen from November to April.

Gauge.—Vertical staff enamel gauge is used, and read two or three times a week by Mr. Jas. Montgomery.

Channel.—The channel is straight above and below the section for 50 yards. The control is a gravel bar, and there is a pronounced riffle at low water, 25 yards below the section.

Discharge Measurements.—Measurements are made from the downstream side of the highway bridge. In 1912, six measurements were made; in 1913, eight; and in 1914, three.

Accuracy.—Gauge readings are infrequent, the measuring section is good, there is a possibility of backwater from the Columbia at high water. These results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Spillimacheen River near Spillimacheen Landing, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 17.....	J. A. E.....	1909	135	670	8.88	3.3	5,920
July 31.....	".....	1909	124	585	5.84	2.45	3,430
Oct. 23.....	".....	1909	114	374	1.28	0.40	480

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DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge.	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	-0.2	200	.....	1,390	1.8	2,100
2	-0.2	200	.....	2,100	.....	3,600
3	-0.2	200	2.0	2,500	3.1	5,330
4	-0.2	200	.....	2,100	.....	4,500
5	-0.2	200	.....	1,450	.....	3,720
6	.....	200	1.4	1,450	2.2	2,980
7	.....	325	.....	1,590	.....	2,980
8	0.1	325	.....	1,750	2.2	2,980
9	.....	325	1.75	2,010	.....	2,860
10	.....	325	1.8	2,100	2.1	2,750
11	0.1	325	.....	2,100	.....	2,980
12	0.1	325	.....	2,200	.....	3,220
13	.....	375	1.85	2,200	2.4	3,480
14	.....	425	.....	2,300	2.9	4,780
15	0.4	500	.....	2,500	.....	5,330
16	.....	500	2.2	2,980	.....	5,330
17	.....	500	2.3	3,220	3.3	5,900
18	0.4	500	.....	2,980	.....	5,330
19	0.45	535	.....	2,500	.....	4,780
20	.....	575	1.9	2,300	2.7	4,240
21	.....	575	.....	2,500	2.8	4,500
22	0.55	615	.....	2,750	.....	3,980
23	.....	650	2.2	2,980	.....	3,480
24	.....	680	2.3	3,220	2.15	2,860
25	0.7	725	.....	2,980	.....	2,980
26	0.65	690	.....	2,750	.....	3,220
27	690	2.0	2,500	2.4	3,480
28	725	2,500	2.45	3,630
29	0.7	725	2,100	3,720
30	0.9	905	1.8	2,100	2.6	3,980
31	1.9	2,300

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DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		4,640		3,220		1,640		1,060	0-5	575		375
2	3-1	5,330	2-4	3,480	1-50	1,590		1,000		550	0-2	375
3		5,330		3,220		1,590	1-0	1,000		525		360
4	3-1	5,330		2,980		1,590	0-9	965	0-4	500		340
5	3-2	5,620	2-0	2,500	1-50	1,590		845		475	0-1	325
6		5,900		2,500	1-40	1,450		785		450	0-0	275
7		5,900		2,750		1,390	0-7	725	0-3	425		275
8	3-3	5,900	2-1	2,750		1,330		700	0-3	425		275
9		5,900	1-8	2,100		1,260		675		425	0-0	275
10		5,620		2,100	1-20	1,200	0-6	650		425		275
11		5,620		2,500		1,150	0-55	612	0-3	425		275
12	3-3	5,900	2-0	2,500	1-10	1,100		575		425	0-0	275
13		5,900		2,500	0-90	965		537		425	0-0	275
14		5,620		2,500		820	0-4	500	0-3	425		250
15	3-2	5,620	2-0	2,500		735		550	0-2	375		250
16		5,060	2-1	2,750	0-63	650		600		375		250
17		5,060		2,750		1,050	0-6	650		375		235
18	2-8	4,500		2,750		1,350	0-7	725	0-2	375		235
19	2-9	4,780	2-1	2,750	1-60	1,750		675		355		225
20		4,240		2,670	1-50	1,590		625		345		225
21		3,720		2,580		1,280	0-5	575	0-1	325		250
22	2-2	2,930	2-0	2,500		960		525	0-1	325		250
23		3,220	1-75	2,610	0-60	650		475		360		250
24		3,480		1,980		830	0-3	425		390		250
25	2-5	3,720		1,950		1,020		425	0-3	425		250
26	2-3	3,220	1-75	1,920	1-20	1,200		425		415		250
27		3,220		1,980	1-20	1,200	0-3	425		410		250
28		2,980		2,040		1,130		465	0-25	400		250
29		2,980	1-80	2,110		1,070		505	0-2	375		250
30	2-2	2,980	1-6	1,750	1-0	1,600		575		375		250
31		2,990		1,700			0-5	575				250

MONTHLY DISCHARGE of Spillimacheen River at Spillimacheen, for 1914.

(Drainage area, 580 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April	0-5	200	408-0	0-81	0-90	27,800	D
May	3,220	1,390	2,310	4-03	4-65	144,800	B
June	5,900	2,100	3,830	6-61	7-88	228,000	B
July	5,900	2,080	4,020	7-97	9-11	284,000	B
August	3,480	1,700	2,460	4-24	4-80	131,000	B
September	1,750	630	1,200	2-08	2-32	71,400	B
October	1,000	425	645	1-09	1-29	39,000	D
November	575	325	310	0-72	0-80	24,800	D
December	375		270	0-47	0-54	16,600	

TOBY CREEK, NEAR ATHALMER (3020).

Location.—One and one-half miles from Athalmer, 1 mile from mouth, on highway bridge on road from Athalmer to Wilmer.

Records Available.—June to September, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The climatic conditions at the mouth of Toby creek are similar to Invermere. The precipitation at Invermere from December 1, 1913, to November 30, 1914, was 13 inches. The summer days are hot and the evenings cool. The winters are about four months long, and at times very severe. The thermometer has gone as low as -40° F. Chinook winds occasionally strike the locality and a great change in temperature results. Toby creek remains frozen for about four months, and frazil ice is prevalent.

Gauge.—Vertical staff gauge is used and read daily by Mr. H. H. Peters, Cyderdale Ranch, Wilmer.

Channel.—The channel is straight above the section, but widens out below. Two channels are formed by a central pier in the bridge. The water is not at right angles to the bridge, and is swift.

Discharge Measurements.—Five measurements were made in 1912, nine in 1913, and three in 1914, from the highway bridge.

Accuracy.—Gauge readings are good, the measurements are not reliable, due to a possibility of backwater from the Columbia. Accuracy, 20 per cent.

DISCHARGE MEASUREMENTS of Toby Creek, near Athalmer, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 5.....	D. O'B. G.....	1048	160	316	2.00	1.20	631
June 19.....	J. A. E.....	1909	198	627	4.79	3.15	3,000
Oct. 22.....	".....	1909	185	159	1.87	0.6	298

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DAILY GAUGE HEIGHT AND DISCHARGE of Toby Creek, near Athalmer, for 1914.

Day.	April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			0.9	440	2.0	1,490
2			1.25	682	2.45	2,060
3			1.50	915	3.0	2,800
4			1.20	640	2.9	2,670
5			1.30	725	2.4	2,000
6			1.25	682	2.2	1,740
7			1.20	640	2.0	1,490
8			1.25	682	1.8	1,250
9			1.50	915	1.7	1,130
10			1.55	968	1.7	1,130
11			1.55	968	1.8	1,250
12			1.60	1,020	2.0	1,490
13			1.60	1,020	2.2	1,740
14			1.70	1,130	2.4	2,000
15			2.20	1,740	2.9	2,670
16	0.75	370	2.30	1,870	3.2	3,080
17	0.75	370	2.10	1,610	3.4	3,363
18	0.75	370	2.10	1,610	3.2	3,080
19	0.90	440	1.95	1,430	3.0	2,800
20	0.9	440	1.90	1,370	2.8	2,530
21	0.9	440	1.93	1,370	2.4	2,000
22	0.9	440	1.90	1,370	2.35	1,940
23	0.85	415	1.93	1,370	2.10	1,610
24	0.85	415	2.00	1,490	2.0	1,490
25	0.75	370	1.90	1,370	2.1	1,610
26	0.75	370	1.85	1,310	2.05	1,550
27	0.75	370	1.8	1,250	2.0	1,490
28	0.75	370	1.7	1,130	2.05	1,550
29	0.75	370	1.6	1,020	2.2	1,740
30	0.8	390	1.55	967	2.5	2,130
31			1.7	1,130		

DAILY GAUGE HEIGHT AND DISCHARGE of Toby Creek, near Athalmer,
for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge.	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2-7	2,390	2-5	2,130	1-3	725	0-70	350	0-7	350
2	2-9	2,670	2-5	2,130	1-2	640	0-70	350	0-7	350
3	3-2	3,080	2-2	1,740	1-3	725	0-70	350	0-65	335
4	3-1	2,949	2-25	1,800	1-35	772	0-70	350	0-60	320
5	3-25	3,150	2-2	1,740	1-5	915	0-70	350	0-6	320
6	3-2	3,080	2-3	1,870	1-35	772	0-70	350	0-60	320
7	3-2	3,080	2-4	2,000	1-30	725	0-70	350	0-55	305
8	3-1	2,940	1-7	1,130	1-20	640	0-70	350	0-55	305
9	3-0	2,800	1-5	915	1-0	500	0-70	350	0-55	305
10	2-85	2,630	1-4	820	0-90	440	0-70	350	0-55	305
11	3-15	3,010	1-5	915	1-00	500	0-70	350	0-55	305
12	3-3	3,220	1-9	1,370	1-00	500	0-70	350	0-50	290
13	3-4	3,360	2-0	1,490	0-85	415	0-65	335	0-50	290
14	3-3	3,220	2-0	1,490	0-80	390	0-70	350	0-50	290
15	2-9	2,670	1-95	1,430	0-70	350	0-70	350	Freeze- up.	280
16	2-5	2,135	1-9	1,370	0-80	390	0-70	350		270
17	2-5	2,130	1-5	915	0-70	350	0-65	335		260
18	2-7	2,390	1-5	915	0-80	390	0-65	335		250
19	3-05	2,870	1-7	1,130	0-70	350	0-65	335		250
20	2-6	2,260	1-5	915	0-70	350	0-65	335		250
21	2-1	1,610	1-7	1,130	0-70	350	0-60	320		240
22	1-9	1,370	1-5	915	0-70	350	0-60	320		240
23	1-9	1,370	1-5	915	0-70	350	0-55	305		240
24	1-9	1,370	1-35	772	0-70	350	0-55	305		240
25	1-9	1,370	1-5	915	0-70	350	0-55	305		240
26	2-0	1,490	1-45	867	0-70	350	0-55	305		230
27	2-1	1,610	1-5	915	0-75	370	0-55	305		250
28	2-1	1,610	1-35	772	0-70	350	0-60	320		230
29	1-9	1,370	1-35	772	0-70	350	0-60	320		220
30	2-15	1,680	1-3	725	0-70	350	0-70	350		210
31	2-2	1,740	1-3	725			0-70	350		

MONTHLY DISCHARGE of Toby Creek near Athalmer for 1914.

(Drainage area, 180 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
June	1,870	440	1,120	6-23	7-18	68,900
July	3,360	1,130	1,960	10-9	12-2	117,000
August	3,360	1,370	2,340	13-0	15-0	144,000
September.	2,130	725	1,210	6-72	7-75	74,400
October..	915	350	479	2-66	2-97	28,500
November	350	305	336	1-87	2-16	20,700
December..	350	...	276	1-53	1-71	16,400

Accuracy "C".

NORTH VERMILION CREEK, NEAR EDGEWATER (3032).

Location.—The station is about 200 yards above the Golden-Windermere highway bridge. Revelstoke district.

Records Available.—April 15, to September 30, 1914.

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Climatic Conditions.—Similar to South Vermilion creek.

Gauge.—Vertical staff gauge at measuring section. Read during 1914 by Mrs. S. B. Harrison.

Channel.—Clean and gravelly. Not subject to shifts.

Discharge Measurements.—Seven measurements were made in 1914, by wading.

Co-operation.—The station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The data should be within 15 per cent.

General.—North Vermilion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. This creek drains an area of about 20 square miles. The water of North Vermilion creek is utilized by the Columbia Valley Orchards, Ltd., for irrigation.

DISCHARGE MEASUREMENTS of North Vermilion Creek, near Edgewater, for 1914.

Date.	Hydrographer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914							
April 18	O. J. B. (Prov.)		13.0	8.85	2.38	0.70	21.10
May 6	D. O' B. G.	1048	14.0	16.7	4.00	1.30	66.70
May 26	J. K. B. (Prov.)		15.2	27.7	5.04	1.95	139.10
June 17	J. A. E.	1909	24.0	45.0	6.53	2.80	294.00 ¹
July 27	O. J. B. (Prov.)		13.0	16.05	3.71	1.25	59.80
Aug. 24	J. K. B. (Prov.)		13.7	13.21	2.63	1.00	34.80
Sept. 29	O. J. B. (Prov.)		13.0	13.32	3.32	1.15	44.30

¹Different section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of North Vermilion creek, near Edgewater, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		5-0		44-2	2-3	195-0	2-3	195-0		49-9	0-9	30-4
2		6-0	1-2	52-4		252-0		232-0	1-15	48-3		30-4
3		6-0	1-6	93-4	2-9	315-0	2-7	273-0		48-3	0-9	30-4
4		6-0		82-2		284-0		304-0	1-15	48-3		30-4
5		7-0	1-3	62-0	2-6	252-0	3-0	337-0		49-9	0-9	30-4
6		7-0	1-30	62-0		222-0		348-0	1-2	52-4		30-4
7		7-0	1-25	57-2	2-3	185-0	3-1	360-0		48-3	0-9	30-4
8		8-0		67-0		178-0		326-0	1-1	44-2		30-4
9		8-0	1-4	72-0	2-1	162-0	2-8	294-0		44-2	0-9	30-4
10		8-0	1-5	£2 2		170-0		273-0	1-1	44-2		30-4
11		9-0		84-4	2-2	178-0	2-6	252-0		44-2	0-85	27-8
12		9-0	1-55	87-8		186-0		186-0	1-1	44-2		28-8
13		9-0		93-4	2-3	195-0	1-9	152-0		40-6	0-90	30-4
14	0-3	9-0	1-65	99-2		232-0		118-0	1-0	37-0		30-4
15		11-0		112-0	2-7	273-0	1-7	105-0		37-0	0-90	30-4
16		13-6	1-9	132-0		298-0		105-0	1-0	37-0		31-7
17		16-8	2-2	178-0	2-95	326-0	1-7	105-0		37-0	0-95	33-7
18		20-6		162-0		326-0		99-2	1-0	37-0		33-7
19		25-2		146-0	2-95	326-0	1-6	93-4		37-0	0-95	33-7
20	0-9	30-4	1-9	132-0		337-0		77-1	1-0	37-0	1-00	37-0
21	0-9	30-4		139-0	3-05	348-0	1-3	62-0		37-0		35-0
22		27-8	2-0	146-0		326-0		62-0	1-0	37-0	0-95	33-7
23	0-8	25-2		170-0	2-85	304-0	1-3	62-0		37-0		31-7
24		30-4	2-3	195-0		246-0		62-0	1-0	37-0	0-9	30-4
25	1-0	37-0		170-0	2-3	195-0	1-3	62-0		37-0		30-4
26		37-0	1-95	139-0		170-0		57-2	1-0	37-0	0-9	30-4
27		37-0		122-0	2-0	146-0	1-2	52-4		35-0	1-1	44-2
28	1-0	37-0	1-7	105-0		154-0		48-3	0-95	33-7		40-0
29		37-0		105-0	2-1	162-0	1-1	44-2		31-7		40-0
30	1-0	37-0	1-7	105-0		178-0		48-3	0-90	30-4		30-0
31			1-75	112-0			1-2	52-4		30-4		

MONTHLY DISCHARGE of North Vermilion Creek near Edgewater, for 1914.

(Drainage area, 20 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
April.....	37-0		18-6	0-93	1-04	1,110	.....
May.....	195-0	44-2	110-0	5-50	6-34	6,760	D
June.....	348-0	146-0	238-0	11-9	13-3	14,200	D
July.....	360-0	44-2	156-0	7-80	8-99	9,590	D
August.....	52-4	30-4	40-3	2-02	2-33	2,480	C
September.....	44-2	27-8	32-2	1-61	1-80	1,920	C

SOUTH VERMILION CREEK, NEAR EDGEWATER (3033).

Location.—The station on South Vermilion creek is about 40 feet above the highway bridge of the Golden-Windermere road, and about one-half mile above the mouth. Revelstoke district.

Records Available.—April to September, 1914.

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Climatic Conditions.—Summer is hot, with cold nights. Precipitation is about the same as that of Golden. Winter is of about four and one-half months duration. Minimum temperature about -40° F.

Gauge.—Vertical staff gauge, read in 1914 by Mr. A. Braisher, driver of Rocky Mountain mail stage.

Channel.—Gravelly, and does not seem subject to shifts.

Discharge Measurements.—Eight measurements were made in 1914, by wading.

Co-operation.—This station was maintained in 1914 by co-operation with the Provincial Water Rights Branch.

Accuracy.—Data should be within 20 per cent.

General.—South Vermillion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. It drains an area of about 10 square miles. The use of the creek is confined to irrigation.

DISCHARGE MEASUREMENTS of South Vermilion Creek, near Edgewater, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
April 18.	O. J. B. (Prov.).....		14.6	7.50	1.58	0.40	11.90
May 6 " 25.....	D. O'B. G..... J. K. B. (Prov.).....	1,048	14.5 15.0	12.30 15.64	2.59 4.16	0.60 0.95	31.90 65.20
June 21.....	J. A. E.....	1,909	14.5	22.40	4.78	1.20	107.00
July 27.....	O. J. B. (Prov.).....		14.0	11.95	2.77	0.79	33.10
Aug. 3..... " 24.....	J. A. E..... J. K. B. (Prov.).....	1,909	14.5 14.5	12.80 11.69	2.74 1.90	0.70 0.55	35.20 22.20
Sept. 30.....	".....		14.0	9.53	2.08	0.58	19.80

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of South Vermilion Creek, near Edgewater, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		6-0	0-75	43-8		75-0	1-2	105-0	0-7	38-2	0-55	23-6
2		6-0	0-7	38-2	1-10	89-6		105-0		38-2		23-6
3		6-0		36-2		116-0	1-2	105-0	0-7	38-2	0-55	23-6
4		6-0		34-2	1-45	145-0		100-4		35-2		21-0
5		6-0	0-65	33-1		126-0	1-15	97-3	0-65	33-1	0-50	19-2
6		6-0		31-1	1-20	105-0		92-7		33-1	0-50	19-2
7		6-0	0-6	28-1	1-10	89-6	1-1	89-6		33-1		19-2
8		7-0		30-1		85-2		89-6	0-65	33-1	0-50	19-2
9		7-0	0-65	33-1	1-05	82-3		75-0		30-1		19-2
10		7-0	0-75	43-8		88-1	1-0	75-0	0-6	28-1	0-50	19-2
11		8-0		41-5	1-12	92-7	0-95	68-3		28-1		20-1
12		8-0	0-72	40-4		98-8	0-95	68-3	0-6	28-1	0-52	21-0
13		8-5		44-9	1-2	105-0		82-3	0-65	33-1	0-50	19-2
14	0-35	8-55	0-8	49-2	1-35	129-0	1-15	97-3	0-6	28-1		19-2
15		9-73		64-3		137-0		83-8	0-6	28-1	0-50	19-2
16	0-4	11-5	1-05	82-3	1-45	145-0	0-97	71-0		28-1	0-52	21-0
17		11-5	1-0	75-0		145-0		68-3	0-6	28-1		21-9
18	0-4	11-5		72-3	1-45	145-0		65-6		25-4	0-55	23-6
19	0-45	15-3	0-95	68-3		137-0	0-90	61-6	0-55	23-6		26-3
20		17-7		64-3	1-35	129-0		61-6		23-6	0-60	28-1
21	0-50	19-2	0-9	61-6	1-20	105-0	0-90	61-6	0-55	23-6		28-1
22		16-9		61-6		97-3	57-9	57-9	0-55	23-6	0-59	27-2
23	0-45	15-3	0-9	61-6	1-10	89-6	0-85	55-4		23-6		26-3
24		15-3	0-95	68-3		94-2		61-6	0-55	23-6	0-58	26-3
25	0-45	15-3		68-3	1-15	97-3	0-95	68-3		23-6		25-4
26	0-5	19-2	0-95	68-3		97-3	0-8	49-3	0-55	23-6	0-57	25-4
27		19-2		64-3	1-15	97-3		49-3		23-6		25-0
28	0-5	19-2	0-88	59-1	1-10	89-6	0-8	49-3		23-6		23-0
29		21-0		54-2		91-1		47-1		23-6		21-0
30	0-55	23-6	0-8	49-3	1-12	92-7	0-75	43-8	0-55	23-6		20-0
31			0-9	61-6				40-4		23-6		

MONTHLY DISCHARGE of South Vermilion, near Edgewater, for 1914.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches	Total in acre-feet.
					in Drainage area.	
March	23-6		11-9	1-19	1-33	708
April	82-3	28-1	52-6	5-26	6-06	3,230
May	145-0	82-3	107-0	10-7	11-9	6,370
June	105-0	40-4	72-4	7-24	8-35	4,450
July	38-2	23-6	28-2	2-82	3-25	1,730
August	28-1	19-2	22-5	2-25	2-51	1,340

Accuracy "D".

WINDERMERE CREEK, NEAR WINDERMERE (3055).

Location.—The station is about 5 miles from the mouth, and above Tegart's diversion. It is about 7 miles from the town of Windermere, Revelstoke district.

Records Available.—April 1 to September 30, 1914.

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Climatic Conditions.—Same as Invermere. (See Toby creek.)*Gauge.*—Vertical staff gauge at station. Read tri-weekly by Mr. Lloyd Tegart.*Channel.*—Broken gravelley, and subject to shifts.*Discharge Measurements.*—Four in 1913; six in 1914, by wading.*Co-operation.*—Station maintained in 1914 by co-operation with the Provincial Water Rights Branch.*Accuracy.*—Results on Windermere creek are not guaranteed.*General.*—Windermere creek flows from the westerly slope of the Rockies, rising in Tegart's pass and flowing to Windermere lake, draining an area of 15 square miles. It is practically all used for irrigation and domestic purposes.

DISCHARGE MEASUREMENTS of Windermere Creek, near Windermere, B.C., for 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913.							
Sept. 26.....	O. J. B. (Prov.).....	6,018	.....	6.50	3.14	0.60	20.4
Nov. 7.....	".....	6,018	.....	5.42	3.23	0.50	17.5
July 22.....	".....	6,018	.....	8.30	3.08	0.60	25.6
1914.							
April 14.....	O. J. B. (Prov.).....	6,018	10.0	4.74	2.60	0.43	12.3
May 12.....	".....	6,018	10.0	5.06	3.30	0.48	16.7
June 20.....	J. A. E.....	1,969	13.0	13.7	4.46	1.15	61.1
July.. 28.....	O. J. B. (Prov.).....	6,018	13.5	9.4	3.38	0.77	31.8
Aug. 26.....	J. K. Bell (Prov.).....	6,018	14.4	9.3	3.60	0.70	33.4
Sept. 30.....	".....	6,018	12.3	7.5	3.30	0.70	24.9

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DAILY GAUGE HEIGHT AND DISCHARGE of Windermere Creek, near Windermere, for 1914.

DAY.	April.		May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1		12-0		15-3	1-1	57-2		54-4		38-8		29-8
2		12-0		15-2		69-1	1-07	54-9	0-85	38-8	0-72	30-1
3		13-0		15-1	1-4	81-0		54-9		38-8		31-0
4		13-0	0-45	15-0		77-8		54-9	0-85	38-8	0-75	32-0
5	0-42	13-5		15-3	1-32	74-6	1-07	54-9		37-6	0-80	35-3
6		13-5		15-6		71-8		51-8		36-5		35-3
7		13-5	0-47	15-9	1-25	69-0		48-8	0-80	35-3	0-80	35-3
8	0-42	13-5		16-3		69-1	0-95	45-8		35-3		37-0
9		13-5		16-7	1-1	57-2		46-2	0-80	35-3	0-85	38-8
10		13-5		17-0		63-1		46-6		35-3		38-8
11		13-5	0-50	17-4	1-25	69-0		47-0	0-80	35-3		38-8
12	0-42	13-5		18-0		69-0	0-97	47-3		35-3	0-85	38-8
13		14-0		18-5	1-25	69-0		47-3		35-3		38-8
14		14-0	0-53	19-0	1-3	73-0		47-3	0-80	35-3	0-85	38-8
15	0-44	14-5		21-8		71-6	0-97	47-3		32-0		39-1
16		14-7	0-63	24-6		70-3		46-1	0-70	28-8		39-6
17		14-9	0-75	32-0	1-25	69-0		44-8		28-8	0-87	40-1
18		15-1		30-4		67-0		43-5	0-70	28-8		41-2
19	0-46	15-4	0-70	28-8	1-2	65-0	0-90	42-2	0-70	28-8	0-90	42-2
20		15-6		28-8	1-1	57-2	0-90	42-2		28-8		40-5
21		15-8	0-70	28-8		52-2		39-5		28-8		38-8
22	0-47	15-9		30-4		47-2	0-82	36-7	0-70	28-8		37-2
23		15-8	0-75	32-0	0-9	42-2		38-5		28-8		35-6
24		15-6		33-7		44-6		40-3		28-8	0-88	34-0
25		15-5	0-80	35-5		47-0	0-90	42-2	0-70	28-8		34-0
26	0-46	15-4		34-7	1-0	49-5		42-2		28-8		34-0
27		15-4		34-0		50-8	0-90	42-2	0-70	28-8	0-88	34-0
28		15-4	0-77	33-4		52-1		41-4		28-8		33-6
29	0-46	15-4		32-7	1-05	53-4		40-5	0-70	28-8		33-2
30		15-4	0-75	32-0		53-9		39-6		29-1	0-66	32-7
31				44-6			0-85	38-8		29-5		

MONTHLY DISCHARGE of Windermere Creek, near Windermere, for 1914.

MONTH.	DISCHARGE, IN SECOND-FEET.				RUN-OFF.		
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
March		15-9		14-4	0-96	1-07	857
April		35-3	15-0	24-8	1-65	1-90	1,520
May		61-0	42-2	61-9	4-13	4-61	3,680
June		58-9	36-7	45-5	3-03	3-49	2,800
July		38-8	28-8	32-4	2-16	2-49	1,990
August		42-2	29-8	36-3	2-42	2-70	2,160

BULL RIVER, NEAR MOUTH (3039).

Location.—At mouth, near Bull River settlement, 6 miles from Wardner, in south-east Kootenay, Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—The summers are hot and dry. The winters are very severe, with a light snowfall in the lower altitudes. Ice conditions exist generally

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from some time in November till about the first of April. During this period extreme low flow may be anticipated, and frazil ice is to be expected.

Gauge.—A vertical staff gauge, situated about 100 yards below Bull River Lumber Company's (C.P.R.) dam, one-quarter mile from Bull river and 1 mile from the mouth.

Channel.—Channel is straight for 100 yards above and below the gauge.

Discharge Measurements.—Nine well-distributed measurements were made from the railway bridge in 1914.

Accuracy.—The channel at the measuring section shifted considerably during June and possibly the first week in July. The daily gauge readings are reliable. The results during May, June, and July, are considered to be within 20 per cent, and after July, 10 per cent.

General.—Bull river is a stream about 30 miles long. It rises in the Rockies, amongst peaks from 8,000 to 10,000 feet above sea-level, and flows generally in a southwesterly direction through various canyons and over shifting gravel beds into the Kootenay, near the settlement of Bull river, 6 miles from Wardner, B.C. The stream generally is from 30 to 150 feet wide, but about 6 miles from the mouth it is confined in a deep rock canyon, in places not over 15 feet in width at the top. This canyon extends for about 400 feet, and in this distance the river drops 175 feet, about half of this being a perpendicular fall 100 feet from the head of the canyon. A little over 1 mile from the mouth the river is controlled by the Bull River Lumber Company's dam, built to form a pond for logs.

A company owns timber limits towards the source of the stream, and every year this company has been driving logs down the river to their mill near the mouth, where the logs are sawn into ties.

Some seven or eight years ago a company commenced the installation of a hydro-electric development at the above mentioned canyon, about 6 miles from the mouth. A cedar flume, 16 feet by 8 feet, and some 10,000 feet in length was constructed. By means of this flume a head of about 250 feet was obtained. The installation has not been completed to date, in fact practically nothing has been done since the flume was constructed.



Cranbrook District (V)—Bull river looking up from metering section.

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DISCHARGE MEASUREMENTS of Bull River, at Mouth, for 1914.

Date.	Hydrographer.	Meter No.	Width.		Mean Velocity	Gauge Height	Discharge.
			Feet.	Sq. ft.			
Apr. 28.....	H. B. H. & C. E. R.....	1048	94	502	3.78	2-02	1,870
May 15.....	D. O. B. Gill.....	1048	122	677	7-01	4-10	4,880 ¹
June 6.....	" ".....	1048	121	678	6-19	3-50	3,770 ¹
" 15.....	" ".....	1048	121	642	7-04	4-10	4,980 ¹
July 30.....	D. O. B. G. & R. H. H.....	1929	79	388	3-39	1-36	1,310
" 26.....	" ".....	1929	94	442	3-16	1-40	1,460
Oct. 8.....	" ".....	1929	94-5	425	1-60	0-74	685
" 13.....	" ".....	1929	94-5	419	1-59	0-70	668
Dec. 17.....	J. A. E. & C. B. C.....	1909	37	117	1-19	.....	141. ²

¹ Soundings incorrect.² Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	2-4	2,600	3-9	4,660
2.....	3-4	3,950	4-7	5,830
3.....	4-0	4,800	5-5	7,060
4.....	3-6	4,230	5-2	6,590
5.....	3-0	3,390	.....	5,340
6.....	2-7	2,990	3-5	4,090
7.....	2-4	2,600	3-4	3,950
8.....	2-4	2,600	2-9	3,250
9.....	3-3	3,810	2-4	2,600
10.....	3-3	3,810	2-4	2,600
11.....	3-3	3,810	2-5	2,730
12.....	3-0	3,390	2-8	3,120
13.....	3-3	3,810	3-2	3,660
14.....	3-6	4,230	3-7	3,990
15.....	4-1	4,940	4-1	4,940
16.....	4-3	5,230	4-3	5,230
17.....	4-2	5,080	4-4	5,380
18.....	4-2	5,080	5-1	6,440
19.....	3-95	4,730	4-6	5,680
20.....	3-8	4,510	4-1	4,940
21.....	3-3	3,810	3-4	3,950
22.....	3-5	4,090	3-1	3,520
23.....	3-4	3,950	2-7	2,990
24.....	3-8	4,510	2-4	2,600
25.....	3-9	4,660	3-0	3,390
26.....	3-6	4,230	3-0	3,390
27.....	3-4	3,950	2-9	3,250
28.....	2-0	2,100	3-0	3,390
29.....	1-9	1,970	2-7	2,990
30.....	2-0	2,100	2-6	2,860
31.....	3-1	3,520

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DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	3-2	3,660	1-3	1,290	0-50	475	0-7	665	1-9	1,970	0-6	570
2.	3-4	3,950	1-3	1,296	0-50	475	0-9	860	2-1	2,220	0-6	570
3.	3-4	3,950	1-3	1,290	0-40	390	0-9	860	1-7	1,740	0-6	570
4.	3-5	4,090	1-2	1,180	0-40	390	0-9	850	1-7	1,740	0-5	475
5.	3-4	3,950	1-1	1,070	0-40	390	0-8	760	1-9	1,970	0-5	475
6.	3-3	3,810	1-0	960	0-40	390	0-8	760	1-7	1,740	0-6	570
7.		3,640	1-0	960	0-40	390	0-7	665	1-7	1,740	0-4	390
8.		3,400	1-0	960	0-50	475	0-7	665	1-5	1,510	0-4	390
9.		3,200	0-9	860	0-50	475	0-7	665	1-3	1,290	Frozen.	
10.		3,000	0-9	860	0-50	475	0-7	665	1-3	1,290		
11.	2-6	2,860	0-8	760	0-50	475	0-7	665	1-3	1,290		
12.	2-5	2,730	0-8	760	0-50	475	0-7	665	1-2	1,180		
13.	2-7	2,990	0-8	760	0-50	475	0-7	665	1-2	1,180		
14.	2-5	2,730	0-8	760	0-50	475	0-8	760	1-0	960		
15.	2-5	2,730	0-8	760	0-50	475	1-0	960	0-7	665		
16.	2-4	2,670	0-8	760	0-50	475	1-1	1,070	0-6	570		
17.	2-1	2,220	0-8	760	0-60	570	1-1	1,070	0-6	570		
18.	2-1	2,220	0-9	860	0-70	665	1-1	1,070	0-6	570		
19.	2-0	2,100	0-7	665	1-60	1,620	1-5	1,510	0-6	570		
20.	2-0	2,100	0-7	665	1-20	1,180	1-4	1,400	0-8	760		
21.	1-9	1,970	0-7	665	1-00	960	1-2	1,180	0-8	760		
22.	1-7	1,740	0-7	665	0-90	860	1-0	960	0-7	665		
23.	1-5	1,510	0-7	665	1-00	960	0-9	860	0-7	665		
24.	1-5	1,510	0-7	665	1-00	960	0-9	860	0-6	570		
25.	1-5	1,510	0-6	570	1-00	960	0-9	860	0-6	570		
26.	1-5	1,510	0-6	570	1-00	960	0-9	860	0-9	860		
27.	1-5	1,510	0-6	570	1-20	1,180	0-8	760	0-7	635		
28.	1-5	1,510	0-6	570	1-00	960	0-8	760	0-7	665		
29.	1-4	1,430	0-6	570	0-90	860	0-8	760	0-6	570		
30.	1-3	1,290	0-6	570	0-80	760	0-8	760	0-6	570		
31.	1-3	1,290	0-5	475			1-0	960				

MONTHLY DISCHARGE of Bull River, at Mouth, for 1914.

(Drainage Area, 420 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area.	Total in acre-feet	
May	5,230	2,600	3,920	9.33	10.8	241,000	D
June	7,060	2,600	4,190	9.98	11.2	249,000	D
July	1,093	1,120	2,410	5.74	6.62	148,000	D
August	1,290	475	800	1.90	2.19	49,190	B
September	1,620	390	688	1.64	1.83	40,900	B
October	1,510	665	866	2.06	2.37	53,200	B
November	2,220	570	1,070	2.55	2.84	63,670	B

CHERRY CREEK, NEAR WASA (3038).

Location.—About 1 mile above the mouth, near Wasa, in south-east Kootenay. Cranbrook district.

Records Available.—May to November, 1913; May to September, 1914.

Climatic Conditions.—Summers hot and dry, winters severe (as low as $-50^{\circ}\text{F}.$) with a light snowfall. Generally similar to Cranbrook (see St. Marys river).

Gauge.—Vertical staff gauge, marked in feet and inches, located on highway bridge about 1 mile from mouth.

Channel.—Channel is regular and affords a good measuring section. Slight shifts are possible.

Discharge Measurements.—Discharges from May to June 30, 1913, were plotted from a curve based on measurements made by Mr. H. B. Hicks, District Engineer, Provincial Water Rights Branch. The 1914 curve was plotted from five discharge measurements made in 1914 after June 30. Measurements made in 1913 after June 30 fit on the 1914 curve, so 1913 discharges after June 30 were plotted from the 1914 curve.

Accuracy.—1913, 20 per cent; 1914, 10 per cent and 15 per cent.

Co-operation.—During 1914 this station was maintained by co-operation with the Provincial Water Rights Branch.

General.—Cherry creek is a small tributary of the Kootenay, flowing in from the right near Wasa in southeast Kootenay. The drainage area, as taken from the only available maps, appears in the neighbourhood of 80 square miles. The stream is used for irrigation.

DISCHARGE MEASUREMENTS of Cherry Creek, near Wasa, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 28.....	D. O. B. G., R. H. H.....	1530	16.5	32.8	4.61	1.133	152
July 15.....	R. H. H. (Prov.).....		16.5	30.2	3.05	0.958	92.2
July 24.....	D. O. B. G.....	1929	16.5	24.2	2.34	0.604	56.7
Aug. 31.....	H. B. H. (Prov.).....		16.5	13.7	1.18	0.662	16.2
Sept. 25.....	" ".....		16.5	16.3	1.37	0.229	22.3

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DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

Day.	May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Inches.	Sec.-ft.	Inches.	Sec.-ft.
1.....		40-0	26-5	353-0
2.....		45-0	27-2	370-0
3.....		50-0	26-2	346-0
4.....		55-0	27-0	365-0
5.....		60-0	27-0	365-0
6.....	9-5	65-0	26-5	353-0
7.....	10-5	75-0	25-0	318-0
8.....	12-5	97-0	24-0	295-0
9.....	13-25	106-0	25-5	329-0
10.....	15-5	137-0	26-2	346-0
11.....	17-0	160-0	26-0	341-0
12.....	16-5	152-0	26-0	341-0
13.....	16-5	152-0	23-0	273-0
14.....	15-5	137-0	22-5	262-0
15.....	15-0	130-0	22-0	252-0
16.....	15-0	130-0	21-0	232-0
17.....	15-0	130-0	17-0	160-0
18.....	15-0	130-0	14-5	123-0
19.....	14-0	116-0	14-0	116-0
20.....	13-0	103-0	13-5	109-0
21.....	13-0	103-0	15-0	130-0
22.....	15-0	130-0	14-5	123-0
23.....	15-0	130-0	14-5	123-0
24.....	17-25	164-0	14-0	116-0
25.....	22-0	252-0	14-5	123-0
26.....	24-0	295-0	14-5	123-0
27.....	24-0	295-0	14-0	116-0
28.....	24-0	295-0	16-0	144-0
29.....	23-0	273-0	14-5	133-0
30.....	24-2	300-0	14-0	116-0
31.....	24-0	295-0		

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

DAY.	July.		August.		September.		October.		November.	
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	13.7	119.0	4.75	34.0	3.75	28.5	3.0	24.0	1.5	18.0
2	14.5	131.0	4.75	34.0	4.0	30.0	3.0	24.0	1.5	18.0
3	13.75	120.0	4.75	34.0	3.5	27.0	3.0	24.0	1.5	18.0
4	13.5	116.0	4.5	32.5	3.25	25.5	3.0	24.0	1.5	18.0
5	13.75	120.0	4.0	30.0	3.0	24.0	3.0	24.0	1.5	18.0
6	13.0	110.0	4.0	30.0	3.0	24.0	3.0	24.0	1.5	18.0
7	12.5	102.0	4.0	30.0	3.0	24.0	3.0	24.0	1.5	18.0
8	12.0	97.0	4.0	30.0	3.5	27.0	3.0	24.0	1.5	18.0
9	12.0	97.0	4.0	30.0	3.0	24.0	3.0	24.0	1.5	18.0
10	11.0	85.0	4.0	30.0	3.0	24.0	3.0	24.0	1.5	18.0
11	11.0	85.0	4.0	30.0	3.0	24.0	3.0	24.0	2.0	20.0
12	10.0	75.0	4.0	30.0	3.0	24.0	3.0	24.0	2.0	20.0
13	10.0	75.0	4.0	30.0	3.0	24.0	3.0	24.0	2.0	20.0
14	10.0	75.0	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
15	9.25	67.5	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
16	9.0	65.0	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
17	8.0	56.0	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
18	7.5	52.5	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
19	7.0	49.0	4.0	30.0	3.0	24.0	3.5	27.0	2.0	20.0
20	7.0	49.0	4.0	30.0	3.0	24.0	3.0	24.0	1.0	16.0
21	7.0	49.0	4.5	32.5	3.0	24.0	3.0	24.0	.....	16.0
22	7.0	49.0	4.0	30.0	3.0	24.0	3.0	24.0	.....	16.0
23	6.0	42.0	4.0	30.0	3.5	27.0	2.0	20.0	.....	16.0
24	6.0	42.0	4.0	30.0	3.5	27.0	2.0	20.0	.....	16.0
25	6.0	42.0	4.0	30.0	3.5	27.0	2.5	22.0	.....	16.0
26	6.0	42.0	4.0	30.0	3.5	27.0	2.5	22.0	.....	16.0
27	5.5	38.5	4.0	30.0	3.5	27.0	2.5	22.0	.....	16.0
28	5.0	35.0	4.0	30.0	3.0	24.0	2.5	22.0	.....	16.0
29	5.0	35.0	4.0	30.0	3.0	24.0	1.5	18.0	16.0
30	5.0	35.0	4.0	30.0	3.0	24.0	1.5	18.0	16.0
31	5.0	35.0	4.0	30.0	1.5	18.0

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DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

DAY.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Inches.	Sec.-ft.	Inches.	Sec.-ft.	Inches.	Sec.-ft.
1			14-75	132-0	13-25	112-0
2			15-75	150-0	15-0	137-0
3			16-5	163-0	18-25	193-0
4			17-75	183-0	22-0	268-0
5			17-0	170-0	24-0	312-0
6			16-5	163-0	20-5	236-0
7			15-0	137-0	18-0	188-0
8			13-25	112-0	16-5	163-0
9				116-0	13-75	120-0
10			13-75	120-0	13-0	110-0
11			15-0	137-0	12-75	105-0
12			16-75	166-0	12-5	102-0
13			14-75	132-0	13-75	110-0
14	8-75	62-8	15-0	137-0	16-0	155-0
15	9-0	65-0	15-0	137-0	18-5	197-0
16	9-5	70-0	15-25	142-0	19-5	216-0
17	9-5	70-0	16-75	166-0	20-5	236-0
18	8-75	62-8	17-75	183-0	21-5	256-0
19	9-5	70-0	17-25	175-0	23-5	301-0
20	13-0	110-0	16-75	166-0	21-5	256-0
21	14-5	130-0	15-75	150-0	18-5	197-0
22	14-0	124-0	15-0	137-0	16-5	163-0
23	13-25	112-0	14-25	126-0	15-5	146-0
24	13-75	120-0	14-0	124-0	13-5	116-0
25	14-75	132-0	14-25	126-0	13-5	116-0
26	14-5	130-0	14-0	121-0	17-25	175-0
27	14-0	124-0	16-0	155-0	15-2	141-0
28	14-0	124-0	16-0	155-0	15-0	137-0
29	14-0	124-0	14-5	130-0	12-2	99-0
30	14-25	126-0	13-5	116-0	12-0	97-0
31			12-25	100-0		

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DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

DAY.	July.		August.		September.		October.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Inches.	Sec.-ft.	Inches.	Sec.-ft.	Inches.	Sec.-ft.	Inches.	Sec.-ft.
1	12-0	97-0	3-0	24-0	1-0	16-0	2-0	20-0
2	13-0	110-0	3-0	24-0	1-0	16-0	2-0	20-0
3	13-0	110-0	3-0	24-0	1-0	16-0	3-0	24-0
4	13-0	110-0	2-7	22-8	1-0	16-0	3-0	24-0
5	14-0	124-0	2-5	22-0	1-0	16-0	3-0	24-0
6	13-2	112-0	2-5	22-0	1-0	16-0	3-0	24-0
7	12-5	102-0	2-5	22-0	2-0	20-0	3-0	24-0
8	11-5	91-0	2-5	22-0	2-0	20-0		
9	11-0	85-0	2-5	22-0	2-0	20-0		
10	10-2	77-0	2-5	22-0	1-0	16-0		
11	9-5	70-0	2-5	22-0	0-5	14-0		
12	9-0	65-0	2-5	22-0	0-5	14-0		
13	8-2	57-8	2-5	22-0	0-5	14-0		
14	10-7	82-0	2-5	22-0	0-5	14-0		
15	12-0	97-0	2-5	22-0	0-5	14-0		
16	11-0	85-0	2-5	22-0	1-25	17-0		
17	8-7	62-3	2-5	22-0	4-0	30-0		
18	8-0	56-0	2-5	22-0	4-0	30-0		
19	7-2	50-4	2-5	22-0	4-75	33-8		
20	7-0	49-0	2-5	22-0	4-75	33-8		
21	7-0	49-0	2-0	20-0	4-0	30-0		
22	7-0	49-0	2-0	20-0	4-0	30-0		
23	6-2	43-4	2-0	20-0	4-0	30-0		
24	6-5	45-5	2-0	20-0	3-5	27-0		
25	5-8	40-6	2-0	20-0	3-0	24-0		
26	5-0	35-0	2-0	20-0	2-5	22-0		
27	5-0	35-0	1-0	16-0	2-5	22-0		
28	5-0	35-0	1-0	16-0	3-0	24-0		
29	5-0	35-0	1-0	16-0	3-0	24-0		
30	5-0	35-0	1-0	16-0	3-0	24-0		
31	5-0	35-0	1-0	16-0				

MONTHLY DISCHARGE of Cherry Creek, near Wasa, for 1913.

(Drainage area, 80 square miles).

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	300		145-0	1-81	2-09	8,920
June	370	109	230-0	2-87	3-20	13,700
July	131	35	70-6	0-88	1-02	4,340
August	34	30	30-5	0-38	0-44	1,870
September	30	24	25-1	0-31	0-35	1,480
October	27	18	23-5	0-29	0-33	1,440
November	20		17-9	0-22	0-24	1,060

Accuracy "D."

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MONTHLY DISCHARGE of Cherry Creek, near Wasa, B.C., for 1914.

(Drainage area, 80 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				Run-Off.-		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May.....	183	100	143	1.79	2.06	8,790	B 1
June.....	312	97	176	2.2	2.46	10,500	C
July.....	124	35	68.7	0.86	0.99	4,220	B
August.....	24	16	20.9	0.26	0.30	1,290	B
September.....	33.8	14	21.5	0.27	0.30	1,280	B

ELK RIVER, NEAR ELKO (3048).

Location.—At the cable station 50 yards above the traffic bridge one-quarter mile from Elko in south east Kootenay. Cranbrook district.



Cranbrook District (1)—Photograph showing Elk river cable station above Canyon.

Records Available.—April to November, 1914.

Climatic Conditions.—At Elko, the precipitation from December 1, 1913, to November 30, 1914, was 18.7 inches. The summers are hot and dry. The winters are very severe, as low as -50° F. some seasons, with generally only a light snowfall; 1913-14, approximately 3 feet. Frazil ice may be expected.

Gauge.—A chain gauge was established at the highway bridge, near Elko in November, 1913, and has been read since then by Mr. Wm. Leacey and Mr. Jas. McKee. When the cable station was established in May a new gauge was put in at the section (50 yards above highway bridge). Mr. McKee also read this gauge.

Channel.—The channel below the highway bridge is confined in a canyon, and there is no possibility of shift, though log jams might occasionally affect the gauge readings. The channel above and below the cable station is straight for approximately 40 yards. There is a distinct riffle 30 yards below the section at low water, but at high water it is drowned by the water backing up in its endeavour to get through the narrow canyon below. The low-water control below the cable station may shift somewhat in high water.

Discharge Measurements.—Measurements are made from the cable station. The section is ideal at all stages, except extreme high water, when it is impossible to obtain accurate soundings. In 1914 eight measurements were made, one of which was made on December 18, under ice conditions. Discharge, 630 c.f.s.

Accuracy.—The measurements should be very reliable. Daily gauge readings were obtained, but before July the chain gauge caused trouble. The gauge-height discharge curve appears to be very good. The results after July should be within 5 per cent, and before July 15 per cent.

General.—Elk river is about 150 miles long. It rises near Kananaskis pass, N. latitude $50^{\circ} 35'$, W. longitude $115^{\circ} 05'$, and flows practically due south for about 100 miles, passing through Fernie, and veering slightly to the west passes through Elko and discharges into Kootenay river about 15 miles above the international boundary line. The Elk drains a very mountainous country. The precipitation is not very heavy, being considerably less in this district than in the vicinity of either Field or Glacier.

Elk river is used for lumbering only at present. There is an excellent power site near Elko. Immediately below the highway bridge, Elko, the river enters a canyon about three-quarters of a mile long. In this canyon there is a fall of about 175 feet. A low flow of 400 or 500 c.f.s. may be expected any year, and this is not necessarily a minimum flow. It is anticipated that this power will, at some future date, be harnessed. In order to obtain reliable data a cable station was established a little over 100 yards above this canyon. Very satisfactory open-flow data were obtained in 1914, and in the coming winter one or two low-water measurements will be made.

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DISCHARGE MEASUREMENTS of Elk River, near Traffic bridge, Elko, 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 5	D. O'B. G	1048	218	1,380	7.81	8.95	10,800
June 17	do	1048	211	1,140	7.47	7.95	8,570
June 19	do	1048	213	1,200	7.42	8.15	8,950
July 30	do	1929	195	515	3.48	4.12	1,780
July 26	do	1929	195	356	3.51	4.2	1,880
Oct. 7	do	1929	194	455	2.95	3.55	1,360
Oct. 14	do	1929	195	458	3.07	3.60	1,410
Dec. 18	J. A. E., C. B. C.	1909	70	281	2.24	2.8	630

Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis-charge	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	2.7	930	5.4	3,380	6.6	5,520
2	2.75	952	6.0	4,380	7.3	6,980
3	2.8	975	6.7	5,710	8.5	9,690
4	2.8	975	6.5	5,340	9.15	11,300
5	2.85	997	6.0	4,380	8.95	10,800
6	3.5	1,330	5.7	3,850	8.05	8,640
7	3.5	1,330	5.5	3,540	7.2	6,770
8	3.6	1,390	5.8	4,020	6.7	5,710
9	3.6	1,390	6.1	4,560	6.2	4,740
10	3.6	1,390	6.3	4,920	5.9	4,200
11	3.7	1,450	6.3	4,920	5.65	3,770
12	3.9	1,600	6.3	4,920	5.85	4,110
13	4.2	1,860	6.3	4,920	6.25	4,830
14	4.5	2,170	6.6	5,520	6.85	6,020
15	4.6	2,200	7.1	6,550	7.2	6,770
16	4.7	2,410	7.5	7,410	7.7	7,850
17	4.55	2,230	7.9	8,290	7.95	8,400
18	4.35	2,010	7.9	8,290	8.2	8,980
19	4.8	2,530	7.7	7,850	8.15	8,880
20	5.3	3,240	7.6	7,630	7.85	8,180
21	5.0	2,700	7.3	6,980	7.35	7,190
22	4.8	2,530	7.2	6,770	6.65	5,620
23	5.0	2,700	7.0	6,330	6.0	4,380
24	4.9	2,660	7.2	6,770	5.7	3,850
25	4.8	2,530	7.3	6,980	5.7	3,850
26	4.75	2,470	7.3	7,410	5.95	4,290
27	4.7	2,410	7.4	7,200	5.65	3,770
28	4.6	2,290	6.9	6,120	5.45	3,460
29	4.5	2,170	6.4	5,120	5.75	3,940
30	4.6	2,200	6.3	4,920	5.55	3,620
31			6.5	5,340		

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DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	5-6	3,690	4-05	1,720	3-3	1,220	3-5	1,330	4-0	1,650	3-3	1,220
2	5-7	3,850	4-05	1,720	3-2	1,170	3-5	1,330	4-7	2,410	3-25	1,200
3	5-85	4,110	4-0	1,680	3-2	1,170	3-55	1,360	4-6	2,290	3-3	1,220
4	6-0	4,380	3-95	1,640	3-2	1,170	3-6	1,390	4-4	2,060	3-25	1,200
5	6-1	4,560	3-95	1,640	3-2	1,170	3-65	1,420	4-9	2,660	3-05	1,100
6	6-05	4,470	3-92	1,610	3-2	1,170	3-6	1,390	4-9	2,660	3-1	1,120
7	5-95	4,290	3-87	1,570	3-2	1,170	3-55	1,360	4-55	2,230	2-9	1,020
8	5-9	4,200	3-9	1,600	3-2	1,170	3-55	1,360	4-3	1,960	2-8	975
9	5-8	4,020	3-9	1,600	3-25	1,200	3-55	1,360	4-15	1,810	2-7	930
10	5-7	3,850	3-9	1,600	3-1	1,120	3-55	1,360	4-05	1,720	2-55	872
11	5-6	3,690	3-8	1,520	3-15	1,140	3-6	1,390	4-2	1,860	.....	840
12	5-5	3,540	3-8	1,520	3-1	1,120	3-6	1,390	4-1	1,760	.....	810
13	5-4	3,380	3-7	1,450	3-1	1,120	3-55	1,360	4-0	1,680	.....	780
14	5-45	3,460	3-7	1,450	3-1	1,120	3-6	1,390	3-9	1,600	.....	750
15	5-4	3,380	3-6	1,390	3-15	1,140	3-8	1,520	3-6	1,390	.....	720
16	5-3	3,240	3-6	1,390	3-15	1,140	4-0	1,680	3-4	1,270	.....	690
17	5-2	3,080	3-75	1,480	3-25	1,200	4-1	1,760	3-45	1,300	.....	660
18	5-0	2,790	3-85	1,560	3-35	1,240	4-15	1,810	3-5	1,330	.....	630
19	4-8	2,530	3-75	1,480	3-8	1,520	4-35	2,010	3-5	1,330	.....	630
20	4-75	2,470	3-75	1,480	3-9	1,600	4-4	2,060	3-5	1,330	.....	630
21	4-7	2,410	3-65	1,420	3-8	1,520	4-15	1,810	3-5	1,330	.....	630
22	4-65	2,350	3-55	1,360	3-7	1,450	4-0	1,680	3-45	1,300	.....	630
23	4-5	2,170	3-55	1,360	3-6	1,390	3-9	1,600	3-4	1,270	.....	630
24	4-3	1,960	3-55	1,360	3-55	1,360	3-8	1,520	3-4	1,270	.....	640
25	4-25	1,910	3-55	1,360	3-55	1,360	3-75	1,480	3-4	1,270	.....	650
26	4-2	1,860	3-52	1,340	3-55	1,360	3-7	1,450	3-7	1,450	.....	660
27	4-15	1,810	3-45	1,300	3-55	1,360	3-7	1,450	3-6	1,390	.....	670
28	4-15	1,810	3-45	1,300	3-55	1,360	3-6	1,390	3-6	1,390	.....	680
29	4-15	1,810	3-35	1,240	3-55	1,360	3-6	1,390	3-55	1,360	.....	690
30	4-12	1,780	3-35	1,240	3-5	1,330	3-6	1,390	3-45	1,300	.....	700
31	4-05	1,720	3-3	1,220	.....	.....	3-7	1,450	.....	.....	.....	710

MONTHLY DISCHARGE of Elk River, near Elko, B.C. for 1914.

(Drainage area, 1,600 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May	8,290	3,380	5,820	3-63	4-18	358,000	C
June	11,300	3,460	6,230	3-89	4-34	371,000	C
July	4,560	1,720	3,050	1-91	2-20	188,000	B
August	1,720	1,220	1,470	0-92	1-06	90,400	A
September	1,600	1,120	1,260	C-79	0-88	75,000	A
October	2,060	1,330	1,500	0-94	1-08	92,200	A
November	2,660	1,270	1,660	1-04	1-16	98,800	A
December	1,220	.....	847	0-53	0-61	52,100	.....

GOLD CREEK, NEAR NEWGATE (3047).

Location.—At highway bridge, half-a-mile from mouth, opposite Flagstone, and 7 miles from international boundary line at Newgate, south-east Kootenay. Cranbrook district.

Records Available.—May to August, 1914.

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Climatic Conditions.—Winters, severe, with light snowfall. Summers, hot and dry.

Gauge.—Wooden staff, 4 feet long, located on downstream side of bridge. Gauge is read three times a week by Mr. F. Neuendorp.

Channel.—Fairly smooth, unbroken, gravel bar below.

Discharge Measurements.—Five-well distributed measurements were made from the bridge in 1914.

Accuracy.—The measurements are very reliable. Three gauge readings a week are obtained. The gauge-height-discharges curve is very good. Accuracy during high water, 15 per cent, during low water, 10 per cent.

Co-operation.—This section was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

General.—Gold creek rises in the hills south of Cranbrook and flows in a south-easterly direction for about 35 miles, discharging into Kootenay river opposite Flagstone, and about 7 miles above the international boundary line. The drainage area is about 230 square miles. The precipitation throughout the drainage is very light, probably not exceeding 20 inches. Gold creek may be termed an irrigation stream.

DISCHARGE MEASUREMENTS of Gold Creek, near Flagstone, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 17.....	D. O. B. G., R. H. H.....	1048	63.5	192	5.97	2.35	1,150
June 18.....	D. O. B. G., H. B. H.....	1048	60	112	3.02	1.35	339
July 11.....	R. H. H. (Prov.).....		62	744	1.65	0.75	123
July 28.....	D. O. B. G., R. H. H.....	1929	62	48.45	1.11	0.37	53.8
Sept. 11.....	H. B. H. (Prov.).....			30.0	0.69	0.05	20.6

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DAILY GAUGE HEIGHT AND DISCHARGE of Gold Creek, near Gateway, for 1914.

DAY.	May.		June.		July.		August.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1.75	595		646		172		46
2		793	1.9	710		169		43
3	22.2	990		710	0.9	169	0.25	40
4		920		710		184		40
5	2.05	845	1.9	710	1.05	210	0.25	40
6		800		630		175		37
7		755	1.65	525	0.85	148	0.20	35
8	1.9	710		463		140		37
9		800	1.45	398		134	0.25	40
10	2.1	890		381	0.75	123		38
11		890		366		123	0.20	35
12		845	1.35	344	0.75	123		32
13	2.05	845		344		123		30
14		960	1.35	344		111	0.10	26
15	2.3	1,100	1.35	344	0.70	111		26
16		1,160	1.3	317		100	0.10	26
17	2.4	1,210		302	0.60	90		40
18		1,130	1.25	294		87	0.40	60
19		1,030		280	0.55	82		50
20	2.15	940		266		78	0.25	40
21		910	1.15	250	0.50	75		57
22	2.1	890		238		75	0.50	75
23		910	1.1	230		68		50
24		920		280	0.45	68	0.15	30
25	2.15	940		338		64		28
26		845	1.45	398	0.40	60	0.10	26
27	1.95	755		317		57		29
28		686	1.15	250	0.35	53	0.15	30
29	1.8	630		210		53		28
30		616	0.95	175	0.35	53	0.10	26
31	1.75	595				49		26

MONTHLY DISCHARGE of Gold Creek, near Gateway, for 1914.

(Drainage area, 230 square miles.)

MONTH	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage	Total in Acre-feet.	
June	710	175	392	1.70	1.90	23,300	B.
July	210	49	107	0.46	0.53	6,580	B.
August	60	26	37.6	0.16	0.18	2,310	B.

KOOTENAY RIVER, NEAR WARDNER (3041).

Location.—At the highway bridge near Wardner, above the mouth of Elk river, below the mouths of Bull and St. Mary's rivers and about 35 miles from the international boundary line. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—The precipitation at Wardner in 1914 was about 17 inches. The summers are hot and dry and the winters are severe. Cold

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spells, a week or two in duration, occur, when the temperature will go down to -30° F. (and in some cases the thermometer has gone down to -50° F.) The river is generally affected by ice from December to March. Frazil ice is prevalent.

Gauge.—A vertical staff gauge, 12 feet long, is read daily by Mrs. C. Barnes, of Wardner.

Channel.—The channel is straight and uniform, but piles have been driven down the centre of the river for logging purposes.

Discharge Measurements.—One measurement in 1913, and nine in 1914, were made from the traffic bridge.

Accuracy.—Daily gauge readings are obtained, reliable measurements were made, and the gauge height discharge curve is very good. The results should be within 5 per cent.

General.—Kootenay river rises in the Beaverfoot range of the Rockies, in township 24, range 16, west 5th meridian, and flows in a south by southeasterly direction through Wardner, a distance of about 100 miles. The valley of the Kootenay is broad and fertile, and is gradually being opened for agricultural developments. The fall of the river is very gradual, and will not be used for power between Canal Flats and Wardner. The river is most suitable for logging, and each year drives come down from valuable limits at the headwaters.

DISCHARGE MEASUREMENTS of Kootenay River, near Wardner, for 1913-14.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1913							
Nov. 23	C. E. W., C. E. R.	1,048	460	2,100	1.64	2.00	3,460
1914							
May 19	D. O. B. G., R. H. H.	1,048	482	4,860	4.83	8.00	23,500
June 7	" "	1,048	482	4,840	4.85	8.00	23,500
" 15	" "	1,048	483	5,450	5.55	9.30	30,200
" 20	" "	1,048	488	6,070	6.41	10.65	38,900
July 25	" "	1,929	467	3,350	3.38	5.00	11,300
" 31	" "	1,929	467	3,210	3.33	4.70	10,700
Oct. 7	" "	1,929	464	2,490	2.08	2.95	5,210
" 13	" "	1,929	465	2,469	2.11	2.88	5,180
Dec. 13	J. A. E., C. B. C.	1,909	134	774	2.11	1.7	1,637 ¹

¹Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

DAY.	January.		February.		March.		April.		May.		June.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-1	1,000	1-2	1,200	1-0	800	1-05	900	4-1	8,700	6-95	18,400
2	1-1	1,000	1-2	1,200	1-0	800	1-05	900	4-85	11,000	8-30	24,800
3	1-1	1,000	1-3	1,400	1-0	800	1-05	900	6-25	15,800	9-65	32,400
4	1-2	1,200	1-4	1,700	1-0	800	1-00	800	6-85	18,000	10-75	39,500
5		1,200	1-4	1,700	1-0	800	1-0	800	6-3	15,900	11-25	43,000
6		1,200		1,700	1-0	800	1-1	1,000	5-75	14,000	9-25	30,000
7		1,200		1,700	0-9	600	1-3	1,400	5-40	12,600	8-20	24,300
8		1,200		1,700	1-0	800	1-75	2,600	5-07	11,600	8-40	25,300
9		1,200		1,700	1-0	800	1-8	2,700	5-47	12,900	7-35	20,200
10		1,200		1,700	1-0	800	1-9	2,900	6-10	15,200	6-50	16,600
11		1,200		1,700	1-0	800	2-0	3,200	6-3	15,900	6-35	16,000
12		1,200		1,700	1-0	800	2-15	3,600	6-3	15,900	6-80	17,800
13		1,200		1,700	0-95	700	2-5	4,400	6-3	15,900	7-45	20,600
14		1,200		1,700	0-95	700	2-85	5,300	6-65	17,200	8-4	25,300
15		1,200		1,700	1-00	800	2-97	5,610	7-52	21,000	9-35	30,600
16		1,200		1,700	1-10	1,000	3-25	6,400	8-2	24,300	9-9	33,800
17		1,200		1,700	1-10	1,000	3-32	6,540	8-32	24,900	10-42	37,200
18		1,200		1,700	1-10	1,000	3-2	6,300	8-4	25,300	10-77	39,600
19	1-2	1,200	1-3	1,400	1-10	1,000	3-15	6,150	8-07	23,600	11-02	41,300
20	1-2	1,200	1-2	1,200	1-05	900	3-72	7,560	7-65	21,600	10-65	38,800
21	1-2	1,200	1-3	1,400	1-05	900	4-0	8,400	7-3	20,000	9-58	32,000
22	1-1	1,000	1-3	1,400	1-05	900	3-82	7,860	7-15	19,400	8-4	25,300
23	1-1	1,000	1-1	1,000	1-05	900	3-7	7,500	7-37	20,300	7-45	20,600
24	1-0	800	1-0	800	1-05	900	3-7	7,500	7-55	21,200	6-87	18,100
25	0-9	600	1-0	800	1-05	900	3-8	7,800	7-8	22,300	6-7	17,400
26	1-0	800	1-0	800	1-05	900	3-85	7,950	7-85	22,600	7-42	20,500
27	1-1	1,000	1-0	800	1-05	900	3-80	7,800	7-3	20,000	7-42	20,500
28	1-1	1,000	1-0	800	1-05	900	3-80	7,800	6-85	18,000	7-27	19,900
29	1-1	1,000			1-05	900	3-70	7,500	6-3	15,900	7-32	20,100
30	1-1	1,000			1-05	900	3-70	7,500	5-97	14,700	7-60	21,400
31	1-2	1,200			1-05	900			6-10	15,200		

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	7-9	22,700	4-70	10,500	2-98	5,640	3-22	6,340	2-92	5,460	2-05	3,350
2.	8-4	25,300	4-85	11,000	2-88	5,360	3-17	6,210	3-4	6,700	1-92	2,960
3.	8-8	27,400	4-82	10,900	2-82	5,240	3-22	6,340	3-37	6,640	1-95	3,050
4.	9-07	29,000	4-72	10,600	2-85	5,300	3-22	6,340	3-27	6,440	1-97	3,110
5.	9-27	30,200	4-67	10,400	2-85	5,300	3-12	6,060	3-23	6,360	1-90	2,900
6.	9-15	29,500	4-45	9,750	2-85	5,300	3-02	5,760	3-39	6,680	1-85	2,800
7.	8-88	27,900	4-35	9,450	2-72	5,040	2-95	5,550	3-25	6,400	1-80	2,700
8.	8-42	25,400	4-45	9,750	2-70	5,000	2-92	5,460	3-02	5,760	1-75	2,600
9.	8-07	23,600	4-25	9,150	2-75	5,100	2-88	5,360	2-92	5,460	1-75	2,600
10.	7-8	22,300	3-97	8,310	2-70	5,000	2-92	5,460	2-8	5,200	1-67	2,440
11.	7-55	21,200	3-80	7,800	2-62	4,760	2-95	5,550	2-77	5,140	1-45	1,850
12.	7-40	20,400	3-80	7,800	2-55	4,550	2-95	5,550	2-3	5,200	1-50	2,000
13.	7-52	21,000	3-75	7,650	2-65	4,850	2-87	5,340	2-77	5,140	1-07	940
14.	8-00	23,300	3-72	7,560	2-58	4,640	2-82	5,240	2-7	5,000	1-02	840
15.	7-97	23,000	3-72	7,560	2-50	4,400	2-82	5,240	2-5	4,400	.....	1,000
16.	7-67	21,800	3-7	7,500	2-55	4,550	2-90	5,400	2-3	3,900	.....	1,160
17.	6-87	18,100	3-7	7,500	2-53	4,490	2-90	5,400	2-15	3,600	.....	1,320
18.	6-35	16,000	3-67	7,410	2-65	4,850	2-95	5,550	2-12	3,540	.....	1,480
19.	6-32	16,000	3-53	7,060	3-00	5,700	3-12	6,060	2-35	4,000	.....	1,640
20.	6-27	15,800	3-4	6,700	3-60	7,200	3-25	6,400	2-2	3,700	.....	1,600
21.	6-32	16,000	3-4	6,700	3-55	7,100	3-15	6,150	2-2	3,700	.....	1,600
22.	5-9	14,400	3-37	6,640	3-32	6,540	3-00	5,700	2-3	3,900	.....	1,600
23.	5-35	12,400	3-40	6,700	3-17	6,210	2-90	5,400	2-3	3,900	.....	1,600
24.	5-05	11,600	3-3	6,500	3-02	5,760	2-77	5,140	2-3	3,900	.....	1,600
25.	5-00	11,400	3-22	6,340	3-12	6,060	2-72	5,040	2-25	3,800	.....	1,600
26.	5-05	11,600	3-1	6,000	3-25	6,400	2-73	5,060	2-2	3,700	.....	1,600
27.	4-92	11,200	3-07	5,910	3-42	6,760	2-65	4,850	2-22	3,740	.....	1,600
28.	4-87	11,000	3-05	5,850	3-67	7,410	2-60	4,700	2-2	3,700	.....	1,600
29.	4-85	11,000	3-00	5,700	3-65	7,350	2-60	4,700	2-2	3,700	.....	1,600
30.	4-77	10,700	2-98	5,640	3-42	6,760	2-60	4,700	2-17	3,640	.....	1,600
31.	4-70	10,500	3-08	5,940	.....	.....	2-62	4,760	.....	.....	.....	1,600

MONTHLY DISCHARGE of Kootenay River, near Wardner, for 1914.

(Drainage area, 5,200 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet	
January	1,200	600	1,100	0-21	0-24	67,600	
February	1,700	800	1,420	0-27	0-28	78,900	
March	1,000	600	852	0-16	0-18	52,400	B
April	8,400	800	4,920	0-05	1-06	293,000	B
May	25,300	8,700	18,100	3-48	4-01	1,110,000	A
June	43,000	17,400	26,400	5-08	5-67	1,570,000	A
July	30,200	10,500	19,100	3-67	4-23	1,170,000	A
August	11,000	5,610	7,820	1-50	1-73	481,000	A
September	7,410	4,400	5,620	1-08	1-20	334,000	A
October	6,400	4,700	5,510	1-06	1-22	339,000	A
November	6,700	3,540	4,750	0-91	1-02	283,000	A
December	3,350	810	1,940	0-37	0-43	119,000	

LINKLATER CREEK, NEAR NEWGATE (3045).

Location.—At Smith's ranch, 6 miles north of international boundary line; at Newgate, 4 miles from mouth of Gold creek. Cranbrook district.

Records Available.—May to September, 1913.

Climatic Conditions.—The precipitation is light, generally not in excess of 20 inches. The summers are hot and dry. Winters are severe, during some cold spells the thermometer going down to -40° F.

Gauge.—Three-foot vertical staff gauge, nailed to bridge. Mr. Jas. Bean reads gauge daily.

Channel.—Moderately swift, fairly smooth, and unbroken.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the Provincial Water Rights Branch and the British Columbia Hydrographic Survey.

Accuracy.—Daily gauge readings are obtained, the measurements should be accurate. The results are within 15 per cent.

General.—Linklater creek is a small irrigation stream, about 15 miles long, flowing from the northwest into Kootenay river near Newgate. The drainage area is about 40 square miles (as obtained from the only available maps.)

DISCHARGE MEASUREMENTS of Linklater Creek, near Smith's ranch, Gateway, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
		Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.	
1914.							
May 17.	D. O. B. G., R. H. H.	1,048	20-0	30-0	3-30	1-30	99-0
June 18.	" H. D. H.	1,048	20-0	21-5	2-66	0-85	57-1
July 11.	R. H. H. (Prov.)	20-0	13-0	1-66	0-50	21-7
July 28.	D. O. B. G., R. H. H.	1,909	20-0	10-6	1-35	0-40	14-3
Sept. 11.	H. B. H. (Prov.)	8-70	1-41	0-30	12-3

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DAILY GAUGE HEIGHT AND DISCHARGE of Linklater Creek, near Gateway, for 1914.

DAY.	May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	0.6	30.0	1.1	77.0	0.60	30.0	0.33	12.8	0.28	10.9
2.	0.8	45.0	1.3	96.0	0.55	26.0	0.33	12.8	C.28	10.9
3.	1.0	67.0	1.35	100.0	0.55	26.0	0.32	12.4	0.28	10.9
4.	0.9	58.0	1.25	91.0	0.55	26.0	0.32	12.4	C.28	10.9
5.	0.75	43.5	1.1	77.0	0.63	32.7	0.32	12.4	0.29	11.2
6.	0.70	39.0	1.0	67.0	0.55	26.0	0.32	12.4	0.29	11.2
7.	0.75	43.5	0.85	53.0	0.50	22.0	0.32	12.1	0.29	11.2
8.	0.70	39.0	0.8	48.0	0.50	22.0	0.33	12.8	0.30	11.5
9.	0.90	58.0	0.75	43.5	0.47	20.2	0.34	13.3	0.30	11.5
10.	0.90	58.0	0.75	43.5	0.45	19.0	0.32	12.4	0.30	11.5
11.	0.85	53.0	0.75	43.5	0.45	19.0	0.31	12.0	0.30	11.5
12.	0.85	53.0	0.85	53.0	0.45	19.0	0.30	11.5	0.30	11.5
13.	C.85	53.0	0.9	58.0	0.50	22.0	0.30	11.5	0.30	11.5
14.	1.0	67.0	0.9	58.0	0.45	19.0	C.29	11.2	0.30	11.5
15.	1.2	86.0	C.9	58.0	0.45	19.0	0.28	10.9	0.30	11.5
16.	1.25	91.0	0.9	58.0	C.40	16.0	0.28	10.9	0.31	12.0
17.	1.3	96.0	0.9	58.0	0.40	16.0	0.55	26.0	0.34	13.3
18.	1.2	86.0	0.85	53.0	0.40	16.0	0.45	19.0	C.37	14.6
19.	1.2	86.0	0.80	48.0	0.40	16.0	0.35	13.8	0.40	16.0
20.	1.1	77.0	C.75	43.5	0.40	16.0	0.33	12.8	0.40	16.0
21.	1.65	72.0	0.73	41.7	0.40	16.0	0.35	13.8	0.37	14.6
22.	1.1	77.0	0.65	34.5	0.38	15.1	0.33	12.8	0.32	12.4
23.	1.15	81.5	0.70	39.0	0.37	14.6	0.30	11.5	0.31	12.0
24.	1.2	86.0	0.75	43.5	0.37	14.6	0.35	13.8	0.30	11.5
25.	1.25	91.0	0.92	59.8	0.38	15.1	0.30	11.5	0.30	11.5
26.	1.1	77.0	0.80	48.0	0.38	15.1	0.30	11.5	0.29	11.2
27.	0.95	62.5	0.70	39.0	0.37	14.6	C.29	11.2	0.29	11.2
28.	0.9	58.0	0.70	39.0	0.35	13.8	0.29	11.2	C.30	11.5
29.	0.85	53.0	0.65	34.5	0.35	13.8	0.29	11.2	0.30	11.5
30.	0.95	62.5	0.60	30.0	0.35	13.8	0.29	11.2	0.30	11.5
31.	1.0	67.0			0.33	12.8	0.29	11.2		

MONTHLY DISCHARGE of Linklater Creek, near Newgate, for 1914.

(Drainage area 42 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on Drainage area	Total in acre-feet
May	96	30	65.5	1.56	1.80	4,030
June	106	30	54.4	1.30	1.45	3,240
July	32.7	12.8	19.0	0.45	0.52	1,170
August	26.0	11.2	12.8	0.30	0.35	787
September	15.0	10.9	12.0	0.29	0.32	714

Accuracy "C."

MARK CREEK, NEAR MARYSVILLE (3037).

Location.—At the mouth of the creek near Marysville, about 14 miles from Cranbrook. Cranbrook district.

Records Available.—May to December, 1914.

25E—34½

Climatic Conditions.—At Marysville the precipitation each year is a little greater than at Cranbrook, which in 1914 was 16 inches. The summers are hot and dry. The winters are severe. Cold spells lasting for a week or so often occur, when the thermometer may reach -40° F. and -50° F. The creek freezes over in November or December and remains frozen till March. Frazil ice is present.

Gauge.—An enamel gauge, 6 feet long, is read daily by Mr. W. M. Burdette, of Marysville.

Channel.—Straight, rocky, and water is generally broken. The section may fill but the control appears permanent.

Discharge Measurements.—Eight well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the British Columbia Hydrographic Survey and the Water Rights Branch of the province.

Accuracy.—The measurements are fair, daily readings are obtained, and the gauge heights discharge curve seems very good. The results should be within 10 per cent.

General.—Mark creek is a stream about 15 or 20 miles long, flowing from the northwest into St. Mary's river near Marysville. The drainage area is about 90 square miles (as estimated from the only available maps). Near Kimberley is the Sullivan mine, where large quantities of silver-lead ore is mined and shipped to Trail smelter. This company has a water-power development on Mark creek. At present about 350 horse-power is developed during the summer months. The head it is anticipated, will soon be increased.

There are other valuable mining claims in Mark creek drainage which, when developed, may tend to increase the importance of this little stream.

DISCHARGE MEASUREMENTS of Mark Creek, near Marysville, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 1.....	H. B. H. & C. E. R.....	1,048	20	41.4	2.66	1.68	110
May 28.....	D. O' B. G.....	1,530	25	57.9	4.08	2.2	236
July 3.....	H. B. H. (Prov.).....		24	55.4	4.02	2.1	223
July 24.....	D. O' B. G., H. B. H.....	1,929	16	34.1	1.92	1.4	56.4
Sept. 1.....	H. B. H. (Prov.).....			22.2	.77	1.00	17.2
Sept. 29.....	".....			26.2	1.05	1.20	27.4
Oct. 10.....	D. O. B. G.....	1,929	19.5	28.4	0.86	1.125	24.2
Oct. 16.....	".....	1,929	19.5	29.4	0.99	1.22	29.1

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C.,
for 1914.

DAY.	May.		June.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	1-70	112	2-56	354
2.....	1-85	171	2-76	428
3.....	2-10	210	3-01	527
4.....	2-0	184	2-90	483
5.....	1-9	158	2-56	354
6.....	1-81	136	2-41	303
7.....	1-71	114	2-14	221
8.....	1-75	123	2-05	197
9.....	2-0	184	2-00	184
10.....	1-99	181	1-96	174
11.....	1-98	179	1-94	168
12.....	2-01	187	1-98	179
13.....	2-08	205	2-08	205
14.....	2-24	250	2-41	303
15.....	2-48	325	2-52	339
16.....	2-59	364	2-63	379
17.....	2-6	368	2-69	401
18.....	2-54	346	2-67	394
19.....	2-47	322	2-55	350
20.....	2-38	293	2-33	277
21.....	2-37	290	2-13	218
22.....	2-36	286	1-96	174
23.....	2-37	290	1-86	148
24.....	2-43	310	1-79	132
25.....	2-38	293	2-05	197
26.....	2-45	316	2-23	247
27.....	2-37	290	2-05	197
28.....	2-22	244	2-00	184
29.....	2-08	205	2-00	184
30.....	2-10	210	2-00	184
31.....	2-25	253	..	..

DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C.,
for 1914—*Concluded.*

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.	2-02	189	1-27	38-1	1-07	17-9	1-12	21-8	1-20	29-0	1-22	31-6
2.	2-08	206	1-2	29-0	1-07	17-9	1-14	23-6	1-27	38-1	1-17	26-3
3.	2-12	215	1-2	29-0	1-07	17-9	1-18	27-2	1-20	29-0	1-20	29-0
4.	2-11	213	1-18	27-2	1-07	17-9	1-19	28-1	1-23	32-9	1-26	36-8
5.	2-14	221	1-18	27-2	1-04	15-8	1-19	28-1	1-26	36-8	1-23	32-9
6.	2-02	189	1-18	27-2	1-04	15-8	1-19	28-1	1-25	35-5	1-19	28-1
7.	1-9	158	1-16	25-4	1-08	18-6	1-19	28-1	1-21	30-3	1-12	21-8
8.	1-82	139	1-18	27-2	1-10	20-0	1-16	25-4	1-21	30-3	1-56	21-0
9.	1-77	128	1-12	21-8	1-08	18-6	1-16	25-4	1-23	32-9	2-10	20-0
10.	1-72	116	1-17	26-3	1-08	18-6	1-18	27-2	1-18	27-2	2-25	20-0
11.	1-69	110	1-17	26-3	1-08	18-6	1-18	27-2	1-19	28-1	2-45	19-0
12.	1-65	102	1-17	26-3	1-08	18-6	1-20	29-0	1-17	26-3	2-50	18-0
13.	1-77	127	1-16	25-4	1-06	17-2	1-17	26-3	1-16	25-4	2-55	17-0
14.	1-84	144	1-12	21-8	1-06	17-2	1-17	26-3	1-15	24-5	2-60	16-0
15.	1-67	106	1-13	22-7	1-09	19-3	1-20	29-0	1-15	24-5	Frozen	15-3
16.	1-60	92-0	1-13	22-7	1-12	21-8	1-20	29-0	1-15	24-5	.....	15-0
17.	1-53	78-7	1-16	25-4	1-06	17-6	1-15	24-5	1-17	26-3	.....	15-0
18.	1-50	73-0	1-17	26-3	1-10	20-0	1-18	27-2	1-17	26-3	.....	15-0
19.	1-42	59-4	1-12	21-8	1-19	28-1	1-23	32-9	1-18	27-2	.....	15-0
20.	1-45	64-5	1-13	22-7	1-18	27-2	1-24	34-2	1-20	29-0	.....	16-0
21.	1-41	57-7	1-11	20-9	1-15	24-5	1-22	31-6	1-20	29-0	.....	16-0
22.	1-40	56-0	1-10	20-0	1-10	20-0	1-18	27-2	1-17	26-3	.....	17-0
23.	1-40	56-0	1-08	18-6	1-11	20-9	1-16	25-4	1-20	29-0	.....	17-0
24.	1-37	51-8	1-08	18-6	1-11	20-9	1-16	25-4	1-20	29-0	.....	18-0
25.	1-32	44-8	1-08	18-6	1-14	23-6	1-11	20-9	1-21	30-3	.....	18-0
26.	1-35	49-0	1-08	18-6	1-19	28-1	1-16	25-4	1-20	29-0	.....	18-0
27.	1-34	47-6	1-08	18-6	1-19	28-1	1-20	29-0	1-18	27-2	.....	18-0
28.	1-31	43-4	1-07	17-9	1-19	28-1	1-20	29-0	1-17	26-3	.....	18-0
29.	1-30	42-0	1-07	17-9	1-16	25-4	1-20	29-0	1-16	25-4	.....	18-6
30.	1-29	40-7	1-07	17-9	1-15	25-4	1-20	29-0	1-21	30-3	.....	18-0
31.	1-26	36-8	1-07	17-9	.....	.....	1-20	29-0	.....	.....	.....	18-0

MONTHLY DISCHARGE of Mark Creek, at Marysville, B.C., for 1914.

Drainage area 90 square miles.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May.	368	112	238	2-64	3-04	14,600	B
June	527	132	270	3-0	3-55	10,100	"
July	221	36-8	105	1-17	1-35	6,460	"
August	38-1	17-9	23-4	0-26	0-30	1,440	"
September	20-1	15-8	21-0	0-23	0-26	1,250	"
October	34-2	21-8	27-4	0-30	0-35	1,680	"
November	38-1	24-5	28-9	0-32	0-36	1,720	"
December	36-8	.....	20-1	0-22	0-23	1,240	.....

MUD CREEK, NEAR ELKO (3044).

Location.—Two and one-half miles above Rock creek mill, near Elko. Cranbrook district.

Records Available.—June to September, 1914.

Climatic Conditions.—Similar to Elko. (See Elk river.)

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Gauge.—Three-foot enamel gauge, nailed to an old bridge, about one-half mile above Rock Creek mill. Read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Sluggish. Not very uniform.

Discharge Measurements.—Four measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Not guaranteed.

General.—Mud creek is a small irrigation stream, tributary to Rock creek, near Elko. The discharge of Mud creek, plus that of Rock creek, gives the discharge of Rock creek at the Rock Creek Lumber Company's dam.

DISCHARGE MEASUREMENTS of Mud Creek, near Baynes, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 18	D. O'B. G., R. H. H...	1,048	8.5	10.0	2.27	2.05	22.7
July 12	R. H. H. (Prov.)	.....	8.1	8.9	1.94	1.70	17.3
" 29	D. O'B. G., R. H. H....	1,929	8.1	7.9	1.50	1.40	11.9
Sept. 14.	H. B. H. (Prov.)	.....	.....	7.13	1.22	1.20	8.68

DAILY GAUGE HEIGHT AND DISCHARGE of Mud Creek, near Elko, for 1914.

DAY.	May.		June.		July.		August.		September.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1				22.8	1.8	18.4		11.8	1.20	8.7
2			2.1	23.7		17.6	1.4	11.8		8.4
3			2.1	23.7	1.7	16.7	1.35	11.0	1.15	8.0
4			2.1	23.7	1.8	18.4		11.0	1.15	8.0
5				24.2		18.4	1.35	11.0	1.15	8.0
6			2.15	24.6	1.8	18.4		10.6	1.15	8.0
7				24.6		17.6	1.3	10.2		8.0
8			2.15	24.6	1.7	16.7	1.3	10.2	1.15	8.0
9				24.1		17.6		10.2		8.0
10			2.1	23.7	1.8	18.4	1.3	10.2	1.15	8.0
11			2.1	23.7	1.6	15.0		9.8		8.0
12			2.0	21.0	1.65	15.8	1.25	9.4	1.15	8.0
13			1.95	21.0		15.4		9.4	1.15	8.0
14			1.95	21.0	1.6	15.0	1.25	9.4		8.4
15				21.0		14.6	1.25	9.4	1.20	8.7
16			1.95	21.0	1.55	14.2	1.25	9.4		8.7
17			1.95	21.0		14.6		9.4	1.20	8.7
18	2.05	22.8		21.4	1.6	15.0	1.25	9.4		9.0
19	2.1	23.7	2.0	21.9		14.6		9.4	1.25	9.4
20	2.1	23.7	2.0	21.9	1.55	14.2	1.25	9.4	1.25	9.4
21		23.2		15.6		13.8		9.0	1.25	9.4
22	2.05	22.8	1.25	9.4	1.5	13.4	1.2	8.7		9.4
23		22.8		9.0		13.4		8.7	1.25	9.4
24	2.05	22.8	1.2	8.7	1.5	13.4	1.2	8.7		9.4
25		22.8		8.4	1.55	14.2		8.7	1.25	9.4
26	2.05	22.8	1.15	8.0	1.5	13.4	1.2	8.7	1.30	10.2
27		23.7	1.3	10.2		13.0		8.7	1.30	10.2
28	2.15	24.6	1.9	20.1	1.45	12.6	1.2	8.7	1.30	10.2
29		24.1	2.0	21.9		12.2	1.2	8.7		10.2
30	2.1	23.7	1.8	18.4	1.4	11.8		8.7	1.30	10.2
31.	2.0	21.9			1.4	11.8		8.7		

6 GEORGE V, A. 1916

MONTHLY DISCHARGE of Mud Creek, near Elko, for 1914.

(Drainage area, 7 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
June.....	24.6	8.0	10.5	2.78	3.10	1,160
July.....	18.4	11.8	15.1	2.15	2.48	928
August.....	11.8	8.7	9.62	1.37	1.58	596
September.....	10.2	8.0	8.84	1.26	1.41	526

PHILLIPS CREEK, NEAR ROOSVILLE (3046).

Location.—Fifteen hundred feet above road, near Roo's ranch, Roosville. Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as -40° F. during cold spells some seasons. Similar to Elko (see Elk river).

Gauge.—Wooden staff gauge, read by Mr. Fred Roo, of Roosville.

Channel.—Fairly uniform and smooth. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated during 1914.

Accuracy.—Daily gauge readings and fairly good measurements. Results should be within 15 per cent.

General.—Phillips creek is a small stream about 10 to 15 miles long, flowing from the east into Montana, about 4 miles from the mouth, and thence into Kootenay river. It is used for irrigation, and there is a fall on the creek above Roo's ranch, where a small industrial development might be installed.

DISCHARGE MEASUREMENTS of Phillips Creek, near Roosville, B.C., for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 16.....	D. O'B. G., R. H. H.....	1,048	16.5	23.3	3.36	1.80	78.4
June 17.....	D. O'B. G., H. B. H.....	1,048	14.0	23.65	4.06	1.85	96.1
July 10.....	R. H. H. (Prov.).....		13.0	14.6	2.21	1.40	32.2
" 27.....	D. O'B. G., R. H. H.....	1,929	11.0	13.3	1.35	1.20	18.0
Sept. 10.....	H. B. H. (Prov.).....			11.6	1.00	1.10	12.7

SESSIONAL PAPER No. 25a

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Rossville,
for 1914.

DAY	April.		May		June.	
	Gauge Height	Dis- charge	Gauge Height	Dis- charge	Gauge Height	Dis- charge
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1			1.4	33.0	1.15	115.0
2			1.55	47.5	1.5	150.0
3			1.4	33.0	1.1	106.0
4			1.4	33.0	1.15	115.0
5			1.55	47.5	1.3	130.0
6						
7			1.55	47.5	1.3	130.0
8			1.5	42.0	1.3	130.0
9			1.55	47.5	1.4	140.0
10			1.65	58.5	1.4	140.0
11						
12			1.65	58.5	1.7	170.0
13			1.65	58.5	1.7	170.0
14			1.7	70.0	1.7	170.0
15			1.4	70.0	1.45	145.0
16						
17			1.4	70.0	1.4	140.0
18			1.3	61.0	1.45	145.0
19			1.35	63.5	1.4	140.0
20			1.4	70.0	1.7	170.0
21						
22			1.4	70.0	1.7	170.0
23			1.4	70.0	1.4	140.0
24			1.3	61.0	1.7	170.0
25			1.0	30.0	1.15	115.0
26						
27			1.3	61.0	1.4	140.0
28			1.45	59.0	1.45	145.0
29			1.45	59.0	1.4	140.0
30			1.4	59.0	1.4	140.0
31					1.15	115.0

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Roosville, for 1914.

DAY.	July.		August.		September.		October.		November.	
	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge	Gauge Height	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	1-6	53-0	1-2	18-0	1-10	12-0	1-15	15-0	1-3	25-0
2	1-6	53-0	1-2	18-0	1-15	15-0	1-15	15-0	1-3	25-0
3	1-55	47-5	1-2	18-0	1-10	12-0	1-15	15-0	1-35	29-0
4	1-55	47-5	1-2	18-0	1-10	12-0	1-2	18-0	1-35	29-0
5	1-6	53-0	1-2	18-0	1-10	12-0	1-2	18-0	1-35	29-0
6	1-55	47-5	1-2	18-0	1-15	15-0	1-2	18-0	1-35	29-0
7	1-55	47-5	1-2	18-0	1-15	15-0	1-15	15-0	1-35	29-0
8	1-5	42-0	1-2	18-0	1-1	12-0	1-15	15-0	1-35	29-0
9	1-5	42-0	1-2	18-0	1-15	15-0	1-15	15-0	1-3	25-0
10	1-5	42-0	1-2	18-0	1-1	12-0	1-15	15-0	1-3	25-0
11	1-4	33-0	1-15	15-0	1-1	12-0	1-2	18-0	1-3	25-0
12	1-4	33-0	1-15	15-0	1-15	15-0	1-2	18-0	1-3	25-0
13	1-45	37-5	1-15	15-0	1-15	15-0	1-2	18-0	1-3	25-0
14	1-4	33-0	1-15	15-0	1-10	12-0	1-2	18-0	1-3	25-0
15	1-4	33-0	1-15	15-0	1-15	15-0	1-2	18-0	1-3	25-0
16	1-4	33-0	1-15	15-0	1-15	15-0	1-25	21-5	1-3	25-0
17	1-4	33-0	1-4	33-0	1-15	15-0	1-3	25-0	1-3	25-0
18	1-35	29-0	1-25	21-5	1-15	15-0	1-3	25-0	1-3	25-0
19	1-35	29-0	1-25	21-5	1-20	18-0	1-3	25-0	1-25	21-5
20	1-35	29-0	1-15	15-0	1-20	18-0	1-3	25-0	1-25	21-5
21	1-3	25-0	1-2	18-0	1-15	15-0	1-3	25-0	1-2	18-0
22	1-3	25-0	1-2	18-0	1-15	15-0	1-25	21-5	1-2	18-0
23	1-3	25-0	1-2	18-0	1-15	15-0	1-25	21-5	1-2	18-0
24	1-3	25-0	1-15	15-0	1-15	15-0	1-25	21-5	1-2	18-0
25	1-3	25-0	1-15	15-0	1-15	15-0	1-25	21-5	1-2	18-0
26	1-25	21-5	1-15	15-0	1-15	15-0	1-20	18-0	1-2	18-0
27	1-25	21-5	1-15	15-0	1-10	12-0	1-20	18-0	1-2	18-0
28	1-25	21-5	1-15	15-0	1-10	12-0	1-20	18-0	1-2	18-0
29	1-25	21-5	1-10	12-0	1-10	12-0	1-20	18-0	1-2	18-0
30	1-25	21-5	1-10	12-0	1-10	12-0	1-20	18-0	1-2	18-0
31	1-25	21-5	1-10	12-0	1-10	12-0	1-20	18-0	1-2	18-0

MONTHLY DISCHARGE of Phillips Creek, near Roosville, for 1914.

(Drainage area, 23 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May	106	33	69-6	3-02	3-48	4,280
June	134	53	76-2	3-31	3-69	4,530
July	53	21-5	33-9	1-47	1-70	2,080
August	33	12-0	17-0	0-74	0-85	1,050
September	18	12-0	14-0	0-61	0-68	833
October	25	15-0	19-0	0-83	0-96	1,170
November	29	23-2	1-01	1-13	1,380

Accuracy "C."

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ROCK CREEK, NEAR ELKO (3049).

Location.—One-half mile above Rock mill, near Elko. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Similar to Elko (see Elk river).

Gauge.—Two-foot wooden staff gauge, read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Smooth, with swift water. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Rock creek is a small stream, about 15 miles long, flowing from the east into Kootenay river, about 10 miles south of Jaffray. The total drainage is about 40 square miles. The station is located above the mouth of Mud creek, and the total discharge of Rock and Mud creeks gives the discharge at Rock Creek Lumber Company's dam. The water is used for irrigation.

DISCHARGE MEASUREMENTS of Rock Creek, near Baynes, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 18	D. O'B. G., R. H. H.	1048	18.5	40.6	2.06	1.30	82.8
June 19	D. O'B. G., H. B. H.	1048	18.5	37.6	2.28	1.35	86.0
July 12	R. H. H. (Prov.)		18.5	29.3	1.78	0.85	52.1
July 29	D. O'B. G.	1929	18.5	23.6	1.35	0.53	31.9
Sept. 14	H. B. H. (Prov.)			20.6	0.87	0.33	18.1

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Rock Creek, near Baynes, for 1914.

DAY.	May.		June.		July.		August.		September.	
	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.	Gauge Height.	Discharge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.		31.9		76.1	1.15	73.7	0.5	28.5	0.35	19.2
2.	0.55	31.9	1.3	82.9		69.8	0.5	28.5		19.2
3.		43.8	1.4	89.7	1.05	65.9		27.4	0.35	19.2
4.	0.9	55.7	1.45	93.1	1.0	62.5		26.4	0.35	19.2
5.	1.0	62.5		91.4		64.2	0.45	25.2	0.35	19.2
6.	1.0	62.5	1.4	89.7	1.05	65.9		23.6	0.35	19.2
7.		62.5		84.6		60.8	0.4	22.0		19.2
8.	1.0	62.5	1.25	79.5	0.90	55.7	0.45	25.2	0.35	19.2
9.		63.3		79.5		55.7		25.2		19.2
10.		64.1	1.25	79.5	0.90	55.7	0.45	25.2	0.35	19.2
11.		64.9	1.35	79.5	0.85	52.3		25.2		19.2
12.	1.05	65.9	1.2	76.1	0.85	52.3	0.45	25.2	0.35	19.2
13.	1.15	73.7	1.15	73.7		48.9		23.6	0.30	16.4
14.	1.15	73.7	1.15	73.7	0.75	45.5	0.4	22.0		17.8
15.	1.25	79.5		76.6		45.5	0.4	22.0	0.35	19.2
16.	1.25	79.5	1.25	79.5	0.75	45.5	0.4	22.0		19.2
17.	1.3	82.9	1.3	82.9		43.8		22.0	0.35	19.2
18.	1.3	82.9		86.3	0.70	42.1	0.4	22.0		19.2
19.	1.3	82.9	1.4	89.7		40.4		22.0	0.35	19.2
20.	1.35	86.3	1.35	86.3	0.65	38.7	0.4	22.0	0.35	19.2
21.		84.6		108.6		38.7		20.6	0.35	19.2
22.	1.3	82.9	2.0	131.0	0.65	38.7	0.35	19.2		20.6
23.		82.9		129.0		37.0		19.2	0.40	22.0
24.	1.3	82.9	1.95	128.0	0.6	35.3	0.35	19.2		22.0
25.		82.9		128.0	0.6	35.3		19.2	0.40	22.0
26.	1.3	82.9	1.95	128.0	0.6	35.3	0.35	19.2	0.40	22.0
27.		81.2	1.9	124.0		33.6		19.2	0.45	25.2
28.	1.25	79.5	1.25	79.5	0.55	31.9	0.35	19.2	0.45	25.2
29.		81.2		76.6		31.9	0.35	19.2		25.2
30.	1.3	82.9	1.15	73.7	0.55	31.9		19.2	0.45	25.2
31.	1.1	69.3			0.5	28.5		19.2		

MONTHLY DISCHARGE of Rock Creek, near Baynes, for 1914.

(Drainage area, 15 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.		Accuracy.
	Maximum.	Minimum.	Menn.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.	
May.....	86.3	31.9	71.2	4.75	5.40	4,380	C
June.....	131.0	73.7	91.9	6.12	6.83	5,470	D
July.....	73.7	28.5	47.2	3.15	3.63	2,900	C
August.....	28.5	19.2	22.5	1.50	1.73	1,380	B
September.....	25.2	16.4	20.3	1.35	1.51	1,210	B

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BIG SAND CREEK, NEAR JAFFRAY (3042).

Location.—About 300 yards below highway and C.P.R. bridges, 2 miles from Galloway, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as -40° F. some seasons, with light snowfall. For further information see Elk river. The conditions at Elko are very similar.

Gauge.—Five-foot wooden staff gauge, read daily by Mr. N. Craigie.

Channel.—Uniform and smooth, with swift water. Good control.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was established by Mr. H. B. Hicks, Provincial Water Rights Branch, and maintained co-operatively by him and the British Columbia Hydrographic Survey.

Accuracy.—Mr. Hicks made a splendid section, late in 1913. The measurements are reliable, daily gauge readings were taken, and the gauge-height-discharge curve is good. The results should be within 5 per cent.

General.—Big Sand creek is an irrigation stream, about 20 miles long, flowing from the northeast into Kootenay river, south of Jaffray. The gauging station is about 8 miles from the mouth, and above the station the drainage area is about 40 square miles. As before stated, the water is used for irrigation.

DISCHARGE MEASUREMENTS of Big Sand Creek, near Jaffray, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1914.			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May. 19.	D. O'B. G., R. H. H.	1048	38	93.8	5.44	2.3	511
June 19.	D. O'B. G., H. B. H.	1048	38	81.5	4.53	2.0	369
July 9.	R. H. H. (Prov.) .....	.....	36	51.2	2.64	1.20	135
July 29.	D. O'B. G., R. H. H.	1929	35	28.4	1.65	0.65	47.1
Sept. 9.	H. B. H. (Prov.) .....	.....	.....	19.9	1.10	0.35	21.9

DAILY GAUGE HEIGHT AND DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

DAY.	May.		June.		July.		August.		September.		
	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge	Gauge Height.	Discharge.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	
1		615	2-1	415	1-5	205	0-58	40-2	0-18	9-0	
2		615	2-35	335	1-6	233	0-55	37-5	0-19	9-5	
3		2-5	615	2-5	615	1-55	219	0-52	34-8	0-16	8-0
4		2-35	535	2-45	588	1-45	191	0-50	33-0	0-18	9-0
5		1-95	355	2-3	510	1-4	177	0-47	30-6	0-18	9-0
6		1-75	282	2-15	438	1-4	177	0-47	30-6	0-16	8-0
7		1-95	355	1-85	316	1-35	166	0-45	29-0	0-18	9-0
8		2-2	460	1-75	282	1-3	155	0-45	29-0	0-22	11-4
9		2-35	535	1-65	249	1-2	133	0-42	26-6	0-28	15-6
10		2-4	560	1-5	205	1-1	113	0-42	26-6	0-25	13-5
11		2-35	535	1-65	249	1-0	95	0-4	25-0	0-28	15-6
12		2-25	485	1-65	249	1-0	95	0-4	25-0	0-25	13-5
13		2-15	438	1-85	316	0-95	87-5	0-37	22-6	0-25	13-5
14		2-35	535	2-15	438	1-05	103	0-37	22-6	0-20	10-0
15		2-55	642	2-15	438	1-05	103	0-35	21-0	0-22	11-4
16		2-7	730	2-15	438	1-0	95	0-35	21-0	0-30	17-0
17		2-6	670	2-15	438	0-9	80	0-32	18-6	0-41	25-8
18		2-55	642	2-2	460	0-9	80	0-37	22-6	0-61	43-3
19		2-5	615	2-1	415	0-96	89	0-37	22-6	0-88	77-4
20		2-4	560	2-05	395	0-91	81-5	0-37	22-6	1-02	98-6
21		2-4	560	1-85	316	0-83	70-9	0-35	21-0	0-90	80-0
22		2-5	615	1-75	282	0-8	67-0	0-35	21-0	0-88	77-4
23		2-4	560	1-65	249	0-78	64-6	0-35	21-0	0-80	67-0
24		2-35	535	1-4	177	0-75	61-0	0-30	17-0	0-80	67-0
25		2-15	438	1-5	205	0-72	57-4	0-28	15-6	0-76	62-2
26		2-2	460	1-65	249	0-70	55-0	0-25	13-5	0-70	55-0
27		2-15	438	1-65	249	0-67	51-1	0-24	12-8	0-70	55-0
28		2-0	375	1-6	233	0-65	48-5	0-25	13-5	0-65	48-5
29		1-75	282	1-65	249	0-62	44-6	0-22	11-4	0-60	42-0
30		1-75	282	1-65	249	0-61	43-3	0-25	13-5	0-60	42-0
31		2-0	375			0-6	42-0	0-19	9-5		

MONTHLY DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

(Drainage area 40 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May..	730	282	506	12-7	14-6	31,100
June	615	177	348	8-7	9-71	20,700
July	233	42	106	2-65	3-06	6,520
August..	40-2	9-5	22-9	0-57	0-66	1,410
September..	98-5	8-0	34-1	0-85	0-95	2,030

Accuracy A.

LITTLE SAND CREEK, NEAR JAFFRAY (3043).

Location.—At small bridge, above Rosen's ranch, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—See Big Sand creek.

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Gauge.—Wooden staff gauge, nailed to the bridge, read daily by Andrew Rosen of Jaffray.

Channel.—Uniform. Water unbroken and swift. Control doubtful.

Discharge Measurements.—Five were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Little Sand creek, a tributary of Big Sand creek, is a small stream used extensively for irrigation.

DISCHARGE MEASUREMENTS of Little Sand Creek, near Jaffray, for 1914.

Date.	Hydrographer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1914.							
May 15	D. O. B. G., R. H. H.	1048	24.0	31.7	3.51	1.333	111
June 19	D. O. B. G., H. B. H.	1048	24.0	26.7	3.01	1.000	80.3
July 13	R. H. H. (Prov.)		24.0	26.9	3.05	0.875	82.0
July 29	D. O. B. G., R. H. H.	1929	24.0	14.7	2.04	0.458	30.0
Sept 14	H. B. H. (Prov.)			17.2	2.11	0.562	36.3

DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

Day.	April.		May.		June.	
	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
	Feet.	Sq. ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1			1.0	85.0	1.04	90.0
2			0.95	79.0	1.29	120.0
3			1.05	91.0	1.4	133.0
4			0.95	79.0	1.46	141.0
5			0.9	73.2	1.46	141.0
6			0.95	79.0	1.42	136.0
7			1.1	97.0	1.25	115.0
8			0.85	68.2	1.17	105.0
9			1.2	109.0	1.08	95.0
10			1.1	97.0	0.94	77.5
11			1.12	99.0	1.12	99.0
12			1.12	99.0	1.17	105.0
13			1.17	105.0	1.0	85.0
14			1.25	118.0	0.96	80.0
15			1.35	127.0	1.06	92.5
16			1.06	141.0	1.0	85.0
17			1.35	127.0	1.14	102.0
18			1.46	141.0	0.96	80.0
19			1.5	147.0	0.87	69.6
20			1.5	147.0	1.02	87.5
21			1.44	148.0	0.85	68.2
22			1.44	138.0	0.79	61.5
23			1.29	120.0	0.77	59.2
24			1.27	117.0	0.85	68.2
25			1.31	122.0	0.92	75.9
26	0.8	62.4	1.37	129.0	1.0	85.0
27	0.81	60.0	1.2	109.0	1.06	92.5
28	0.85	68.2	1.12	99.0	0.85	68.2
29	0.85	68.2	1.04	90.0	0.79	61.5
30	0.92	75.0	1.12	99.0	0.77	59.2
31			0.96	80.0		

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DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914—Concluded.

DAY.	July.		August.		September.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	0-637	50-3	0-645	46-1	0-312	19-7
2.....	0-666	48-3	0-416	26-3	0-312	19-7
3.....	0-812	63-7	0-437	27-8	0-532	37-0
4.....	0-687	50-3	0-645	46-1	0-604	42-1
5.....	0-604	42-1	0-572	39-2	0-308	19-5
6.....	0-791	61-5	0-416	26-3	0-283	18-3
7.....	0-625	44-1	0-398	24-7	0-301	19-1
8.....	0-625	44-1	0-398	24-7	0-593	40-9
9.....	0-625	44-1	0-398	24-7	0-791	61-5
10.....	0-582	38-1	0-604	42-1	0-687	50-3
11.....	0-250	34-2	0-583	40-1	0-520	34-2
12.....	0-500	32-5	0-604	42-1	0-666	48-3
13.....	0-708	52-5	0-583	40-1	0-687	50-3
14.....	0-520	34-2	0-534	37-3	0-479	30-8
15.....	0-509	32-5	0-562	35-1	0-520	34-2
16.....	0-514	33-3	0-416	26-3	0-479	30-8
17.....	0-479	30-8	0-395	24-7	0-544	36-1
18.....	0-489	31-6	0-437	27-8	0-520	34-2
19.....	0-479	30-8	0-562	35-1	0-479	30-8
20.....	0-625	44-1	0-510	33-4	0-500	33-2
21.....	0-625	44-1	0-363	22-4	0-401	25-3
22.....	0-439	30-8	0-364	22-6	0-416	26-3
23.....	0-437	27-8	0-333	20-7	0-395	24-7
24.....	0-437	27-8	0-348	21-2	0-354	21-9
25.....	0-437	27-8	0-333	20-7	0-416	26-3
26.....	0-416	26-3	0-333	20-7	0-437	27-8
27.....	0-604	42-1	0-372	20-2	0-437	27-8
28.....	0-437	27-8	0-312	19-7	0-408	25-6
29.....	0-416	26-3	0-312	19-7	0-408	25-6
30.....	0-458	29-3	0-312	19-7	0-384	23-8
31.....	0-770	59-2	0-312	19-7	.....	.....

MONTHLY DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

(Drainage area 33 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.
May.....	147	68-2	108	3-28	3-78	6,640
June.....	141	59-2	91-3	2-77	3-09	5,430
July.....	63-7	26-3	39-1	1-18	1-36	2,400
August.....	46-1	19-7	29-1	0-88	1-01	1,700
September.....	61-5	18-3	31-5	0-95	1-06	1,870

Accuracy "C."

ST. MARY'S RIVER, NEAR WYCLIFFE (3050).

Location.—At traffic bridge near Wycliffe, 12 miles from the mouth and 7 miles from Cranbrook. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—Climatic conditions near Wycliffe are very similar to those at Cranbrook. At Cranbrook, from December 1, 1913, to November

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30, 1914, the precipitation was 16 inches. The summers are hot, windy and dusty, almost semi-arid. The winters are severe, with occasional cold spells a week or so duration, when the temperature may go as low as -40°F or -50°F . In December, 1914, engineers of the British Columbia Hydrographic Survey were doing field work around Cranbrook when the temperature was as low as -20°F . St. Mary's river freezes up in November or December and remains frozen till March. Frazil ice is prevalent.

Gauge.—Vertical staff gauge, read daily by the Otis Staples Lumber Company at Wycliffe.

Channel.—Straight, uniform, with smooth, swift water. Good control.

Discharge Measurements.—Mr. Hicks, District Engineer, Provincial Water Rights Branch, made several measurements in 1913, and in 1914 four measurements were made.

Accuracy.—Combining Mr. Hick's measurements and the 1914 measurements a very good gauge-height discharge curve has been obtained. The results should be within 10 per cent.

General.—The St. Mary's is a large river rising in the divide between Kootenay lake and Kootenay river in East Kootenay. It flows in an easterly direction, discharging into Kootenay river near Fort Steele, 50 miles above the international boundary line. It is about 50 miles long and drains in the neighbourhood of 1,100 square miles.

The St. Mary's river is at present used for logging purposes. The Otis Staples Lumber Company has a large mill at Wycliffe, and logs are driven from the timber limits near the source of the river to Wycliffe. Ore, particularly silver-lead and zinc, is found in large quantities in various parts of the drainage. The Sullivan mine, at Kimberley, had an output in 1914 of 36,000 tons, from which was obtained 550,000 ounces of silver and 25,000,000 pounds of lead. Power is obtained from Mark creek, a tributary of the St. Mary's.

On St. Mary's river there is a power site immediately above the gauging station near Wycliffe. A head of from 30 to 40 feet may be obtained, and a development of about 2,000 horse power may be installed at a fairly reasonable figure.

DISCHARGE MEASUREMENTS of St. Mary's River at Wycliffe, for 1914.

Date.	Hydrographer.	Meter No	Width.	Area of Section	Mean Velocity	Gauge Height.	Discharge
1914.			Feet	Sq ft	Ft per sec	Feet	Sec ft.
June 30. . . .	D. O. B. G.	1,048	41	1,110	6.83	5.90	7,561
July 23. . . .	"	1,929	162	708	1.45	8.61	2,480
Oct. 10. . . .	H. B. H.	1,999	148	434	1.95	1.9	878
Oct. 16. . . .	"	1,929	148	452	1.91	1.9	877

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DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe,
for 1914.

DAY.	April.		May.		June.	
	Gauge Height.	Dis- charge.	Gauge Height.	Dis- charge.	Gauge Height.	Dis- charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.ft.
1	1-0	395	3-6	2,460	6-25	8,720
2	1-0	395	4-5	3,910	6-85	11,000
3	1-0	395	5-45	6,210	8-2	17,100
4	1-0	395	5-4	6,070	8-2	17,100
5	1-16	441	4-9	4,790	7-6	14,300
6	1-22	466	4-4	3,710	7-1	12,000
7	1-32	506	4-9	4,790	6-25	8,720
8	1-4	541	3-45	2,280	5-10	5,280
9	1-55	617	3-4	2,220	4-95	4,910
10	1-65	674	3-7	2,590	4-90	4,790
11	1-95	873	4-15	3,260	5-00	5,030
12	2-00	910	4-7	4,340	5-35	5,940
13	2-15	1,030	5-05	5,160	5-65	6,790
14	2-45	1,270	5-15	5,410	6-36	9,060
15	3-05	1,840	6-1	8,200	7-0	11,600
16	3-25	2,060	6-3	8,890	7-2	12,500
17	3-30	2,110	6-4	9,240	7-35	13,100
18	3-40	2,220	6-3	8,890	7-55	14,000
19	3-4	2,220	6-0	7,870	7-6	14,300
20	3-45	2,280	5-9	7,550	7-55	14,000
21	3-6	2,460	5-9	7,550	7-15	12,200
22	3-6	2,460	5-8	7,230	6-25	8,720
23	3-5	2,340	5-7	6,940	5-5	6,350
24	3-5	2,340	5-7	6,940	5-1	5,280
25	3-5	2,340	5-5	6,350	5-1	5,280
26	3-4	2,220	5-4	6,070	5-6	6,640
27	3-4	2,220	5-4	6,070	6-0	7,870
28	3-3	2,110	5-2	5,540	6-25	8,720
29	3-2	2,000	5-2	5,540	6-05	8,040
30	3-1	1,890	5-0	5,030	5-8	7,240
31			5-6	6,640		

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DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe, for 1914.

DAY.	July.		August.		September.		October.		November.		December.	
	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.	Gauge Height.	Dis-charge.
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1.....	5-82	7,300	2-8	1,590	1-8	767	1-5	590	2-0	910	2-0	910
2.....	6-22	8,610	2-8	1,590	1-8	767	1-5	590	2-0	910	2-0	910
3.....	6-65	10,200	2-7	1,500	1-8	767	1-5	590	2-0	910	2-0	910
4.....	7-0	11,600	2-6	1,400	1-8	767	1-5	590	2-0	910	2-0	910
5.....	7-0	11,600	2-6	1,400	1-8	767	1-5	590	2-0	910	2-0	910
6.....	6-7	10,400	2-5	1,310	1-8	767	1-5	590	2-0	910	2-10	910
7.....	6-2	8,890	2-5	1,310	1-8	767	1-5	590	2-0	910	2-2	910
8.....	5-9	7,550	2-4	1,230	1-8	767	1-5	590	2-0	910	2-2	910
9.....	5-6	6,646	2-4	1,230	1-8	767	1-5	590	2-0	910	2-2	910
10.....	5-5	6,356	2-3	1,150	1-8	767	1-6	644	2-0	910	2-2	910
11.....	5-35	5,940	2-2	1,070	1-8	767	1-6	644	2-0	910	2-2	910
12.....	5-4	6,070	2-2	1,070	1-8	767	1-6	644	2-0	910	2-2	910
13.....	5-5	6,350	2-1	990	1-8	767	1-6	644	2-0	910	2-2	910
14.....	5-5	6,350	2-1	990	1-8	787	1-7	703	2-0	910	2-2	910
15.....	5-4	6,075	2-1	990	1-8	767	1-7	703	2-0	910	2-2	910
16.....	5-0	5,090	2-1	990	1-8	767	1-7	703	2-0	910	2-2	910
17.....	4-7	4,340	2-1	990	1-8	767	1-8	767	2-0	910	2-2	910
18.....	4-5	3,910	2-0	910	1-8	767	1-8	767	2-0	910	2-2	910
19.....	4-25	3,430	2-0	910	1-8	767	1-8	767	2-0	910	2-2	910
20.....	3-95	2,940	2-0	910	1-8	767	1-8	767	2-0	910	2-2	910
21.....	3-75	2,660	2-0	910	1-8	767	1-8	767	2-0	910	2-2	910
22.....	3-55	2,490	2-0	910	1-8	767	1-8	767	2-0	910	2-2	910
23.....	3-4	2,220	1-9	836	1-8	767	1-8	767	2-0	910	2-2	910
24.....	3-25	2,060	1-9	836	1-8	767	1-9	836	2-0	910	2-2	910
25.....	3-2	2,000	1-9	836	1-8	767	1-9	836	2-0	910	2-2	910
26.....	3-1	1,890	1-9	836	1-8	767	1-9	836	2-0	910	2-2	910
27.....	3-1	1,890	1-8	767	1-8	767	1-9	836	2-0	910	2-2	910
28.....	3-0	1,780	1-8	767	1-8	767	1-9	836	2-0	910	2-2	910
29.....	3-0	1,780	1-8	767	1-8	767	1-9	836	2-0	910	2-2	910
30.....	2-9	1,680	1-8	767	1-8	767	1-9	836	2-0	910	2-2	910
31.....	2-8	1,590	1-8	767	1-0	.....	1-9	836	.....	.....	2-2	910

MONTHLY DISCHARGE of St. Marys River near Wycliffe for 1914.

(Drainage area, 1,100 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.						RUN-OFF.		ACCURACY.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on Drainage area.	Total in acre-feet.			
April.....	2,460	395	1,470	1-31	1-50	87,500	R		
May.....	9,240	2,220	5,530	5-05	5-82	340,000	R		
June.....	17,100	7,340	9,550	8-68	9-68	568,000	R		
July.....	11,600	1,590	5,420	4-93	5-68	333,000	R		
August.....	1,590	767	1,050	0-95	1-10	64,600	R		
September.....	767	767	767	0-70	0-78	45,600	D		
October.....	836	590	711	0-65	0-75	43,700	D		
November.....	910	910	910	0-83	0-93	54,100	D		

MISCELLANEOUS METERING STATIONS.

Date.	Stream.	Locality.	Gauge Height.	Discharge.
			Feet.	Sec.-ft.
1913.				
Sept. 20.....	Washout Creek.....	Galena.....	0-72	12-9
1914.				
May 26.....	Washout Creek.....	Galena.....	1-50	45-0
June 21.....	".....	".....	1-65	55-8
Aug. 24.....	".....	".....	1-02	13-4
Oct. 7.....	".....	".....	1-10	12-2
April 17.....	Shuswap Creek.....	Athalmer.....	0-59	11-09
May 23.....	".....	".....	1-30	48-62
July 28.....	".....	".....	1-15	20-90
Aug. 25.....	".....	".....	1-00	16-70
Sept. 21.....	".....	".....	1-00	17-15
" 28.....	".....	".....	1-00	15-25
May 27.....	Lewis Creek.....	Wasa.....	0-55	17-5
July 16.....	".....	".....	0-65	17-5
Aug. 12.....	".....	".....	".....	7-08
Sept. 26.....	".....	".....	0-40	4-92
May 15.....	Little Bull.....	Bull River.....	1-05	7-83
Aug. 4.....	".....	".....	1-30	14-3
Sept. 9.....	".....	".....	1-26	12-9
July 7.....	Moyie River.....	Kingsgate.....	2-1	1,140-
Aug. 1.....	".....	".....	0-80	333-0
Oct. 15.....	".....	".....	1-10	183-0
" 15.....	".....	".....	0-80	225-0
" 8.....	".....	".....	0-75	213-0
Aug. 14.....	Sheep Creek.....	Wasa.....	11-25	91-8
Sept. 28.....	".....	".....	11-00	97-0
Aug. 25.....	Skookumehuk Creek.....	".....	".....	114

Date.	Stream.	Tributary to--	Locality.	Gauge Height.	Discharge.
				Feet.	Sec.-ft.
Nov. 27.....	Duncan River.....	Howser.....	Howser.....	1-80	1,250
" 29.....	Fry Creek.....	".....	Kaslo.....	2-1	278
" 27.....	Glacier Creek.....	".....	Howser.....	4-3	142
" 10.....	Kootenay River.....	".....	Taghum.....	".....	27,300
Dec. 8.....	".....	".....	".....	".....	23,400
Nov. 28.....	Lardeau River.....	".....	Howser.....	".....	1,130
April 18.....	Wilson Creek.....	".....	Roseberry.....	1-85	822
May 14.....	".....	".....	".....	3-48	2,290
June 15.....	".....	".....	".....	3-80	3,320
" 18.....	".....	".....	".....	4-00	2,480
July 8.....	".....	".....	".....	2-50	2,340
Aug. 17.....	".....	".....	".....	0-85	642
Nov. 3.....	".....	".....	".....	0-90	759

Date.	Stream.	Locality.	Gauge Height.	Discharge.
			Feet.	Sec.-ft.
1914.				
May 7.....	Columbia River.....	Near Athalmer.....	1-65	235
" 17.....	".....	".....	1-43	233
Oct. 24.....	Field Creek.....	Near Field.....	".....	2-92
June 15.....	Horse Creek.....	Golden.....	".....	62-8
July 28.....	Hospital Creek.....	".....	3-82	17-4
June 12.....	".....	".....	5-20	66-1
July 27.....	".....	".....	4-75	6-69
Nov. 20.....	Salmon River.....	Beaton.....	1-8	57-0

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