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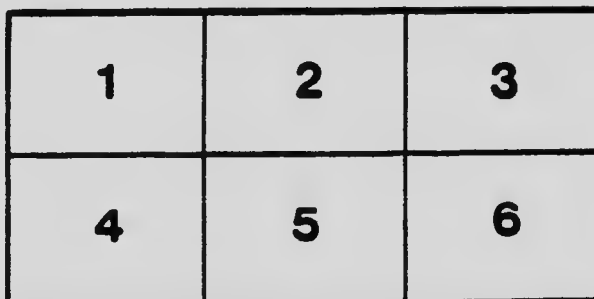
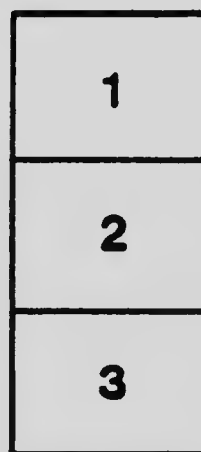
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**DEPARTMENT OF THE INTERIOR—CANADA**

Hon. W. J. ROCHE, Minister, W. W. GORY, Deputy Minister.

**DOMINION WATER POWER BRANCH,**

J. B. CHALLIES, C.E., Superintendent.

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**WATER RESOURCES PAPER No. 21**

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**REPORT**  
OF THE  
**BRITISH COLUMBIA**  
**HYDROMETRIC SURVEY**

FOR  
**The Calendar Year 1916**

BY  
**R. G. SWAN, B.A.Sc.,**  
Chief Engineer

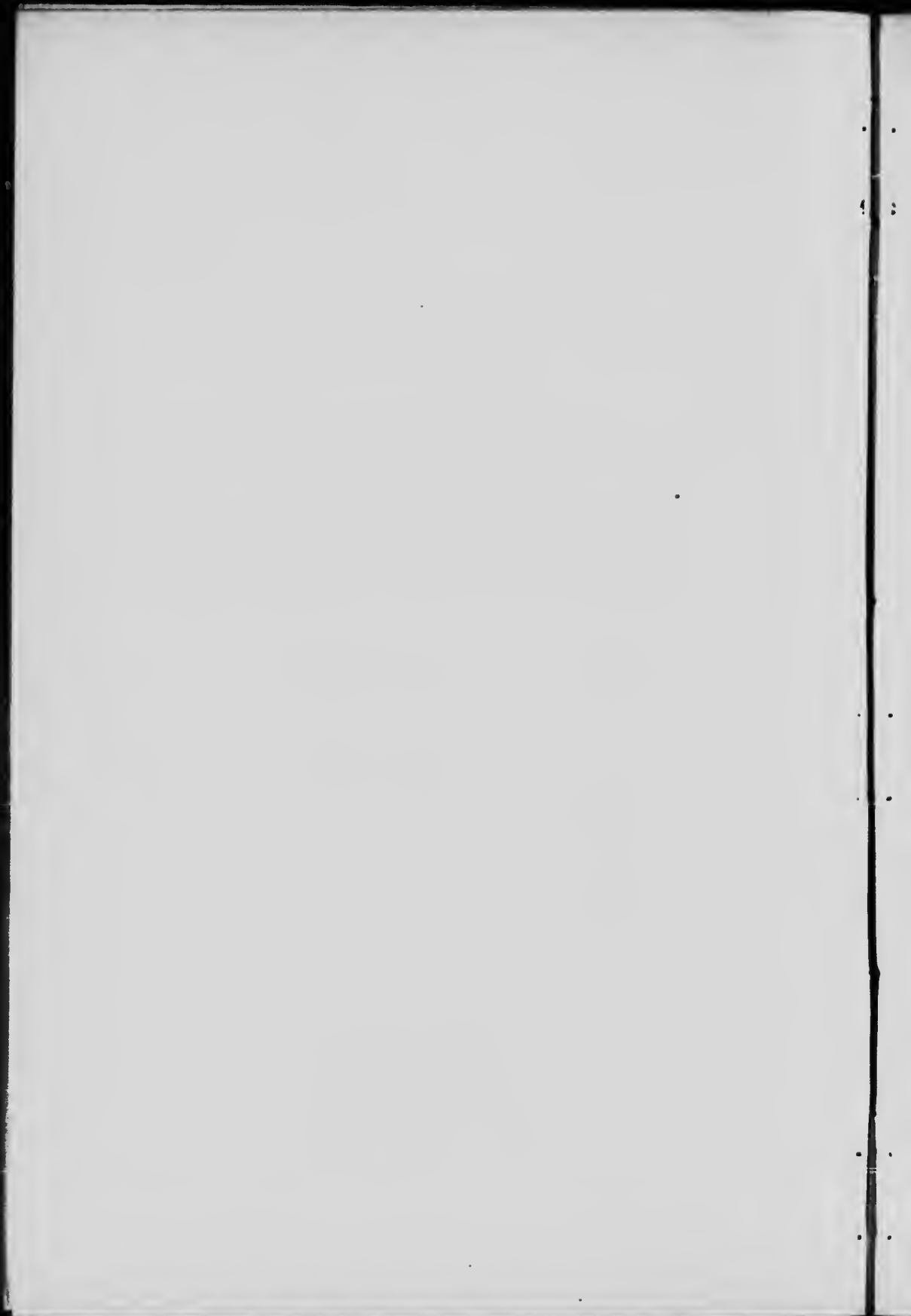
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Prepared under the direction of the Superintendent of Water Power.

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OTTAWA.  
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1918



*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O.,  
etc., etc., Governor General and Commander in Chief of the Dominion of  
Canada.*

MAY IT PLEASE YOUR EXCELLENCY :

The undersigned has the honour to lay before Your Excellency the British  
Columbia Hydrometric Survey Report for 1916.

Respectfully submitted,

W. J. ROCHE,  
*Minister of the Interior.*

OTTAWA, MAY 1, 1917.



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## MAP.

Southern British Columbia, showing Gauging Stations . . . . .	Inside back cover.
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REPORT  
OF THE  
BRITISH COLUMBIA HYDROMETRIC  
SURVEY FOR 1916.

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CHAPTER I.  
REPORT OF R. G. SWAN, B.A.Sc.  
CHIEF ENGINEER





## CHAPTER I.

## REPORT OF THE CHIEF ENGINEER.

## INTRODUCTION.

In May 1911 the Railway Belt Hydrographic Survey was organized by the Department of the Interior for the purpose of investigating the complex water situation on the ground, suggesting a practicable and efficient form of Dominion water administration, studying the water supply of all streams and the water resources of the Railway Belt, investigating storage possibilities with a view to conserving and beneficially using the limited water supply, making the surveys necessary to the proper conservation and use of the said water resources, and reporting on the various irrigation, reclamation and water power projects before the Department.

Following the separation of the Dominion Water Power Branch as a distinct organization, the scope of the hydrometric survey work in British Columbia was enlarged to cover the entire province in accordance with the terms of an agreement reached between the province of British Columbia and the Dominion Government. Since that date all the stream measurement work throughout the Province, except certain extensive investigations regarding irrigation conditions, has been carried on by the Dominion Water Power Branch under the name of the British Columbia Hydrometric Survey, working in close co-operation with the Provincial Water Rights Branch. The work has been extended as rapidly as the funds available would permit and to meet, as far as possible, the present and anticipated requirements of the more newly organized, as well as of the older settled, portions of the Province.

## SCOPE OF WORK.

The work of collecting hydrometric data in the province of British Columbia, has been carried on during 1916 under more or less adverse conditions. The absolute necessity of practising the strictest economy, combined with the shortage of staff, has had the effect of confining the field of research almost exclusively to those streams upon which stations had already been established. By a careful planning of the staff's field work it was, however, found possible to maintain most of the stations established in former years. Those streams upon which sufficient data for the requirements of the British Columbia Water Rights Branch had already been collected were discontinued, as were also those established in connection with the proposed water supply for the town of Field, the scheme having been abandoned.

As a result of the co-operation between the Dominion Lands Branch and the Water Power Branch, investigations have been made and reports submitted on the following:—

Application of the Imperial Oil Company to construct a dam and pipe line for a water supply in connection with their refinery.

The claim of owners of Lot 19, G. 2, Tp. 11, E. C. M. to Lot 242, G. 2, Tp. 11, E.C.M.

Application of J. C. Shields to purchase, under irrigation conditions, certain lands in Tp. 20 and 21, Rge. 20, West of 6th Meridian.

Application of the city of Salmon Arm for the setting aside of certain lands in the drainage area of East Canoe creek, from which the city secures its water supply.

Application of A. R. G. Goodwin to purchase, under irrigation conditions, lands in Section 28, Tp. 19, Rge. 15, West 6th Meridian.

The scheme for co-operation with the Provincial Water Rights Branch, both in work and finance, inaugurated in 1914, has been continued throughout the year with marked success. Every effort has been made to assist the Water Rights Branch by establishing stations on streams where data were required in connection with its administration.

Owing to the shortage of staff, to which passing reference has already been made, it was found necessary to call the field engineers into the office to assist in the annual compilation of run-off data. This was regrettable, as at the time most of the gauging stations, particularly in the interior of the Province, required almost constant attention, owing to the discharge relation being affected by ice conditions.

For the same reason it was found impossible to devote to the newly established Fort George District the amount of attention it really required, the services of Mr. Elliott, the Engineer of that district, being more urgently needed in the Nelson Division.

#### ORGANIZATION.

The methods of collecting and compiling the data for publication in the Annual Stream Measurement Report were similar to those of previous years.

At the commencement of the year the staff consisted of the Chief Engineer, two Division Engineers, six Assistant Engineers, one Accountant, two Clerical Assistants and two Stenographers.

For the first quarter of the year the organization was similar to that of 1915. In April, Mr. C. E. Richardson, the Division Engineer at Nelson, enlisted with the C.E.F., and Mr. H. O. Dempster, the Assistant Engineer, resigned. Except for the temporary appointment of Mr. T. R. Patterson for the summer months, the engineers referred to were not replaced. Under the circumstances it was considered advisable to temporarily close the Nelson office. For the balance of the year the field work was directed from the Vancouver office, the routine work being placed in charge of G. K. Beeston, who was formerly Office Engineer at Nelson, and was transferred to Vancouver.

## SESSIONAL PAPER No. 25d

The arrangement of the territory into districts, instituted in 1914 with a view to the economical visitation of streams, having been found quite satisfactory, no change has been made.

It is with deep regret that mention is made of the death, while on active service, of Mr. E. M. Dann and Mr. C. P. Cotton, members of this staff, whose work, of a high order, will be greatly missed by the Survey.

## COAST DIVISION.

The field work in the three districts of the Coast Division was in charge of Mr. C. E. Webb, B.A.Sc., and Mr. H. C. Hughes, B.Sc., Mr. Webb being in charge of the Vancouver Island District, Mr. Hughes in charge of the Lillooet District, and both engineers in charge of the Southern District at different periods.

The computations of the data for the Annual Report were made by Messrs. Webb and Hughes and checked by Mr. Balls, the Office Engineer.

*Coast Division. List of Regular Gauging Stations, Southern District.*

Station Number.	Stream.	Location.
1000	Belknap	Tp. 5, Rge. 7, W. 7 M.
1063	Belknap	Tp. 7, Rge. 7, W. 7 M.
1001	Boulder	Tp. 3, Rge. 27, W. 6 M.
1021	Brandt	Tp. 7, Rge. 7, W. 7 M.
1023	Capilano	Near North Vancouver—Water District of Vancouver.
1004	Chilliwack	Tp. 23, E. C. M.
1005	Coquihalla	Tp. 5, Rge. 26, W. 6 M.
1066	Coquitlam	Tp. 39, W. C. M.
1062	Flume	Six miles from head of Burrard Inlet—Water District of Vancouver
1007	Fraser	Tp. 5, Rge. 26, W. 6 M.
1064	Hixon	Tp. 6, Rge. 7, W. 7 M.
1010	Jones	Tp. 3, Rge. 27, W. 6 M.
1046	Lynn	Near North Vancouver—Water District of Vancouver.
1011	Meslibet	Tp. 7, Rge. 6, W. 7 M.
1058	Nicolson	Tp. 4, Rge. 5, W. 6 M.
1013	Norton	Tp. 7, Rge. 7, W. 7 M.
1022	Seymour	Near North Vancouver—Water District of Vancouver.
1089	South Lillooet (Alouette)	Tp. 4, Rge. 4, W. 7 M.
1056	Sumallo	Near Railway Belt boundary—Water District of Ashcroft.
1057	Sumallo	Tp. 3, Rge. 24, W. 6 M.—Water District of Ashcroft.
1020	Young	Tp. 7, Rge. 7, W. 7 M.

The streams under observation in this district in 1915 were all maintained, with the exceptions of the Chehalis and Pitt rivers, the stations on which were discontinued early in the year.

The only place on the whole reach of the Chehalis river where the services of a gauge reader could be secured was near the mouth, while the diversion for a power development would be at the outlet of Chehalis lake. When the British Columbia Electric Railway Company discontinued their surveys they also discontinued the gauge readings on their gauge at the outlet of the lake, and, as their records were not continued for a sufficient length of time to establish the relation between the two gauges, it was decided to discontinue observing the gauge which had been installed near the mouth.

Owing to the fact that no one resided in the vicinity of Silver Pitt river, the cost of obtaining records was out of proportion to the importance of the stream, and it was therefore considered advisable to discontinue the station until conditions became more favourable.

A Gurley recording gauge was installed on Jones creek, one of the most important undeveloped powers, close to Vancouver. The Vancouver Power Company, which is interested in the flow of this stream, co-operated in the installation of the gauge by carrying out the work in connection with the intake, well and gauge house.

The light cable carrier, as worked out by Mr. Cline, in use on streams with widths up to 150 feet, has proved a great success, and during the year carriers of an improved design have been installed on Belknap, Capilano and Lynn creeks.

*Coast Division. List of Regular Gauging Stations, Lillooet District.*

Station Number.	Stream.	Location.
1065	Brandywine	Near Brew, one mile above mouth—Water District of Vancouver.
1045	Bridge	Ten miles from Shalaith, thirty miles above mouth—Lillooet Water District.
1048	Cayuse	Near Lillooet, above Seton Creek—Lillooet Water District.
1074	Foster Bar	Twenty-three miles south from Lillooet—Lillooet Water District.
1035	Green	Near Pemberton, above Nairn falls—New Westminster Water District.
1050	Laluwissin	Sec. 30, Tp. 27, Rge. 17, W. 6 M.
1028	Lillooet	Near Pemberton—New Westminster Water District.
1073	Pavilion	Near Pavilion—Lillooet Water District.
1049	Seton	Near Lillooet, below Seton lake—Lillooet Water District.

The study of stream flow data in the above district was commenced during the construction of the Pacific Great Eastern Railway between Vancouver and Lillooet, and gauging records at several stations were taken by employees of the company. Since the completion of the construction of this section of the railroad some localities are practically uninhabited, and it therefore became very difficult to maintain these stations. Those on Soo and Sixmile rivers, which are more or less isolated, have had to be discontinued during the year.

This is regrettable, as both rivers, which are tributaries of Green river, are of importance, particularly Soo river, because the excellent undeveloped power site at Nairn falls, Green river, is dependent on Soo river for storage.

Owing to changes in control at the stations on Cheakamus, Fountain and Texas rivers, the meter measurements only can be returned in this report. These are listed under the heading "Miscellaneous Meter Measurements."

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*Coast Division. List of Regular Gauging Stations, Vancouver Island District.*

Station Number.	Stream.	Location.
1032	Big Qualicum	One-and-a-half mile above mouth—Nanaimo Water District.
1042	Campbell	At Campbell lake—Nanaimo Water District.
1027	Chemainus	One mile above mouth, near Chemainus—Victoria Water District.
1054	Cowichan	At Cowichan lake—Victoria Water District.
1030	Englishtans	One-and-a-half mile above mouth, near Parksville—Nanaimo Water District.
1026	Koksilah	Two miles above mouth, near Duncan—Victoria Water District.
1031	Little Qualicum	At Cameron lake, B.C.—Nanaimo Water District.
1028	Nanaimo	Six miles above mouth—Nanaimo Water District.
1040	Oyster	One mile above mouth—Nanaimo Water District.
1034	Puntledge	One mile above mouth, near Courtenay—Nanaimo Water District.
1063	Puntledge	Diversion Dam, above Canadian Collieries Power Plant—Nanaimo Water District.
1025	Shawnigan	At Shawnigan lake, Koenigs, B.C.—Victoria Water District.
1051	Sproat	At Sproat lake.
1052	Stamp	At Great Central lake.
1053	Stamp	One-half mile above Stamp falls—Abernethy Water District.
1039	Tsolum	Three miles above mouth, near Courtenay—Nanaimo Water District.

No changes have been effected in this district during the year.

*Coast Division. List of Miscellaneous Gauging Stations.*

## SOUTHERN DISTRICT.

Station Number.	Stream.	Location.
1084 <sup>1</sup>	loco No. 2	Burrard inlet—Vancouver Water District.
1085	loco No. 3	Burrard inlet—Vancouver Water District.
1086	loco No. 4	Burrard inlet—Vancouver Water District.
1087 <sup>1</sup>	loco No. 5	Burrard inlet—Vancouver Water District.
1055 <sup>1</sup>	Skagit	Forty miles south from Hope—Ashcroft Water District.

## LILLOOET DISTRICT.

Station Number.	Stream.	Location.
1034 <sup>1</sup>	Cheakamus	Near Chekye—Vancouver Water District.
1088 <sup>1</sup>	Cheakamus	Near Watson—Vancouver Water District.
1047 <sup>1</sup>	Fountain	Near Lillooet, one mile above mouth—Lillooet Water District.
1072 <sup>1</sup>	Fraser	At Lillooet—Lillooet Water District.
1083	Island Bar	Ten miles below Lillooet—Lillooet Water District.
1043	Riley	Nine miles below Lillooet—Lillooet Water District.
1075	Swartz	Nineteen miles below Lillooet—Ashcroft Water District.
1044 <sup>1</sup>	Texas	Fourteen miles below Lillooet—Lillooet Water District.

## VANCOUVER ISLAND DISTRICT.

Station Number.	Stream.	Location.
1079	Holt	C.N.P. Ry. bridge, near Duncan—Victoria Water District.

Stations marked thus (1) have been maintained as regular gauging stations, but owing to unsatisfactory ratings it has not been found possible to publish daily discharges in this report.

## KAMLOOPS DIVISION.

There have been no changes in the personnel of the staff of the Kamloops Division during the year. The pressure of work made it necessary to hire temporary assistance from time to time as it was required.

Any stations established or discontinued during the year are mentioned under the headings of their respective districts.

The computations of the data for the Annual Report were made by Mr. A. L. McNaughton and checked by Mr. C. G. Cline, the Division Engineer, and, in order to hasten the completion of the work, temporary assistance was procured.

*Kamloops Division. List of Regular Gauging Stations, Kamloops District.*

Station Number.	Stream.	Location.
2084	Barriere	Near Barriere—Kamloops Water District.
2002	Bolean	Tp. 18, Rge. 12, W. 6 M.
2005	Cherry	Tp. 19, Rge. 19, W. 6 M.
2047	Clearwater	Near Raft River—Kamloops Water District.
2082	Edwards	Tp. 22, Rge. 16, W. 6 M.
2083	Edwards (Lyons diversion)	Tp. 22, Rge. 16, W. 3 M.
2011	Essell	Tp. 17, Rge. 14, W. 6 M.
2067	Fishtrap	Thirty miles north of Kamloops—Kamloops Water District.
2013	Greenstone	Tp. 17, Rge. 20, W. 6 M.
2014	Guichon	Near Mamit lake—Nicola Water District.
2019	Heffley (below Heffley lake)	Tp. 22, Rge. 16, W. 6 M.
2018	Heffley (above diversions, near mouth)	Tp. 22, Rge. 17, W. 6 M.
2020	Ingram	Tp. 17, Rge. 13, W. 6 M.
2022	Jamieson	Tp. 22, Rge. 17, W. 6 M.
2056	Little Clearwater	Near Raft river—Kamloops Water District.
2023	Louis	Tp. 23, Rge. 15, W. 6 M.
2024	Monte (above Bostocks diversion)	Tp. 19, Rge. 15, W. 6 M.
2025	Monte (below diversion to Summit lake)	Tp. 18, Rge. 14, W. 6 M.
2026	Monte (diversion to Summit lake)	Tp. 18, Rge. 14, W. 6 M.
2069	Murtle	Near Raft river—Kamloops Water District.
2085	North Thompson	Near Barriere—Kamloops Water District.
2032	Paul	Tp. 20, Rge. 16, W. 6 M.
2035	Raft	Near Raft river—Kamloops Water District.
2078	Salmon	Tp. 18, Rge. 12, W. 6 M.
2058	Siwash	Tp. 22, Rge. 16, W. 6 M.
2091	Sullivan	Tp. 23, Rge. 16, W. 6 M.
2080	Three mile (Derand)	Tp. 20, Rge. 21, W. 6 M.
2043	Tranquille	Tp. 20, Rge. 19, W. 6 M.
2066	Whitewood	Near Barriere—Kamloops Water District.

This year the ratings were completed for Fishtrap and Greenstone creeks, and the discharges worked out for both 1915 and 1916.

On account of more stable conditions in the stream bed, it has been possible to compute daily discharges for Essell creek and Sullivan creek, and they are reported as regular stations for 1916.

Daily discharges cannot be given for Campbell creek, on account of changes in the bed of the stream. It is the intention to find a new location for the station on this stream next season.

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*Kamloops Division. List of Regular Gauging Stations, Okanagan District.*

Station Number.	Stream.	Location.
2000	Adams	Tp. 23, Rge. 12, W. 5 M.
2065	Ashnola	Near Keremoss—Princeton Water District.
2048	Boundary	At Greenwood—Grand Forks Water District.
2070	Brash	Tp. 18, Rge. 8, W. 6 M.
2050	Celesta	Tp. 26, Rge. 8, W. 6 M.
2073	Chase	Tp. 21, Rge. 13, W. 6 M.
2051	Crazy	Tp. 23, Rge. 5, W. 6 M.
2010	Eagle	Tp. 22, Rge. 6, W. 6 M.
2049	Kettle (Carson)	At Carson—Grand Forks Water District.
2092	Kettle (Cascade)	At Cascade—Grand Forks Water District.
2046	Kettle (Nicholsons bridge)	Near Kettle valley—Grand Forks Water District.
2045	Kettle (West Fork)	Near Westbridge—Grand Forks Water District.
2088	Okanagan	At Okanagan falls—Fairview Water District.
2061	Seymour	Head of Seymour arm, Shuswap lake—Kamloops Water District.
2034	Shuswap	Tp. 18, Rge. 9, W. 6 M.
2054	Similkameen	Near Ashnola—Princeton Water District.
2063	South Similkameen	At Princeton—Princeton Water District.
2042	South Thompson	Tp. 21, Rge. 13, W. 6 M.
2062	Tulameen	At Coalmont—Princeton Water District.

The ratings have been completed for Ashnola and Celesta creeks, and this year they are reported as regular stations. Discharges have been computed for both 1915 and 1916.

The station on the North Fork of the Kettle river at Grand Forks, proved unsatisfactory on account of the slag which is dumped into the river at the smelter. It was discontinued, and a new station established on the main river at Cascade. The new station gives the total flow of the Kettle river, including the North Fork.

Several stations in this district have been discontinued after records had been kept for a year or two, since there seemed to be an abundant supply of water, and a more accurate idea of the stream flow was not considered necessary. Observations on the following stations were discontinued this year: Granite, Manson, Ross, Scotch and Niskonlith.

On Twentymile creek there is a power plant which utilizes the total flow of the stream, so that actual measurements are hardly necessary. The station was very expensive and difficult to maintain, and it has been discontinued.

*Kamloops Division. List of Regular Gauging Stations, Ashcroft District.*

Station Number.	Stream.	Location.
2001	Barnes	Tp. 20, Rge. 24, W. 6 M.
2089	Beaver	North of Nicola lake—Nicola Water District.
2003	Bonaparte	Tp. 21, Rge. 24, W. 6 M.
2071	Cache	Tp. 21, Rge. 24, W. 6 M.
2072	Cache (diversion to Eightmile)	Tp. 21, Rge. 24, W. 6 M.
2006	Coldwater	Near Merritt—Nicola Water District.
2077	Cries	Tp. 22, Rge. 22, W. 6 M.
2008	Diadman	Tp. 22, Rge. 22, W. 6 M.
2016	Hat	Tp. 19, Rge. 26, W. 6 M.
2027	Nahatlatch (seven miles from mouth)	Tp. 12, Rge. 27, W. 6 M.
2028	Nahatlatch (outlet of Nahatlatch lake)	Tp. 12, Rge. 27, W. 6 M.
2030	Nicola (mouth)	Tp. 17, Rge. 25, W. 6 M.
2075	Nicola (Nicola)	At Nicola—Nicola Water District.
2086	Nicola (above Nicola lake)	East of Nicola lake—Nicola Water District.
2056	Scottie	Tp. 23, Rge. 25, W. 6 M.
2039	Thompson (Spences Bldg.)	Tp. 17, Rge. 25, W. 6 M.

The station on the Nicola river at Merritt was discontinued on account of the continual shifting of the stream bed, and because measurements are now being made on both branches of the stream just above Merritt.

A staff gauge was installed on the Nahatlatch river at the outlet of Nahatlatch lake, to replace a chain gauge previously in use. With the help of the measurements made in 1916, the rating of this station has been revised, and it has been possible to compute fairly accurate discharges for both 1915 and 1916.

At the lower station on the Nahatlatch river, an auxiliary gauge was established on which readings can be taken daily. This is quite an improvement on the weekly readings taken previously. The cable at this station was raised and more securely anchored to the rock cliff above.

Measurements were made on Scottie creek at the request of the Water Rights Branch of British Columbia.

On account of the continual shifting of the channel on Spius creek, it has not been possible to compute the daily discharges this year (1916).

*Kamloops Division. List of Miscellaneous Gauging Stations.*

KAMLOOPS DISTRICT.

Station Number.	Stream.	Location.
2093	Boulder	Sixty miles north of Kamloops—Kamloops Water District.
2004 <sup>1</sup>	Campbell	Tp. 19, Rge. 16, W. 6 M.—Kamloops Water District.
2057	Canyon	Tp. 21, Rge. 15, W. 6 M.—Kamloops Water District.
2095	Fadear	Tp. 24, Rge. 15, W. 6 M.—Kamloops Water District.
2096	Hefley (Anderson's diversion)	Tp. 22, Rge. 16, W. 6 M.—Kamloops Water District.
2097	Hefley (Crawshaw diversion)	Tp. 22, Rge. 16, W. 6 M.—Kamloops Water District.
2098	Lane	Tp. 22, Rge. 17, W. 6 M.—Kamloops Water District.
2099	Peterson	Tp. 19, Rge. 17, W. 6 M.—Kamloops Water District.
2100	Scuittoe	Tp. 18, Rge. 16, W. 6 M.—Kamloops Water District.

OKANAGAN DISTRICT.

Station Number.	Stream.	Location.
2101	East Canoe	Tp. 20, Rge. 8, W. 6 M.—Kamloops Water District.
2052	Kettle (North Fork)	Grand Forks—Grand Forks Water District.
2102	Otter	Tulameen River—Princeton Water District.
2081	Twentymile	Hedley—Princeton Water District.

ASHCROFT DISTRICT.

Station Number.	Stream.	Location.
2090 <sup>1</sup>	Oregann Jack	Tp. 19, Rge. 25, W. 6 M.—Ashcroft Water District.
2037 <sup>1</sup>	Spius	Tp. 13, Rge. 23, W. 6 M.—Nicola Water District.

Stations marked thus (1) have been maintained as regular gauging stations, but owing to unsatisfactory ratings it has not been found possible to publish daily discharges in this report.



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*Kamloops Division. Water Level Stations.*

Station Number.	Stream.	Location.
2103	Adams lake .....	Tp. 21, Rge. 12, W. 6 M.—Kamloops Water District.
2087	Shuswap lake .....	Tp. 21, Rge. 8, W. 6 M.—Kamloops Water District.
2040	Thompson river (Kamloops) .....	Tp. 20, Rge. 17, W. 6 M.—Kamloops Water District.

## NELSON DIVISION.

As previously stated, the Nelson Office was closed in the early part of April, and for the balance of the year the field work was carried on under the direct supervision of the Chief Engineer.

In addition to the territory in Mr. Hughes' care in the Coast Division, the Revelstoke District of the Nelson Division was also placed in his charge.

From April to September Mr. T. R. Patterson was in charge of the Nelson and Cranbrook Districts, and from September to the end of the year Mr. J. A. Elliott was in charge.

The computations of the data for the Annual Report were made by Mr. H. C. Hughes and J. A. Elliott and checked by Mr. G. K. Beeston.

*Nelson Division. List of Regular Gauging Stations, Nelson District.*

Station Number.	Stream.	Location.
3025	Carpenter .....	Sandon—New Denver Water District.
3008	Columbia .....	Trail—Nelson Water District.
3006	Duncan .....	Howser—Kaslo Water District.
3084	Inoosaklin .....	Edgewood—Nelson Water District.
3029	Kaslo .....	Kaslo—Kaslo Water District.
3014	Kootenay .....	Glade—Nelson Water District.
3087	L. H. .....	Silverton—New Denver Water District.
3080	Slocan .....	Slocan City—New Denver Water District.
3023	Wilson .....	Roseberry—New Denver Water District.

The station on the Columbia at Castlegar was established to provide a check on the stream flow records of the Columbia at Trail and Kootenay at Glade, but these stations having been sufficiently well rated, it was decided at the first of the year to discontinue that on the Columbia at Castlegar.

The exceptionally high water on Fry creek washed out the cable and car and changed the control. It has not been possible to re-rate the station during the balance of the year. However, the gauge has been observed daily and it is hoped it will be possible to publish daily discharges, etc., in a later report.

Owing to the stations on Silverton creek above and below Hewitt Mill having been affected by high water carrying out a portion of the dam, they have not been sufficiently well rated to warrant the publication of the daily discharges.

The meter measurement for the three stations on Fry and Silverton creeks will be found under the heading "Miscellaneous Meter Measurements."

*Nelson Division. List of Regular Gauging Stations, Revelstoke District.*

Station Number.	Stream.	Location.
3000	Aholkoix	Near Wigwam—Revelstoke Water District.
3003	Bugaboo	Near Spillimacheen—Golden Water District.
3007	Columbia	At Revelstoke—Revelstoke Water District.
3053	Hospital	Near Golden—Golden Water District.
3009	Illecillewaet	Near Revelstoke—Revelstoke Water District.
3011	Kicking Horse	At Golden—Golden Water District.
3012	Kicking Horse	Near Field—Golden Water District.
3013	Kicking Horse	Near No. 2 Tunnel—Golden Water District.
3019	Spillimacheen	Near Spillimacheen—Golden Water District.

A number of stations in this district, for various reasons, were discontinued at the first of the year.

Field Springs No. 1, No. 2 and No. 3, as previously stated, established in connection with the proposed water supply for the town of Field, were discontinued owing to the project being abandoned.

On account of the difficulty in rating North and South Vermilion creeks, caused by the shifting nature of the river beds, the establishment of permanent controls is under consideration.

The station on the Blackberry river was discontinued. Having been kept up for several years, it was considered that sufficient data had been accumulated for any use to which the stream may be put.

The high water affected the rating of Incomappleux and No. 2 rivers, and the new ratings are not sufficiently well defined to compute the daily discharges. The meter measurements will be found under the heading "Miscellaneous Meter Measurements."

*Nelson Division. List of Regular Gauging Stations, Cranbrook District.*

Station Number.	Stream.	Location.
3012	Big Sand	Jaffray—Fernie Water District.
3038	Cherry	Wasa—Cranbrook Water District.
3048	Elk	Elko—Fernie Water District.
3047	Gold	Newgate—Cranbrook Water District.
3041	Kootenay	Wardner—Cranbrook Water District.
3043	Little Sand	Jaffray—Fernie Water District.
3037	Mark	Marysville—Cranbrook Water District.
3056	Moyie	Kingsgate—Cranbrook Water District.
3050	St. Marys	Wychiffe—Cranbrook Water District.

Previous to 1916 the station on Rock creek had been maintained as a regular gauging station, but this year it was impossible to obtain a gauge reader. The results of meter measurements will be found under the heading "Miscellaneous Meter Measurements."

The exceptional high water which occurred in June affected the control on Bull river, and it was not found possible to re-rate the station during the balance of the year. Daily gauge records have been secured, and it is hoped that it will be possible to publish daily discharges in a later report. The results of meter measurements will be found under the heading "Miscellaneous Meter Measurements."

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The extreme high water in the Kootenays, which is shown by reliable information to have been the highest since 1894, washed out several of our gauges, and consequently some of our records were broken for the short period, until the gauges were replaced.

*Nelson Division. List of Miscellaneous Gauging Stations.*

## NELSON DISTRICT.

Station Number.	Stream.	Location.
3024	Carpenter	New Denver—New Denver Water District.
3004	Columbia	Castlegar—Nelson Water District.
3088	Enterprise	Silverton—New Denver Water District.
3070 <sup>1</sup>	Fry	Kaslo—Kaslo Water District.
3031 <sup>1</sup>	Goat	Brackton—Nelson Water District.
3091	Gold	Silverton—New Denver Water District.
3064 <sup>1</sup>	Lardeau	Howser—Kaslo Water District.
3028 <sup>1</sup>	Silverton (above Intake)	Silverton—New Denver Water District.
3027 <sup>1</sup>	Silverton (above Mill)	Silverton—New Denver Water District.
3018	Slocan	Crescent Valley—Nelson Water District.
3089	Spring	Trail—Nelson Water District.
3090	Vevey	Silverton—New Denver Water District.

## REVELSTOKE DISTRICT.

3005 <sup>1</sup>	Columbia	Golden—Golden Water District.
5030 <sup>1</sup>	Incomappleux	Beaton—Revelstoke Water District.
3068	Incomappleux	Cambourne—Revelstoke Water District.
3015 <sup>1</sup>	No. 2	Wilmer—Windermere Water District.
3020	Toby	Mahmer—Windermere Water District.
3054	Washout	Galena—Golden Water District.

## CRANBROOK DISTRICT.

3039 <sup>1</sup>	Hull	Bull River—Fernie Water District.
3045	Linklater	Newgate—Cranbrook Water District.
3046	Phillips	Roosville—Fernie Water District.
3049 <sup>1</sup>	Rock	Elko—Fernie Water District.

Stations marked thus (1) have been maintained as regular gauging stations, but owing to unsatisfactory ratings it has not been found possible to publish daily discharges in this report.

## FORT GEORGE DISTRICT.

Owing to the necessity of transferring Mr. Elliot from the Fort George District to the Nelson Division, to which reference has already been made, we were not able to devote the amount of attention required to thoroughly rate the Fort George stations. As much work as possible was done to them, but it was not sufficient to ensure that degree of accuracy which would warrant the publication of daily discharges. For this reason the daily discharges for 1916 do not appear in this report, but will be published in a subsequent one.

The meter measurements for the stations in the district will be found under the heading "Miscellaneous Meter Measurements."

*Fort George District. List of Regular Gauging Stations.*

Station Number	Stream.	Location.
4004	Bulkley	Hazelton—Hazelton Water District.
4003	Bulkley	Hubert—Hazelton Water District.
4002	Dore	McBride—Fort George Water District.
4007	Fraser	Ft. George—Fort George Water District.
4000	Nechako	Ft. Fraser—Fort Fraser Water District.
4006	Nechako	Vanderhoof—Fort Fraser Water District.
4005	Skeena	Hazelton—Hazelton Water District.

## DEFINITION OF TERMS.

The volume of water flowing in a stream—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,” “miner’s inches” and “discharge in second-feet per square mile” and (2) those which represent the actual quantity of water, as “run-off depth in inches,” “acre-feet,” “mile-feet,” and “millions of cubic feet.”

The units used in this series of reports are “second-feet”, “second-feet per square mile” “run-off depth in inches” “acre-feet,” “mile-feet” and “millions of cubic feet.” They may be defined as follows:

“Second-feet” is an abbreviation for cubic feet per second (c.f.s.). A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section, 1 foot wide and 1 foot deep at an average velocity of 1 foot a second. It is generally used as a fundamental unit from which others are computed by the use of 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, on the assumption that the run-off is distributed uniformly both as regards time and area.

“Run-off depth in inches” is the depth to which a drainage area would be covered if all the 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 of water required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation or power.

“Mile-foot” is equivalent to 27,878,400 cubic feet, and is the quantity of water required to cover one square mile to a depth of 1 foot, and is equal to 640 acre-feet.

“Millions of cubic feet” is a term frequently used to express quantity of storage. When the quantities are of sufficient magnitude the unit is increased to that of “billions of cubic feet.”

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Certain terms not in common use may be defined as follows:

"Control," "controlling section," and "point of control" are used to designate the cross section of the stream below the gauge, which controls or regulates the height of the water surface at the gauge. The control may not be the same cross section at all stages.

"Discharge relation" is the relation of gauge height to discharge.

## CONVENIENT EQUIVALENTS.

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

*Table for converting velocity in feet per second into velocity in miles per hour.*

(1 foot per second = 0.681818 mile per hour, or very nearly  $\frac{1}{2}$  mile per hour. 1 mile per hour = 1.4667 foot per second, or very nearly  $1\frac{1}{2}$  foot per second. In computing the table the values 0.68182 and 1.4667 were used.)

Units.	TENTHS.									
	0	1	2	3	4	5	6	7	8	9
0	0 000	0 068	0 136	0 205	0 273	0 341	0 409	0 477	0 545	0 614
1	0 682	0 750	0 818	0 886	0 955	1 020	1 090	1 160	1 230	1 300
2	1 360	1 430	1 500	1 570	1 640	1 706	1 770	1 840	1 910	1 980
3	2 050	2 110	2 180	2 250	2 320	2 390	2 450	2 520	2 590	2 660
4	2 730	2 800	2 860	2 930	3 000	3 070	3 140	3 200	3 270	3 340
5	3 410	3 480	3 550	3 610	3 680	3 750	3 820	3 890	3 950	4 020
6	4 090	4 160	4 230	4 300	4 360	4 430	4 500	4 570	4 640	4 700
7	4 770	4 840	4 910	4 980	5 050	5 110	5 180	5 250	5 320	5 390
8	5 450	5 520	5 590	5 660	5 730	5 800	5 860	5 930	6 000	6 070
9	6 140	6 200	6 270	6 340	6 410	6 480	6 550	6 610	6 680	6 750

*Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.*

Discharge in second-feet per square mile.	RUN-OFF IN INCHES.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0 03719	1 041	1 079	1 116	153
2	0 07438	2 083	2 157	2 231	306
3	0 11157	3 124	3 236	3 347	4 599
4	0 14876	4 165	4 314	4 463	6 112
5	0 18595	5 207	5 393	5 578	7 764
6	0 22314	6 248	6 471	6 694	8 917
7	0 26033	7 289	7 550	7 810	10 070
8	0 29752	8 331	8 628	8 926	12 223
9	0 33471	9 372	9 707	10 041	14 376

NOTE.—For part of a month multiply the value for one day by the number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge in second-feet.	RUN-OFF IN ACRE-FEET.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1.....	1 983	55 54	57 52	59 50	61 49
2.....	3 967	114 10	115 00	119 00	123 00
3.....	5 950	166 60	172 60	178 50	184 50
4.....	7 934	222 10	230 10	238 00	246 00
5.....	9 917	277 70	287 00	297 50	307 40
6.....	11 900	333 20	345 10	357 00	368 90
7.....	13 880	388 80	402 60	416 50	430 40
8.....	15 870	444 30	460 20	476 00	491 90
9.....	17 850	499 80	517 70	535 00	553 40

NOTE.—For part of a month multiply values for one day by the number of days.

Table for converting discharge in second-feet into run-off in millions of gallons.

Discharge in second-feet.	RUN-OFF IN MILLIONS OF GALLONS.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1.....	0 6463	18 10	18 74	19 39	20 04
2.....	1 2930	36 20	37 48	38 78	40 08
3.....	1 9390	54 30	55 22	58 17	60 12
4.....	2 5850	72 40	74 96	77 56	80 16
5.....	3 2320	90 50	93 70	96 95	100 20
6.....	3 8780	108 60	112 40	116 30	120 20
7.....	4 5240	126 70	131 20	135 70	140 30
8.....	5 1710	144 80	149 90	155 10	160 30
9.....	5 8170	162 90	168 70	174 50	180 40

NOTE.—For part of a month multiply the value for one day by the number of days.

Table for converting discharge in second-feet into run-off in millions of cubic feet.

Discharge in second-feet.	RUN-OFF IN MILLIONS OF CUBIC FEET.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1.....	0 0864	2 419	2 506	2 592	2 678
2.....	0 1728	4 838	5 012	5 184	5 356
3.....	0 2592	7 257	7 518	7 776	8 034
4.....	0 3456	9 676	10 024	10 368	10 712
5.....	0 4320	12 095	12 530	12 960	13 390
6.....	0 5184	14 514	15 036	15 552	16 068
7.....	0 6048	16 933	17 542	18 144	18 746
8.....	0 6912	19 352	20 048	20 736	21 424
9.....	0 7776	21 771	22 534	23 328	24 102

NOTE.—For part of a month multiply values for one day by the number of days.

1 second-foot equals 35.71 British Columbia miner's inches, or one British Columbia miner's inch equals 1.68 cubic feet per minute.

1 second-foot equals 6.23 British Imperial gallons per second equals 538,453 gallons for one day.

1 second-foot equals 7.48 United States gallons per second equals 646,317 gallons for one day.

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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 for one hour equals about 1 acre-inch.

100 British Imperial gallons per minute equals 0.268 second-foot.

100 United States gallons per minute equals 0.223 second-foot.

1,000,000 British Imperial gallons per day equals 1.86 second-foot.

1,000,000 United States gallons per day equals 1.55 second-foot.

1,000,000 British Imperial gallons equals 3.68 acre-feet.

1,000,000 United States gallons equals 3.07 acre-feet.

1,000,000 cubic feet equals 22.95 acre-feet.

1,000,000,000 (1 billion) cubic feet equals 11,570 second-feet for one day.

1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.

1,000,000,000 cubic feet equals 399 second-feet for one 29-day month

1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.

1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.

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 foot deep on 100 square miles equals 2.79 billions of cubic feet—equals 3,227 second-feet for 10 days, 1,076 second feet for 30 days or 88 second-feet for one year.

1 foot equals 0.3048 metre.

1 mile equals 1.60935 kilometres.

1 mile equals 5,280 feet.

1 acre equals 0.4047 hectare.

1 acre equals 43,560 square feet.

1 acre equals 209 feet square, nearly.

1 square mile equals 2.59 square kilometres.

1 cubic foot equals 0.0283 cubic metre.

1 cubic foot of water weighs 62.43 pounds.

1 cubic metre per minute equals 0.5886 second-foot.

1 horse power equals 550 foot-pounds per second.

1 horse power equals 76.0 kilogram-metres per second.

1 horse power equals 746 watts, or 0.746 kilowatts.

1 horse power equals 1 second-foot of water falling 8.80 feet.

$1\frac{1}{3}$  horse power equals about 1 kilowatt.

To calculate water-power quickly:

Second-feet  $\times$  fall in feet  $\div$  11 = 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 footnotes.

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 but a short time. 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.

## EXPLANATION OF DATA.

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

1. Description of the Station.
2. Table of Discharge Measurements.
3. Table of Daily Gauge Heights and Discharges.
4. Table of Monthly Discharge and Run-off.

Under description of the station, the following information is given: location and installation of the station, methods of determining discharge, characteristics of channel, extent of drainage area and control factors, if any, which might affect the discharge relation. A statement is also made as to the accuracy and reliability of the data.

The table of discharge measurements gives particulars of each individual measurement, including the date of the measurement, by whom made, the number of meter in use, gauge height, width and area of cross section, mean velocity and discharge in second-feet.

The table of daily gauge heights and discharges gives the observed daily elevation of water surface at the station together with the corresponding discharge. Where observations are made more frequently than once a day, the mean of the day's readings is given in the table.

Attention is called to the fact that the zero of the gauge bears no relation to zero flow or the bottom of the river.

The discharge measurements and gauge heights are the base data from which discharge rating tables, daily discharges and monthly discharges are computed.



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The discharge rating table, which is not published in this report, gives the discharges in second-feet corresponding to every stage of the river recorded during the period for which the table is applicable. At such times as the gauge height is temporarily affected by ice cover, backwater, etc., the discharge relation is not applicable unless proper corrections to the gauge heights are known and applied.

In the table of monthly discharge, the column headed "Maximum" gives the mean flow for the day of highest discharge. As this discharge is based on the mean daily gauge reading, it is evident that there may have been short periods when the discharge was higher than that given in the column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day of the lowest discharge. The column headed "Mean" is the average flow for the month in cubic feet per second based upon the mean daily discharge. On this mean are based computations of runoff which have previously been defined.

The drainage areas as given for each station have been obtained by planimeter determination from the latest available departmental maps.

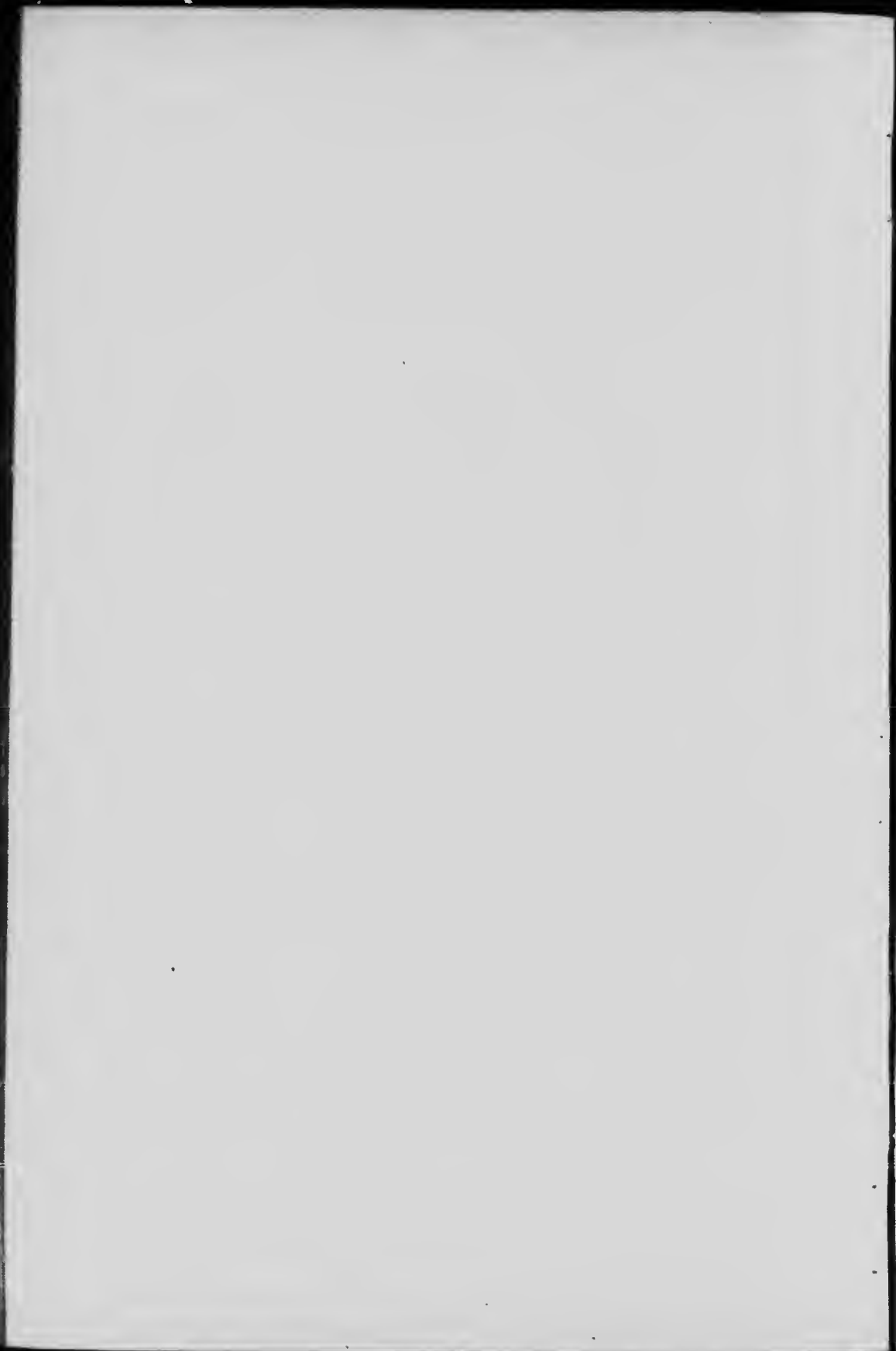
The base data presented in this report, unless otherwise stated in the description of station, have been collected by methods commonly in practice and described in previous annual reports.

#### CONCLUSION AND ACKNOWLEDGMENTS.

As in the past, the Survey has, in pursuing its investigations, continued to receive the esteemed co-operation of various persons and companies interested in the stream flow data of the Province. I desire to express my thanks to them, especially the following: The Westminster Power Company; Messrs. Anderson and Warden, Civil Engineers, Vancouver, B.C.; Mr. F. S. Easton, C.E., Assistant Engineer, Vancouver Power Co. Ltd.; Mr. Jas. Hunter, C.E., Chief Engineer, Canadian Collieries (Dunsmuir) Ltd.; Mr. Wm. Young, Comptroller of Water Rights, Victoria, B.C.; The Kootenay Power Company; the Bridge River Power Company.

Thanks are due to Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, Alta., for the courtesy of rating the current meters belonging to the Survey.

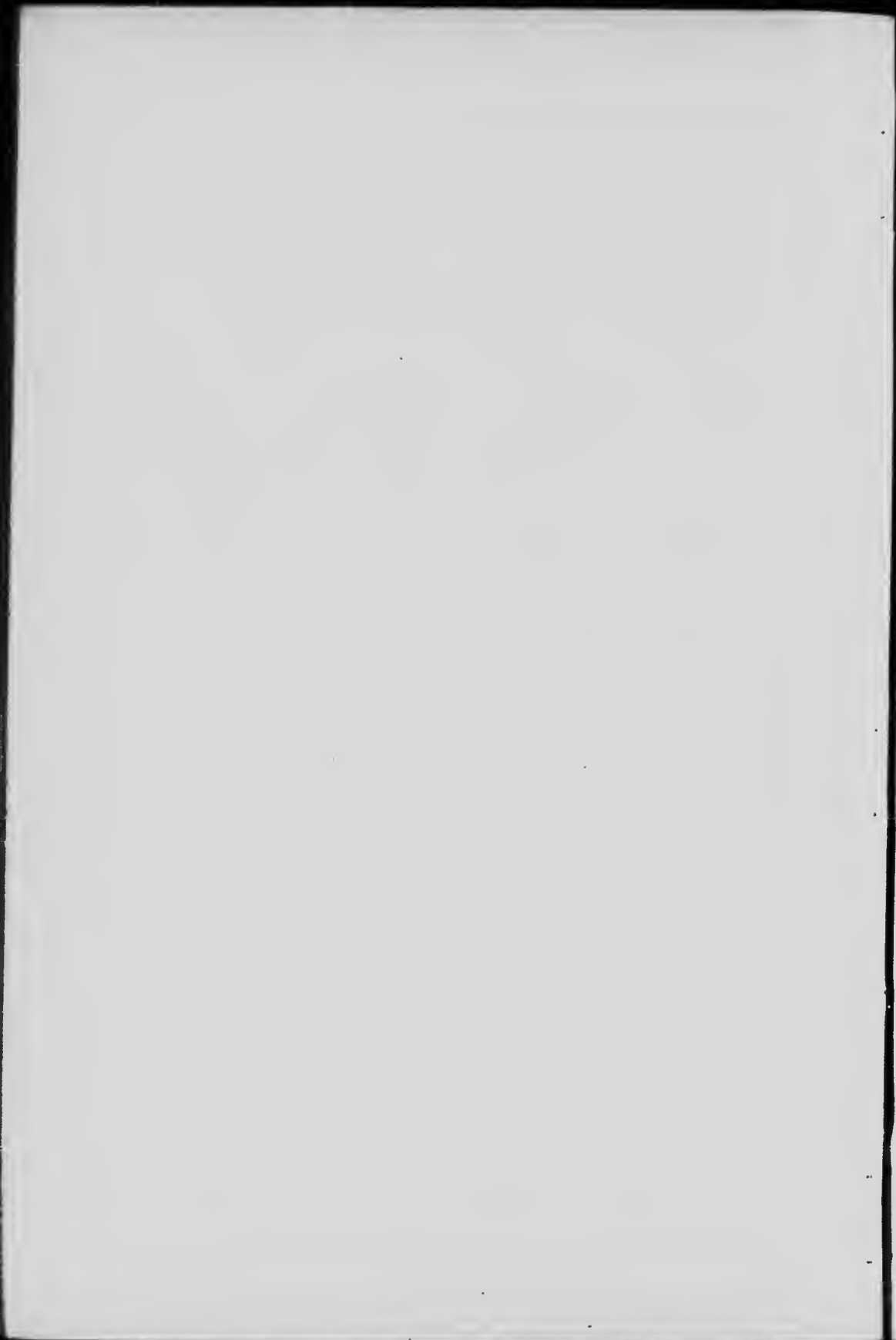
In compiling this report valuable information has been secured from the reports of the Meteorological Survey.



REPORT  
OF THE  
BRITISH COLUMBIA HYDROMETRIC  
SURVEY FOR 1916.

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CHAPTER II.  
COAST DIVISION.



CHAPTER II.  
COAST DIVISION.

Classified list of streams, giving object of maintenance of gauging station and number of Water Resources Papers where description of stream and flow data may be found.

*Southern District.*

STREAM.	Object of Maintenance	Water Resources Papers.
Belknap	Power	
Boulder	Power	S. 14. 18
Brandt	Power	S. 14. 18
Capilano	Municipal Supply	S. 14. 18
Chilliwack	Power, Reclamation	S. 14. 18
Coquitella	Power	S. 14. 18
Coquitlam	Power, Reclamation	S. 14. 18
Flume	Power	S. 14. 18
Fraser	Power	S. 14. 18
Hixon	Power	I. S. 14. 18
loco	Municipal Supply	S. 14. 18
Jones	Power	
Lynn	Municipal Supply	S. 14. 18
Mesilloet	Power	S. 14. 18
Nicolson	Power	S. 14. 18
Seymour	Municipal Supply	14. 18
Skagit	International Power Stream	S. 14. 18
South Lilloet	Power	14. 18
Squamish	Power	S. 14. 18
Young	Power	14. 18

*Lilloet District.*

Brandywine	Power	
Bridge	Power	18
Cayuse	Irrigation, Power	S. 14. 18
Cheakamus	Power	14. 18
Foster bar	Irrigation	S. 14. 18
Fountain	Irrigation	14. 18
Green	Power	14. 18
Island bar	Irrigation	S. 14. 18
Laluwissin	Irrigation	
Lilloet	Municipal Supply, Reclamation	S. 14. 18
Pavilion	Irrigation	18
Riley	Irrigation	14. 18
Seton	Irrigation	
Swartz	Irrigation	14. 18
Texas	Irrigation	14. 18

*Vancouver Island District.*

Big Qualicum	Power	14. 18
Campbell	Power	14. 18
Chemainus	Power	14. 18
Cowichan	Power	14. 18
Englishmans	Power	14. 18
Fort	Power	14. 18
Koksilah	Municipal Supply	18
Little Qualicum	Power	14. 18
Nanaimo	Municipal Supply	14. 18
Oyster	Power	18
Puntledge	Power	14. 18
Shawigan	Power	14
Strat	Municipal Supply	14. 18
Stamp	Power	14. 18
Tsolum	Power	14. 18

## METEOROLOGICAL DATA.

*Mean Monthly Temperature in Degrees (Fahr.)—Southern District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia beach	25	38	40	46	50	58	58	62	59	49	36	30	46
Vancouver.	26	37	42	48	52	60	61	63	57	47	40	34	47
Steveston	25	36	42	47	52	58	60	61	55	45	39	34	46
Ladner	24	37	42	49	51	57	58	60	55	46	37	35	46
Buntzet lake	24	41	44	49.	54	62	63	66	61	52	41	32	49
Coquitlam lake	24	35	37	44	50	58	59	63	58	48	39	33	46
New Westminster	24	38	41	48	52	60	61	64	58	47	39	32	47
Stave falls	24	37	40	48	53	60	62	65	59	49	39	32	47
North Nicomen	22	35	42	49	53	60	62	65	58	48	39	31	47
Agassiz	21	36	41	48	53	60	61	65	58	49	40	32	47
Jones lake	9	26	32	36	42	51	59	61	54	42	31	21	39
Chilliwack.	20	35	41	49	53	60	61	63	57	47	39	30	46
Hope.	11	39	38	47	52	60	60	64	57	47	36	27	46

*Mean Monthly Temperature in Degrees (Fahr.)—Lillooet District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Pemberton hatchery	10	28	37	46	52	59	70	4	56	44	33	22	42
Pemberton meadows	1	26	37	46	54	60	61	62	53	43	33	19	41

*Mean Monthly Temperature in Degrees (Fahr.)—Vancouver Island District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria	30	40	43	48	51	56	58	59	57	49	42	37	48
Sooke	29	38	40	47	52	59	58	59	56	47	42	36	47
Shawigan lake.	23	35	39	45	51	58	60	61	57	46	39	32	46
Coble hill	26	36	40	45	50	59	59	59	55	46	39	34	46
Cowichan (Tzou- halem)	25	37	42	48	52	59	61	63	57	46	39	35	47
Ladysmith	25	37	41	47	53	60	60	64	57	48	39	31	47
Nanaimo	27	38	42	47	52	60	60	64	58	48	41	35	48
Nanoose bay	26	37	40	47	53	60	57	62	53	45	36	31	46
Alert Bay	24	38	41	47	51	60	59	63	64	49	48	32	47
Alberni	29	40	42	46	49	55	58	59	54	47	42	38	46
Clayoquot	32	41	41	46	50	55	55	59	55	48	41	37	47
Quatsino	27	38	40	45	50	56	57	59	55	47	40	36	46
Holberg	26	35	39	45	49	57	56	61	56	50	41	36	46

*Difference from Average Temperature in Degrees (Fahr.)—Southern District—1916.**Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Vancouver	15	-9	-1	0	1	2	2	5	1	1	3	-3	-4	18
Steveston	20	-11	-2	1	1	0	1	0	2	1	4	3	-5	16
Ladner	15	11	0	0	2	1	0	6	1	0	4	-6	-3	23
New Westminster	28	11	0	-2	0	2	1	2	1	1	2	-3	-6	21
North Nicomen	24	13	-3	0	0	2	2	3	2	0	2	-3	-7	24
Agassiz	25	14	-1	3	-1	-3	1	3	2	1	2	-2	-6	26
Chilliwack	14	-16	-3	-2	-1	2	0	3	0	0	3	-2	-7	33

NOTE.—All quantities are plus unless otherwise designated.

SESSIONAL PAPER No. 25d

*Difference from Average Temperature in Degrees (Fahr.)—Vancouver Island District—1916.*

*Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria	24	9	0	0	0	2	1	2	1	1	1	3	4	-1.8
Nanaimo	15	9	1	0	1	2	2	4	1	1	-1	2	-3	-1.4
Alberni	19	10	0	1	1	4	1	6	-2	6	-2	2	-5	2.2
Clayoquot	17	8	0	1	0	0	1	3	0	1	-3	-4	5	2.0
Quatsino	19	9	0	1	1	1	2	1	1	2	-1	3	-4	1.5

NOTE: All quantities are plus unless otherwise designated.

*Total Monthly Precipitation (Inches)—Southern District—1916.*

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Britannia beach	9.45	9.39	14.99	6.27	1.62	2.21	5.25	0.53	1.42	3.83	8.29	3.84	61.09
Vancouver	5.91	7.43	14.55	4.97	1.41	1.34	5.27	0.58	1.28	2.17	6.37	5.71	56.08
Steveston	4.69	3.00	6.81	2.32	1.18	1.10	2.62	0.51	0.13	1.47	4.66	4.92	35.08
1st bar	4.10	5.39	7.21	3.27	1.67	1.53	2.97	0.45	0.19	1.86	2.56	4.36	34.82
Quintan lake	7.84	11.62	24.18	8.30	3.51	2.35	7.73	0.74	1.71	5.33	10.67	9.75	91.45
Couquiam lake	11.97	12.66	28.35	16.36	9.97	2.55	8.25	0.77	1.84	6.83	13.94	12.42	113.43
New Westminster	5.80	7.74	13.56	3.68	1.48	1.77	1.70	0.99	2.63	2.18	6.57	5.55	55.96
Stave fall	6.51	8.97	16.66	8.09	3.87	3.67	6.42	1.25	2.16	2.70	11.24	7.07	78.71
North Nicome	6.34	7.53	11.29	6.40	4.17	2.68	5.35	1.21	2.10	2.26	8.64	6.11	67.27
Agassiz	2.89	4.29	13.78	1.37	4.98	2.68	1.67	0.98	1.68	1.79	7.83	6.72	59.20
Jones lake	6.63	10.52	14.06	8.81	8.10	1.03	6.34	1.12	4.89	5.77	10.60	6.47	87.77
Chilliwack	1.85	7.97	11.17	4.37	3.78	1.79	4.13	0.58	1.59	1.76	7.21	6.69	53.70
Hope	2.65	6.71	8.29	4.35	3.66	1.98	2.70	0.31		2.89	4.55	1.66	

*Total Monthly Precipitation (Inches)—Lillooet District—1916.*

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Pemberton hatchery	3.16	2.67	8.25	2.31	1.02	2.44	2.16	0.75	0.83	1.77	3.38	1.96	30.58
Pemberton meadows	5.05	3.78	5.94	2.07	0.94	1.42	1.75	0.54	0.73	1.42	2.60	1.94	28.18

*Total Monthly Precipitation (Inches)—Vancouver Island District—1916.*

Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria	4.21	7.03	5.37	1.12	0.89	0.52	1.23	Trace	0.35	1.56	2.26	4.92	29.46
Sooke	4.12	7.86	8.79	2.35	1.95	1.11	1.94	0.07	0.86	2.86	5.63	6.26	43.52
Shawnigan lake	8.85	10.29	7.61	1.66	1.08	1.83	1.61	0.18	0.97	3.18	4.43	6.23	48.24
Cobble hill	7.43	6.73	6.61	1.66	0.58	1.17	1.61	0.39	0.59	2.12	3.85	6.26	59.69
Cowichan (Tzouhalem)	7.05	7.71	6.75	2.37	0.46	1.55	1.96	0.81	0.75	2.35	3.78	5.92	41.49
Ladysmith	10.97	8.60	7.88	2.14	1.60	1.59	1.84	1.35	1.16	4.09	4.42	7.33	52.97
Nanaimo	6.77	6.47	5.27	1.63	1.12	0.78	1.33	0.36	0.54	2.11	3.74	4.72	34.34
Nanoose bay	4.33	6.04	3.76	2.13	1.48	1.08	0.99	0.06	0.27	2.39	3.34	3.50	29.31
Alberni	6.64	10.19	11.86	6.53	2.86	1.92	2.82	0.19	0.25	4.70	6.15	7.04	61.14
Alert bay	2.04	5.52	7.00	3.86	1.03	2.24	3.45	0.02	3.25	3.99	6.97	4.66	43.94
Clayoquot	10.23	11.32	27.06	14.76	6.02	4.45	9.17	0.45	2.44	5.93	13.71	13.08	118.50
Quatsino	3.25	5.13	14.06	8.21	4.36	1.54	2.28	0.11	5.73	6.10	12.72	9.00	72.43
Holberg	4.09	8.35	19.27	12.26	6.35	1.68	7.82	0.29	5.59	11.27	17.13	13.73	107.83

## DEPARTMENT OF THE INTERIOR

8 GEORGE V, A. 1918

*Difference from Average Precipitation (Inches)—Southern District—1916.**Difference of Total for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Vancouver	15	-2 60	1 18	10 09	0 98	2 15	-1 48	3 42	-1 13	-3 01	-3 66	4 54	-1 75	-4 15
Steveston	20	-0 96	0 97	4 28	0 40	1 17	-0 76	1 69	-0 63	2 05	-1 94	-1 76	-0 36	-2 29
Ladner	15	-0 49	1 18	4 30	1 46	-1 35	-0 12	1 77	-0 70	-2 30	-2 22	4 15	0 37	-2 99
Buntzen lake	13	-7 49	1 22	12 96	2 27	2 27	-1 90	5 54	-2 05	7 39	-7 18	8 70	-2 91	-18 35
Coquitlam lake	12	-9 07	2 31	17 23	1 98	-4 03	-2 73	5 72	-3 08	8 10	-10 33	-14 65	-6 64	36 10
New Westminster	28	1 99	1 66	8 11	0 46	-1 95	1 01	3 20	-0 90	0 60	-3 05	3 30	1 69	-1 66
North Nicomen	23	-2 23	-0 63	8 12	1 51	-0 48	1 39	3 48	-0 90	-2 36	5 36	3 81	-2 97	-7 02
Agassiz	23	-4 55	-0 83	8 60	1 98	1 07	-2 14	2 41	-1 77	2 98	4 10	0 18	-0 66	-2 08
Chilliwack	13	-2 29	1 57	7 05	0 65	-0 30	-1 42	2 76	-1 52	-2 34	4 04	2 27	1 70	-4 05

NOTE:—All quantities are plus unless otherwise designated.

*Difference from Average Precipitation (Inches)—Vancouver Island District—1916.**Difference of Total for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Victoria	24	0 30	3 50	2 82	-0 61	-0 41	0 41	0 87	-0 65	-1 66	1 16	2 65	0 34	-0 12
Nanaimo	15	0 59	1 04	1 87	-0 07	-0 90	-1 22	0 53	-0 40	-1 53	1 02	4 65	1 69	-7 45
Alberni	19	-3 00	1 73	6 41	2 22	-0 20	-0 38	1 85	-0 95	2 85	3 56	6 18	-4 09	-7 00
Clayoquot	17	-4 45	-1 66	17 03	6 33	-0 71	0 21	7 16	-3 09	-4 64	-6 57	6 29	3 19	0 13
Quatsino	19	-9 39	-5 96	5 08	0 52	1 46	-1 23	-0 49	-3 94	-1 33	-5 50	4 53	8 34	-36 57

NOTE:—All quantities are plus unless otherwise designated.



SESSIONAL PAPER No. 75d

## HYDROMETRIC DATA.

## SOUTHERN DISTRICT.

## BELKNAP CREEK AT BELKNAP LAKE (1000).

*Location.*—At the outlet of Belknap lake in section 36, township 6, range 7, west of 7th meridian.

*Records Available.*—Daily discharges from October 1912 to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff gauge read bi-weekly by Mr. J. L. Davis.

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

*Discharge Measurements.*—Twelve meter measurements, made during 1912-16, define rating curve very well except for extreme high water.

*Winter Flow.*—Very heavy snowfall, but little ice. Open-water conditions practically all winter.

*Accuracy.*—"D." Poor because gauge readings were infrequent.

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

*Discharge Measurements of Belknap Creek at Belknap Lake, for 1916.*

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
Oct. 15	W. J. and Hughes	1046	29	51.0	0.24	1.01	12.1

<sup>1</sup>Wading at regular section

## DEPARTMENT OF THE INTERIOR

S. GEORGE V. A. 1818

## Daily Gauge Height and Discharge of Belknap Creek at Belknap Lake, for 1916.

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		11		11		43		58				
2		11		11	1 60	41		66	2 10	88	2 70	148
3		11	1 00	11		60		74		115		155
4	1 0	11		11		80	2 10	83		147		185
5		11		11		100		77	2 85	180		155
6	1 0	11		11	2 45	120		71			2 70	155
7		11		11		150	1 90	65		187		182
8		11		11		180		61		195		149
9		11	1 00	11	3 00	210		57	3 00	219	2 65	147
10	1 0	11		17		180		53		166		173
11		11		23		150	1 70	49		163		199
12		11		29		120		55	2 60	140		225
13	0 98	11		35		90		60		137	3 20	250
14		11	1 60	41	1 90	65	1 90	65		133		310
15		10		170		61		67		129		370
16		10		300		57		60	2 50	125	4 00	430
17		9	4 00	430	1 75	53		71		125		400
18	0 80	9		360		52	12 00	74		125		375
19		9		290		51		80	2 50	125		350
20	0 80	9		220		50		87		121	3 50	320
21		19		150	1 70	49	2 20	93		117		343
22		29	2 15	88		50		88		113		346
23		39		85		52		84	2 35	109	4 70	380
24	1 70	49	2 10	83	1 75	53		79		114		340
25		44		74		54	2 00	74		120		320
26		39		65		55		93		125		300
27	1 50	31		55		56		93		124	3 30	280
28		28	1 65	45	1 80	57	2 30	103		122		295
29		22		44		55		98		121		305
30		16				52		93	2 45	120	3 50	320
31	1 00	11			1 70	49				132		
	July.		August.		September.		October		November		December.	
1		280	2 8	170	2 20	93		26		207	2 10	300
2		250		170		93		19		224		266
3		220		170		93	1 20	17	3 15	246		234
4	2 90	190	2 8	170		93		15		265		202
5		181		161	2 20	93		15		290	2 80	170
6		177		155		96		11				
7	2 80	170		147		99	1 00	11		315		151
8		170	2 6	149	2 30	103		11	3 60	340		133
9		170		135		101		11		325	2 40	115
10		170		130		98		11		313		100
11	2 80	170	2 5	125		95		11	3 40	300		85
12		165		115	2 20	93		11		274		71
13		160		105		89		11		246	1 80	57
14	2 70	155		94		86		11		218		47
15		186	2 1	83	2 10	83		11	2 80	170		57
16		218		86		67	1 01	11		165	1 40	27
17		249		89		51		11		160		23
18	3 30	280	2 2	93		35	1 00	11		150		19
19		263		93	1 25	19		11	2 60	140		15
20		246		93		19	1 00	11		132	1 00	11
21	3 10	230		93		19		11		124		11
22		225	2 2	92		19		11	2 40	115		11
23		220		96	1 25	19		11		111		11
24		215		99		20		11		107	1 00	11
25	3 00	210	2 3	103		21	1 00	11	2 30	103		11
26		198		99		22		11		140		11
27		183		96	1 50	22		12		177		11
28	2 80	170		92		22	1 10	13		214		11
29		170	2 15	88	1 35	23		57	3 20	250	1 00	11
30		150		90		22		101		267		11
31		170		92		22	2 90	145		284		11

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Monthly Discharge of Belknap Creek at Belknap Lake, for 1916.

MONTH	DISCHARGE IN SECOND-FEET.				RUN OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area.	Total in Acre-feet.
January	49	9	17			1,050
February	430	11	93			5,350
March	210	41	50			4,920
April	103	43	74			4,400
May	210	83	136			8,360
June	430	145	266			15,800
July	280	155	201			12,400
August	170	83	115			7,970
September	103	19	60			3,370
October	190	11	26			1,500
November	340	103	212			12,600
December	300	11	71			4,370
The year.....	430	9	110			81,490

BELKNAP CREEK BELOW ANN LAKE (1063)

*Location.*—About half way between Ann lake and Belknap lake, near the proposed site for the diversion dam, and in section 39, township 7, range 7, west of 7th meridian.

*Records Available.*—Daily discharges from June 1913 to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff gauge. Two gauge readings a week are taken by Mr. J. L. Davis.

*Channel.*—Boulders and gravel.

*Discharge Measurements.*—Nine discharge measurements, made during 1913-15, define the ratings curve accurately except for extreme high stages.

*Winter Flow.*—Ice conditions at gauging station in very cold weather.

*Accuracy.*—"D." Poor because of infrequent gauge readings.

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

Discharge Measurements of Belknap Creek below Ann Lake, for 1916.

Date.	Engineer.	Meter No.	Width	Area of Section.	Mean Vels.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per Sec.	Feet.	Sec.-ft.
Oct. 14	Balls and Hughes	1046	29	50 2	0 22	0 61	11 04

<sup>1</sup> Wading at regular section.

## Daily Gauge Height and Discharge of Belknap Creek below Ann Lake, for 1916.

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		16 5		15		37		46		67		112
2		16 5		15	1 30	36		52	1 80	63	2 40	122
3		16 5	0 80	15		48		58		90		119
4	0 85	16 5		15		61	1 80	63		116		116
5		16 5		15		74		59	2 55	146		113
6	0 85	16 5		15	2 10	87		55		153	2 30	110
7		16 5		15		116	1 60	51		160		112
8		16 0		15		145		49		167		114
9		16 0	0 80	15	2 70	173		46	2 70	173	2 35	116
10		15 0		20		150		43		152		144
11	0 80	15 0		25		125	1 40	41		131		172
12		14 0		30		100		44	2 30	110		200
13	0 75	13 5		35		75		48		119	3 00	230
14		13 0	1 40	41	1 60	51	1 60	51		128		290
15		12 5		160		48		53		137		355
16		12 0		280		45		54	2 55	146	3 80	415
17		11 5	3 75	402	1 45	43		55		122		380
18	0 60	11 0		360		43	1 70	57		98		345
19		11 0		320		42		58	1 95	73		310
20	0 60	11 0		280		41		61		72	5 25	280
21		20 0		240	1 40	41	1 80	63		72		290
22		29 0	2 85	200		42		61		71		305
23		38 0		130		42		60	1 90	70	3 40	315
24	1 50	46 0	1 80	63	1 45	43		59		80		300
25		43 0		56		44	1 70	57		89		280
26		40 0		50		45		63	2 20	98		265
27	1 30	36 0		44		46		70		96	3 10	250
28		30 0	1 35	38	1 50	46	2 00	77		95		260
29		25 0		37		44		74		94		270
30		20 0				43		70	2 15	92	3 25	250
31	0 80	15 0			1 40	41				102		

	July.		August.		September.		October.		November.		December.	
1		251	2 65	164	1 80	63		22		189	3 15	260
2		222		155		63		20		205		231
3		193		146		63	0 90	18	2 95	226		203
4	2 65	164	2 50	137		63		16		222		174
5		152		132	1 80	63		15		225	2 55	146
6		140		126		65	0 75	13		227		126
7	2 45	129		121		67		13	3 00	230		106
8		131	2 35	116	1 90	70		13		217	2 10	87
9		133		112		68		13		204		77
10		135		108		66		12	2 80	191		67
11	2 50	137	2 25	104		64		12		178		58
12		132		94	1 80	63		12		164	1 55	49
13		127		85		61		12		151		42
14	2 40	122		76		59	0 61	11	2 50	137		35
15		150	1 85	66	1 70	57		11		130	1 15	28
16		180		68		48		11		123		24
17		210		70		39	0 60	11		116		20
18	3 05	240	1 95	73		30		11		110		17
19		226		74	1 60	22		11		104	0 75	13
20		213		73		22	0 60	11		98		13
21	2 85	200		73		22		11	2 15	92		13
22		195	1 95	73	1 00	22		11		88		13
23		191		74		22		11		85	0 75	13
24		186		76		3	0 60	11	2 05	82		13
25	2 75	182	2 00	77		23		11		111		12
26		170		73	1 05	24		12		140		12
27		158		69		24	0 70	12		170		11
28	2 55	146		64		25		52	2 85	200	0 65	11
29		150	1 75	60	1 10	26		93		220		11
30		155		61		24		133		240		11
31		150		62			2 70	173				11

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## Monthly Discharge of Belknap Creek below Ann Lake for 1916.

Month.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches in Drainage Area.	Total in Acre-feet.
January	46	11	20.3			1,250
February	402	15	102.0			5,870
March	173	36	59.0			4,000
April	77	41	57.0			3,390
May	173	63	109.0			6,700
June	415	110	232.0			13,800
July	251	122	170.0			10,500
August	164	60	92.0			5,660
September	70	22	45.0			2,680
October	173	11	28.0			1,000
November	240	82	162.0			9,640
December	260	11	62.0			3,810
The year	415	11	95.0			68,900

## 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 1916.

*Drainage Area.*—Not known.

*Gauge.*—A fine wire is stretched tightly across the stream and the distance to the water surface is measured by a graduated rod. The result, subtracted from 15.00, gives the direct reading. Daily gauge readings by Mr. R. Barr.

*Channel.*—The channel is about 30 feet wide. The bed of the stream is covered with boulders giving uneven bottom but good control.

*Discharge Measurements.*—Seven discharge measurements, made during 1911-16, define the curve very well except for extreme high stages of the water.

*Winter Flow.*—The stream is affected by ice for about a month each winter.

*Accuracy.*—"A" up to discharge of 100 cubic feet per second; "D" above discharge of 100 cubic feet per second.

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

## Discharge Measurements of Boulder Creek near Mouth, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 14	Balls and Milner	1633	32	47.5	1.73	5.00	82.5
Nov. 24	Hughes and Beeston	1046	30	26.6	0.59	4.35	15.7

Daily Gauge Height and Discharge of Boulder Creek near Mouth, for 1916.

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	Ice		Ice		4.65	37	5.50	180	5.20	120	5.20	120
2					4.60	35	5.40	160	5.50	180	5.40	160
3					4.55	29	5.20	120	5.80	240	5.45	170
4					4.55	29	5.00	83	5.80	240	5.45	170
5					4.50	26	4.90	65	5.45	170	5.35	150
6					4.50	26	4.80	52	5.40	190	5.20	120
7					4.50	26	4.80	52	5.30	140	5.15	110
8					4.50	26	4.95	74	5.10	101	5.40	160
9					5.60	200	4.95	74	5.00	83	5.50	180
10					5.65	210	5.00	83	4.90	65	5.15	110
11					5.95	272	5.10	101	4.85	58	5.15	110
12					6.20	325	4.85	58	4.85	58	5.45	170
13					5.70	220	4.80	52	4.85	58	5.55	190
14					5.40	160	4.90	65	4.85	58	5.65	210
15					5.40	160	4.85	58	5.10	101	5.85	250
16					5.30	140	4.80	52	5.35	150	5.90	260
17			5.35	150	5.40	160	4.80	52	5.50	180	5.90	260
18			5.15	110	5.25	130	4.75	46	5.30	140	5.90	260
19			4.85	58	5.25	130	4.75	46	5.35	150	5.45	170
20			5.15	110	5.40	160	4.75	46	5.15	110	5.20	120
21			5.15	110	5.55	190	4.75	46	5.20	120	5.20	120
22			5.15	110	5.40	160	4.75	46	5.00	83	5.20	120
23			5.05	92	5.35	150	4.65	37	5.00	83	5.40	160
24			4.90	65	5.30	140	4.65	37	5.00	83	5.40	160
25			4.90	65	5.25	130	4.75	46	5.10	101	5.40	160
26			4.90	65	5.25	130	4.95	74	5.40	160	5.70	220
27			4.85	58	5.25	130	5.50	180	5.35	150	5.60	200
28			4.90	52	5.30	140	5.30	140	5.35	150	5.50	180
29			4.70	41	5.30	140	5.15	110	5.20	120	5.20	120
30					5.20	120	5.00	83	5.25	130	5.20	120
31					5.35	150			5.20	120		

	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	5.20	120	4.90	65	4.40	20	4.40	20	4.60	33	4.35	17
2	5.30	140	4.85	58	4.35	17	4.35	17	5.40	160	4.35	17
3	5.40	160	5.05	92	4.45	23	4.30	15	4.80	52	4.50	26
4	5.30	140	4.90	65	4.40	20	4.30	15	5.00	83	4.40	20
5	5.35	150	4.85	58	4.40	20	4.35	13	4.75	46	4.30	15
6	5.25	130	4.85	58	4.35	17	4.20	11	4.60	33		
7	5.30	140	4.90	65	4.35	17	4.20	11	4.55	29	Ice	
8	5.30	140	4.85	58	4.55	29	4.20	11	4.50	26		
9	5.30	140	4.80	52	4.50	26	4.20	11	6.30	35		
10	5.25	130	4.80	52	4.45	23	4.10	8	5.00	83		
11	5.30	140	4.80	52	4.45	23	4.10	8	4.75	46		
12	5.25	130	4.80	52	4.40	20	4.10	8	4.75	46		
13	5.20	120	4.70	41	4.35	17	4.10	8	4.45	23		
14	5.00	83	4.75	46	4.30	15	4.10	8	4.45	23		
15	5.00	83	4.70	41	4.30	15	4.10	8	4.45	23		
16	5.15	110	4.60	33	4.30	15	4.10	8	4.40	20		
17	5.65	210	4.60	33	4.20	11	4.15	9	4.40	20		
18	5.35	150	4.60	33	4.20	11	4.15	9	4.40	20	4.30	15
19	5.20	120	4.55	29	4.20	11	4.15	9	4.40	20	4.30	15
20	5.35	150	4.50	26	4.20	11	4.15	9	4.40	20	4.30	15
21	5.15	110	4.50	26	4.20	11	4.15	9	4.40	20	4.30	15
22	5.75	230	4.50	26	4.40	20	4.15	9	4.40	20	4.30	15
23	5.20	120	4.55	29	4.40	20	4.15	9	4.40	20	4.30	15
24	5.15	110	4.55	29	4.30	15	4.15	9	4.35	17	Ice	
25	5.15	110	4.55	29	4.80	52	4.20	11	4.35	17		
26	5.05	92	4.55	29	4.70	41	4.90	65	4.45	23		
27	5.05	92	4.50	26	4.45	23	4.60	33	4.40	20		
28	5.00	83	4.50	26	4.40	20	4.40	20	4.35	17		
29	5.00	83	4.50	26	4.30	15	4.60	33	4.35	17		
30	4.95	74	4.45	23	4.30	15	4.40	20	4.35	17		
31	4.95	74	4.40	20			4.70	41				

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*Monthly Discharge of Boulder Creek near Mouth, for 1916.*

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January			15			922
February						2,760
March	325	26	132			8,120
April	180	37	77			4,580
May	240	58	125			7,690
June	260	110	167			9,940
July	230	74	125			7,690
August	92	20	42			2,580
September	52	11	20			1,190
October	65	8	15			922
November	350	17	15			2,680
December			16			984
The year	350	8	69			50,958

NOTE.—Gauge height-discharge relation affected by ice Jan. 1 to Feb. 17, Dec. 6 to Dec. 17, Dec. 24 to Dec. 31.

Discharges for these periods estimated from observations and climatic conditions:

Jan. 1—Feb. 10	15 c.f.s.
Feb. 10—Feb. 15	20 c.f.s.
Feb. 16	50 c.f.s.
Dec. 6—Dec. 17	15 c.f.s.
Dec. 21—Dec. 31	15 c.f.s.

## 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.*—Daily discharges from November 1914 to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Cable gauge. Gauge read bi-weekly by Mr. J. L. Davis.

*Channel.*—Solid rock at control. The channel is about 15 feet wide.

*Discharge Measurements.*—Six meter measurements made during 1914-16, define the curve fairly well except for extreme high stages of the water.

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

*Accuracy.*—"D" because of infrequent gauge readings.

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

*Discharge Measurements of Brandt Creek above Young Creek, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
Oct. 14	Balls and Hughes	1016	4.3	1.10	0.29	0.41	0.32

<sup>1</sup> Wading below regular section.

## Daily Gauge Height and Discharge of Brandt Creek above Young Creek, for 1916.

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		5 0		2 0		1 1		2 0		4 2		1 2
2		1 0		2 0	1 10	0 8		2 8	1 60	4 5	1 30	1 5
3		3 0	1 40	2 0		0 8		3 7		6 0		1 5
4	1 45	2 5		2 8		0 8	1 60	4 5		7 5		1 4
5		2 5		3 6		0 8		3 7	1 80	9 0		1 3
6	1 15	2 5		4 4	1 10	0 8		2 0		9 0	1 25	1 3
7		2 6		5 2		6 2	1 40	2 0		9 0		1 4
8		2 6		6 0		11 6		2 0		9 0		1 4
9		2 7		6 8	2 00	17 0		2 0	1 80	9 0	2 30	1 5
10		2 7	1 75	7 7		14 0		2 0		6 5		5 3
11	1 48	2 8		9 0		11 0	1 40	2 0		4 0		9 1
12		2 6		10 5		8 0		2 8	1 30	1 5	1 90	13 0
13	1 45	2 5		12 0		5 0		3 7		1 4		22 2
14		2 4		13 5	1 40	2 0	1 60	1 5		1 3		31 4
15		2 2	1 95	15 0		1 7		1 5		1 2		40 6
16		2 0		12 2		1 4		1 5	1 20	1 1	2 40	50 0
17		1 8		9 4	1 20	1 1		1 5		1 1		42 0
18	1 35	1 7	1 70	6 5		1 3	1 60	2 5		1 0		31 0
19		1 7		5 0		1 5		5 5	1 18	1 0		35 0
20	1 35	1 7		3 5		1 7		6 6		1 0	2 00	17 0
21		4 5	1 10	2 0	1 40	2 0	1 75	7 7		0 9		24 0
22		7 3		2 0		2 2		6 2		0 8		32 0
23		10 2		2 0		2 3		4 8	1 10	0 8	2 30	39 0
24	1 90	13 0	1 40	2 0	1 45	2 5		3 4		1 0		33 5
25		10 8		1 9		2 2	1 40	2 0		1 1		28 0
26		8 6		1 7		2 0		2 3	1 25	1 3		22 5
27	1 70	6 5		1 6		1 7		2 6		1 2	2 00	17 0
28		5 4	1 30	1 5	1 30	1 5	1 50	3 0		1 0		24 0
29		4 3		1 3		1 3		3 4		0 9		32 0
30		3 2				1 2		3 8	1 10	0 8	2 30	39 0
31	1 40	2 0			1 20	1 1				1 0		

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		30 0	1 00	0 6	1 00	0 6		0 3		50	1 80	9 0
2		20 0		0 7		0 6		0 2		110		7 5
3		11 0		0 7		0 6	0 60	0 2	3 00	160		6 0
4	1 25	1 3	1 10	0 8		0 6		0 2		160		4 5
5		1 1		0 8	1 00	0 6		0 1		160	1 50	3 0
6		0 8		0 8		0 6	0 40	0 1		160		2 4
7	1 00	0 6		0 8		0 7		0 1	3 00	160		1 8
8		0 6	1 10	0 8	1 10	0 8		0 1		146	1 20	1 1
9		0 7		0 7		0 7		0 1		133		0 9
10		0 7		0 7		0 7		0 1	2 80	120		0 7
11	1 43	0 8	1 00	0 6		0 6		0 1		91		0 5
12		0 8		0 6	1 00	0 6		0 1		62	0 80	0 1
13		0 7		0 6		0 6		0 1		35		0 3
14		0 6		0 5		0 5	0 41	0 1	1 60	5		0 3
15	1 00	0 6	0 90	0 5	0 90	0 5		0 1		3	0 60	0 2
16		5 8		0 5		0 4		0 1		3		0 2
17		5 0		0 6		0 4	0 40	0 2		2		0 3
18	1 60	1 5	1 60	0 6		0 3		0 1	1 40	2		0 3
19		3 6		0 6	0 70	0 3		0 1		2	0 80	0 4
20		2 8		0 5		0 3	0 10	0 1		1		0 4
21	1 10	2 0		0 5		0 3		0 1	1 30	1		0 4
22		2 0	0 90	0 5	0 70	0 3		0 1		1		0 1
23		2 0		0 5		0 3		0 1		1	0 80	0 1
24		2 0		0 6		0 3	0 40	0 1	1 20	1		0 4
25	1 40	2 0	1 00	0 6		0 3		0 1		1		0 4
26		1 6		0 6	0 75	0 3		0 1		2		0 3
27		1 2		0 5		0 3	0 50	0 1		4		0 3
28	1 10	0 8		0 5		0 4		2 0	1 70	7	0 70	0 3
29		6 7	0 90	0 5	0 80	0 1		4 9		7		0 3
30		0 7		0 5		0 3		2 8		8		0 3
31		0 6		0 6			1 75	7 7				0 3



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*Monthly Discharge of Brandt Creek above Young Creek, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	13.0	1.7	4.10			252
February	15.0	1.3	5.30			305
March	17.0	0.8	3.50			215
April	7.7	2.0	3.70			220
May	9.0	0.8	3.20			197
June	50.0	1.2	19.80			1,180
July	20.0	0.6	3.50			215
August	0.8	0.5	0.61			38
September	0.8	0.3	0.47			28
October	7.7	0.1	0.73			45
November	160.0	1.0	53.00			3,150
December	9.0	0.2	1.40			86
The year	160.0	0.1	8.30			5,931

## CAPILANO CREEK (1023).

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

*Records Available.*—Daily discharge from November 1913 to December 1916.

*Drainage Area.*—Sixty-four square miles, estimated by the engineers of the Provincial Water Rights Branch.

*Gauge.*—Vertical staff gauge in three sections, located about 300 feet above intake. Daily readings by Mr. Wm. Morrison.

*Channel.*—Rocky bed, water swift in high stages.

*Discharge Measurements.*—Eleven discharge measurements taken during 1914-16, give a well defined rating curve.

*Winter Flow.*—Open water all year.

*Accuracy.*—"B" between discharge of 35 cubic feet per second and 2,000 cubic feet per second; "C" above discharge of 2,000 cubic feet per second.

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

*Discharge Measurements of Capilano Creek above City Intake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Fet.	Sq. ft.	Ft. per sec.	Fet.	Sec.-ft.
Sept. 11	Hughes and Balls	1,033	41	70	0.97	1.52	69.21

<sup>1</sup> Wading measurement.

Daily Gauge Height and Discharge of Capilano Creek above Intake, for 1916.

(Drainage area, 64 square miles.)

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 0	210	1 8	150	2 5	390	2 9	600	3 6	1,170	3 3	890
2	1 9	180	1 8	150	2 4	350	3 0	660	4 4	2,080	3 7	1,270
3	1 7	120	1 7	120	2 4	350	3 3	890	4 7	2,460	3 9	1,480
4	1 7	120	1 7	120	2 3	310	3 5	1,070	4 4	2,080	4 0	1,600
5	1 8	150	1 7	120	2 2	270	3 3	890	3 9	1,480	3 7	1,270
6	1 8	150	1 6	100	2 1	240	3 1	730	4 2	1,840	3 3	890
7	1 8	150	1 7	120	2 2	270	3 0	660	3 8	1,370	3 3	890
8	1 8	150	1 6	100	2 9	600	3 3	890	3 7	1,270	3 7	1,270
9	1 8	150	1 6	100	6 1	4,280	3 3	890	3 3	890	3 7	1,270
10	1 8	150	2 0	210	4 6	2,330	3 7	1,270	3 0	660	3 3	890
11	1 8	150	3 6	1,170	6 4	4,670	3 3	890	2 8	540	3 4	980
12	1 8	150	2 7	480	5 0	3,630	3 0	660	2 8	540	3 9	1,480
13	1 7	120	2 5	390	3 9	1,480	3 3	890	2 8	540	4 3	1,960
14	1 6	100	5 0	2,850	3 3	890	3 9	1,480	3 0	660	4 6	2,330
15	1 6	100	9 7	8,960	3 0	660	3 8	1,170	3 5	1,070	4 8	2,590
16	1 7	120	6 8	5,190	3 6	1,170	3 2	810	4 0	1,600	4 8	2,590
17	1 6	100	4 5	2,200	3 2	890	3 5	1,070	4 2	1,840	1 8	2,590
18	1 6	100	3 9	1,480	2 9	600	3 9	1,480	3 9	1,480	4 4	2,080
19	1 6	100	4 0	1,600	2 7	480	3 3	890	3 8	1,370	4 0	1,600
20	1 7	120	3 9	1,480	6 2	4,410	3 4	980	3 5	1,070	3 4	980
21	1 7	120	3 8	1,370	4 6	2,330	3 1	730	3 5	1,070	3 5	1,070
22	1 8	150	3 7	1,270	4 0	1,600	2 9	600	3 2	810	3 5	1,070
23	2 9	600	3 3	890	3 4	980	2 7	480	3 0	660	3 8	1,370
24	2 7	480	3 0	660	3 0	660	2 8	540	3 1	730	3 9	1,480
25	2 3	310	2 9	600	2 8	540	3 6	660	3 7	1,270	4 1	1,720
26	2 1	240	3 1	730	3 3	590	3 2	810	4 3	1,960	4 4	2,080
27	2 0	210	3 1	730	3 4	980	4 3	1,960	3 7	1,270	4 7	2,460
28	1 9	180	2 9	600	3 0	660	3 8	1,370	3 7	1,270	4 3	1,960
29	1 8	150	2 7	480	2 8	540	3 4	980	3 3	890	3 7	1,270
30	1 8	150	.....	.....	2 6	430	3 2	810	3 2	810	3 5	1,070
31	1 8	150	.....	.....	2 6	430	.....	.....	3 2	810	.....	.....

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 9	1,480	2 8	540	1 9	180	1 4	65	3 0	660	2 2	270
2	3 9	1,480	2 7	480	1 9	180	1 4	65	5 3	3,240	2 8	540
3	4 0	1,600	2 8	540	1 8	150	1 3	55	3 4	980	5 9	4,020
4	3 6	1,170	2 6	430	1 7	120	1 3	55	3 7	1,270	3 5	1,070
5	3 4	980	2 0	430	1 7	120	1 3	55	3 5	1,070	2 6	430
6	3 2	810	2 8	540	1 6	100	1 3	55	2 8	540	2 3	310
7	3 4	980	2 8	540	1 6	100	1 3	55	2 4	350	2 1	240
8	3 7	1,270	2 7	480	1 6	100	1 3	55	2 5	390	2 1	240
9	3 0	1,170	2 5	390	1 6	100	1 3	55	3 9	1,480	2 0	210
10	3 4	980	2 5	390	1 5	80	1 3	55	2 9	600	1 9	180
11	3 5	1,070	2 5	390	1 5	80	1 3	55	2 4	350	1 9	180
12	3 6	1,170	2 6	430	1 5	80	1 3	55	2 2	270	1 8	150
13	3 4	980	2 5	390	1 5	80	1 3	55	2 1	240	1 8	150
14	3 0	660	2 4	350	1 5	80	1 3	55	2 0	210	1 8	150
15	2 9	600	2 4	350	1 5	80	1 3	55	1 9	180	1 7	120
16	5 6	3,630	2 3	310	1 5	80	1 3	55	1 9	180	1 7	120
17	5 6	3,630	2 2	270	1 5	80	1 3	55	1 9	180	1 7	120
18	3 8	1,370	2 1	240	1 5	80	1 3	55	2 0	210	2 3	310
19	4 0	1,500	2 0	210	1 5	80	1 3	55	1 9	180	2 4	350
20	4 0	1,600	1 9	180	1 5	80	1 3	55	1 8	150	2 0	210
21	3 4	980	1 9	180	1 4	65	1 2	45	1 8	150	1 9	180
22	4 0	1,600	2 0	210	1 5	80	1 2	45	1 9	180	1 8	150
23	3 4	980	2 1	240	1 5	80	1 2	45	1 9	180	1 8	150
24	3 2	810	2 1	240	1 4	65	1 2	45	1 9	180	1 7	120
25	3 6	1,170	2 1	240	1 4	65	1 2	45	2 3	310	1 7	120
26	3 4	980	2 1	240	2 0	210	1 4	65	2 5	390	1 7	120
27	3 1	730	2 1	240	1 7	120	1 3	55	2 8	540	1 6	100
28	3 0	660	2 0	210	1 5	80	1 2	45	2 6	430	1 6	100
29	2 9	600	1 9	180	1 5	80	1 2	45	2 4	350	1 5	80
30	2 9	600	1 9	180	1 4	65	2 6	430	2 4	350	1 6	100
31	3 1	730	1 9	180	.....	.....	3 8	1,370	.....	.....	1 6	100

SESSIONAL PAPER No. 25d

*Monthly Discharge of Capilano Creek above Intake, for 1916.*

(Drainage area, 64 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	600	100	175	2.73	3.15	10,800
February	8,960	100	1,190	18.60	20.10	68,500
March	4,670	240	1,240	19.40	22.40	76,200
April	1,960	480	927	14.40	16.10	55,200
May	2,460	540	1,210	18.90	21.80	74,400
June	2,590	890	1,550	24.20	27.00	92,200
July	3,630	600	1,230	19.20	22.10	75,600
August	540	180	330	5.15	5.94	20,300
September	210	65	98	1.53	1.71	5,830
October	1,840	47	166	2.60	3.00	10,200
November	3,240	150	526	8.22	9.17	31,300
December	4,020	80	345	5.40	6.23	21,200
The year.	8,960	45	749	11.70	13.70	541,730

## CHILLIWACK RIVER (1004).

*Location.*—Five miles from Sumas lake in section 1, township 23, east of the coast meridian.

*Records Available.*—Daily discharges from November 1911 to December 1916.

*Drainage Area.*—Four hundred and fifty square miles, of which about 100 square miles are in the state of Washington.

*Gauge.*—Vertical staff on rock-filled crib. Daily gauge readings by Mr. A. N. Smith of Vedder Crossing, B.C.

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

*Discharge Measurements.*—Sixteen meter measurements, made during 1911-15, give a fairly well defined rating curve.

*Winter Flow.*—Open-water conditions all year.

*Accuracy.*—"C." No measurements in 1916.

Daily Gauge Height and Discharge of Chilliwack River 5 miles above Sumas M., for 1916.

(Drainage area, 450 square miles.)

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	1.65	1,250	1.10	800	2.60	2,650	2.80	2,650	3.1	1,500	3.40	4,000
2	1.50	1,100	1.10	800	2.50	2,500	2.50	2,500	3.5	1,200	3.50	4,200
3	1.45	1,050	1.10	800	2.50	2,500	2.60	2,650	4.2	5,800	3.70	4,600
4	1.40	1,000	1.05	775	2.40	2,300	2.80	3,000	4.3	6,100	4.00	5,300
5	1.40	1,000	1.05	775	2.40	2,300	3.00	3,000	4.3	6,100	4.00	5,300
6	1.35	950	1.05	775	2.20	2,600	2.80	3,000	4.7	7,500	3.80	4,800
7	1.35	950	1.10	800	2.60	1,700	2.70	2,800	4.6	7,100	3.80	4,800
8	1.30	900	1.10	800	2.40	2,300	2.70	2,800	4.3	6,100	4.00	5,300
9	1.30	900	1.10	800	4.45	6,600	2.60	2,650	4.0	5,300	4.40	6,400
10	1.25	875	1.15	825	4.80	7,900	2.70	2,800	3.8	4,400	4.10	5,500
11	1.25	875	1.15	825	4.80	7,900	2.70	2,800	3.6	4,000	4.10	5,500
12	1.20	850	1.17	825	4.60	7,100	2.80	2,000	3.4	4,000	4.20	5,800
13	1.20	850	1.20	850	5.45	10,700	2.70	2,800	3.2	3,700	4.30	6,100
14	1.15	825	1.20	850	4.90	8,300	2.60	2,650	3.0	3,300	1.60	7,900
15	1.15	825	1.50	1,100	4.60	5,300	2.70	2,800	3.1	3,500	4.80	7,900
16	1.10	800	4.40	5,300	3.30	3,850	2.60	1,650	2.2	3,700	5.65	11,600
17	1.10	800	5.20	9,600	3.50	3,850	2.60	2,650	3.3	3,850	6.20	14,500
18	1.15	800	4.60	7,100	3.50	1,900	2.50	2,500	2.5	1,200	6.20	14,500
19	1.15	825	4.60	5,300	3.20	3,700	2.40	2,300	3.6	4,600	6.15	14,300
20	1.15	825	3.70	4,600	3.60	3,300	2.30	2,150	1.6	4,000	5.25	9,800
21	1.20	850	3.60	4,400	3.60	4,400	2.20	2,600	3.5	1,200	4.80	7,900
22	1.30	900	3.50	4,200	3.50	4,400	2.30	2,150	3.5	4,200	4.50	6,800
23	1.40	1,000	3.30	3,850	3.20	4,200	2.20	2,000	3.4	4,000	4.60	7,100
24	1.35	950	3.20	2,700	3.60	3,700	2.20	2,000	3.3	3,850	5.60	8,700
25	1.30	900	3.10	3,300	2.90	3,150	2.40	2,300	3.3	3,850	5.20	9,600
26	1.25	875	3.00	2,300	2.90	3,150	2.50	2,500	3.6	4,400	5.60	1,400
27	1.20	850	2.90	3,150	2.80	3,000	2.70	2,800	3.6	4,400	6.10	14,000
28	1.20	850	2.80	3,000	2.80	3,000	2.80	3,000	3.5	4,200	5.70	11,900
29	1.16	800	2.70	2,800	2.70	2,800	2.90	3,150	3.4	4,000	5.20	9,600
30	1.16	800	2.70	2,800	2.50	2,650	3.00	3,300	3.3	3,850	4.60	7,100
31	1.10	800	2.60	2,500	2.60	2,500	3.00	3,300	3.4	4,000		

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	4.60	7,100	3.80	1,800	2.40	2,300	1.50	1,100	1.80	1,400	1.60	1,200
2	4.70	7,500	3.90	3,000	2.35	2,220	1.40	1,000	2.40	2,300	1.70	1,300
3	5.00	8,700	3.80	4,800	2.30	2,150	1.40	1,000	1.90	1,550	1.90	1,550
4	4.70	7,500	3.70	4,200	2.30	2,150	1.35	950	2.50	2,500	1.80	1,400
5	4.50	6,800	3.50	4,200	2.20	2,000	1.30	900	2.00	1,700	1.70	1,300
6	4.60	7,100	3.50	3,850	2.10	1,850	1.25	875	1.90	1,550	1.80	1,200
7	4.60	7,100	3.30	3,850	2.05	1,770	1.20	850	1.80	1,400	1.60	1,200
8	4.70	7,500	3.20	3,700	2.00	1,700	1.20	850	1.70	1,300	1.50	1,100
9	4.60	7,100	3.20	3,700	1.95	1,620	1.15	825	4.50	6,800	1.50	1,100
10	4.50	6,800	3.20	3,700	1.90	1,550	1.15	825	2.90	3,150	1.40	1,000
11	4.60	7,100	3.10	3,500	1.90	1,550	1.10	800	2.40	2,300	1.40	1,000
12	4.70	7,500	3.10	3,500	1.85	1,470	1.10	800	2.10	1,850	1.50	1,100
13	4.80	7,900	3.10	3,500	1.85	1,470	1.05	775	2.00	1,700	1.40	1,000
14	4.30	6,100	3.00	3,300	1.80	1,400	1.05	775	2.00	1,700	1.45	1,050
15	4.40	6,400	2.95	3,220	1.80	1,400	1.05	775	1.90	1,550	1.50	1,100
16	4.4	6,400	2.90	3,150	1.75	1,350	1.10	800	1.90	1,550	1.50	1,100
17	5.00	8,700	2.80	3,000	1.75	1,350	1.05	775	1.80	1,400	1.45	1,050
18	4.70	7,500	2.60	2,650	1.70	1,300	1.00	750	1.90	1,550	1.45	1,050
19	4.70	7,500	2.5	2,500	1.70	1,300	1.00	750	1.80	1,400	1.50	1,100
20	4.40	6,100	2.50	2,500	1.65	1,250	1.00	750	1.80	1,400	1.50	1,100
21	4.50	6,800	2.50	2,500	1.60	1,200	0.95	725	1.75	1,350	1.15	1,050
22	4.70	7,500	2.45	2,400	1.60	1,200	0.95	725	1.70	1,300	1.45	1,050
23	4.50	6,800	2.45	2,400	1.50	1,100	0.95	725	1.60	1,200	1.30	1,000
24	4.40	6,400	2.45	2,400	1.50	1,100	0.90	700	1.60	1,200	1.30	1,000
25	4.30	6,100	2.50	2,500	1.60	1,200	0.90	700	1.65	1,250	1.25	875
26	4.50	6,800	2.50	2,500	2.10	1,850	2.00	1,700	1.70	1,300	1.20	850
27	4.40	6,400	2.45	2,400	2.00	1,700	1.40	1,000	2.00	1,700	1.20	850
28	4.20	5,800	2.45	2,400	1.90	1,550	1.30	900	1.80	1,400	1.20	850
29	4.00	5,300	2.40	2,300	1.80	1,400	1.20	850	1.80	1,400	1.15	825
30	3.90	5,000	2.40	2,300	1.60	1,200	1.40	1,000	1.60	1,200	1.20	850
31	3.80	4,800	2.45	2,400			1.50	1,100			1.20	850

**NOTE:—**Owing to errors having been discovered in the data received for the Chilliwack river for the year 1916 the tables on pages 38 and 39 are incorrect, and should not be accepted. See Water Resources Paper No. 18, pages 74 and 75.

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SESSIONAL PAPER No 251

*Monthly discharge of Chilliwack River 5 miles above Simas Mt., for 1916.*

(Drainage area 450 square miles.)

Month	DISCHARGE IN SECONDS-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	1,250	800	800	1.99	2.29	55,100
February	9,100	775	2,710	6.08	6.56	158,000
March	10,700	1,700	3,900	8.80	10.10	213,000
April	3,300	2,900	3,630	8.11	6.52	157,000
May	7,500	3,300	4,520	10.00	11.50	278,000
June	11,500	1,000	8,210	18.20	20.30	480,000
July	8,700	1,800	6,710	15.00	17.30	414,000
August	5,000	1,300	3,210	7.13	8.22	197,000
September	2,300	1,100	1,560	3.47	4.87	92,800
October	1,700	700	872	1.91	2.24	57,000
November	9,800	1,200	1,780	3.95	4.41	106,000
December	1,550	825	1,060	2.35	2.71	65,200
The year	14,500	775	3,180	7.06	96.02	2,308,700

## COQUIHALLA RIVER (1005)

*Location.*—One mile from mouth, near Hope, in section 10, township 5, range 26, west of 6th meridian.

*Records Available.*—Daily discharges from November 1911 to December 1916.

*Drainage Area.*—Three hundred and sixty square miles.

*Gauge.*—Cable gauge on highway bridge, also subsidiary cable gauge on C.N.R. trestle. The gauge reader is Mr. T. L. Thacker. The gauge on the C.N.R. trestle is read four or five times a week. The gauge on the highway bridge is read once or twice a week.

*Channel.*—Stream rather shallow with rocky bottom, water swift at the higher stages.

*Discharge Measurements.*—Seventeen meter measurements were made during 1912. These give a well defined rating curve.

*Winter Flow.*—The section is affected by anchor ice at the control, although the stream never freezes over.

*Accuracy.*—Measurements in 1916 showed revision of curve necessary. The curve is well defined.

Owing to infrequent gauge readings the discharge data is not guaranteed more than accuracy "D."

*Discharge Measurements of Coquihalla River at Mouth, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 5	Balls and Milner	1,631	152	488	5.27	3.40	2,570
July 13	Balls and Milner	1,633	120	432	4.88	3.06	2,100
Aug. 10	Balls and Webb	1,623	122	280	2.81	1.79	787

## Daily Gauge Height and Discharge of Coquihalla River at Highway, for 1916.

(Drainage area, 360 square miles.)

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			Ice									
2		450										
3		450										
4		450										
5		450										
6	1 25	450										
7	1 50	420										
8	1 15	300										
9												
10												
11	Ice											
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												

	July		August		September		October		November		December	
1	3 32	2,490		1,080		370		270		400		370
2		2,870	2 10	1,061		360	0 90	250	1 25	450		410
3	3 40	3,291	1 55	930		450		340	2 50	1,450	1 25	450
4	3 00	2,920	1 90	800		340	0 85	230		1,120	1 25	420
5	3 30	2,600	1 90	800	1 05	330	0 80	210		800	1 00	300
6	3 50	2,750	1 90	800	1 00	300		210	1 30	480	1 00	300
7	3 15	2,670	1 90	800		200	0 80	210	1 15	300	1 00	300
8		2,710	1 85	850		280	0 75	190		1,900	0 90	250
9	3 50	2,750		800		275	0 80	210	4 10	3,600	0 75	300
10		2,700	1 72	754		270	0 75	190	2 45	1,400		240
11												
12		2,650	1 75	775		260	0 70	170		1,150		200
13	3 37	2,600	1 60	670		255		170		800	0 90	250
14	2 55	2,500		670	0 90	250	0 70	170	1 55	635	0 85	200
15	2 55	1,501	1 60	670	0 90	250		170	1 50	600	0 85	200
16				620		240	0 70	170		550	0 70	170
17	2 70	1,681		560		230	0 87	240		500	0 85	200
18		1,780	1 45	510		220		210		445		180
19	2 87	1,860		501		210		190	1 15	300	0 90	250
20	2 70	1,681		491		200	0 70	170	1 10	360	0 90	250
21		1,681		480	0 75	191	0 65	150	1 05	330	0 90	250
22	2 62	1,580		470		270	0 70	170	0 70	170	0 85	200
23		1,541		460		340		160	1 10	300	0 75	170
24	2 55	1,500		450	1 05	330	0 65	150		300	0 80	200
25		1,500		440		465	0 65	150	1 00	300	0 80	200
26	2 55	1,500		430	1 50	600		330		340		170
27		1,470		420	1 20	420		510	1 15	390		170
28		1,450		410	1 20	420		430	1 20	420		170
29		1,310		410		360		350	1 20	420	0 75	170
30	2 22	1,170		400	1 00	300	0 95	275		370		170
31	2 22	1,170		390		280		310	1 05	330		170
	2 15	1,100		380				350				170



SESSIONAL PAPER No. 29d

## Monthly Discharge of Coquitalla River at Highway, for 1916.

(Drainage area, 360 square miles.)

MONTH	DISCHARGE IN SECONDS FEET				RUN-OFF.	
	Maximum	Minimum	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January			402	1.12	1.29	24,700
February			390	1.08	1.17	22,400
March	6,000		1,530	4.25	4.90	94,100
April	3,170	970	1,580	4.39	4.90	94,000
May	4,960	1,500	2,810	7.80	8.99	173,000
June	6,200	2,700	3,730	10.40	11.60	222,000
July	3,260	1,100	2,020	5.61	6.37	124,000
August	1,080	380	634	1.75	2.03	39,000
September	600	100	399	0.86	0.96	18,400
October	510	150	232	0.64	0.74	14,300
November	3,600	170	712	1.98	2.21	42,400
December	150	170	244	0.68	0.78	15,000
The year	6,000	170	1,220	3.38	40.04	883,300

NOTE.—Gauge height-discharge relation affected by ice Jan. 9 to Mar. 6. Daily discharge during that period estimated at 390 second feet from gauge records and climatic conditions Jan. 9, Mar. 6, 1916.

## COQUITLAM RIVER (1066).

*Location.*—One mile above mouth, in section 2, township 39, east of the coast meridian.

*Records Available.*—Daily discharges from January 25 1915 to December 1916. This station discontinued November, 1916.

*Drainage Area.*—One hundred and fifteen square miles above metering section. Taken from provincial map 1913 (scale 3 miles to the inch).

*Gauge.*—Chain gauge on highway bridge at Westminster Junction. The gauge is read daily by Mr. R. C. Galor.

*Channel.*—Gravelly bottom, good control, water dead at low stages.

*Discharge Measurements.*—Six discharge measurements, taken in 1915 and 1916, give a well defined rating curve.

*Winter Flow.*—The stream is affected by ice only in very cold weather, which occurs but seldom.

*Accuracy.*—"C." One measurement in 1916.

## Discharge Measurements of Coquitlam River at Westminster Junction, for 1916.

Date.	Engineer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. Ft.	Ft. per sec.	Feet.	Sec.-ft.
April 14	Elliott and Hughes	1,016	77	383	2.61	3.30	998

Daily Gauge Height and Discharge of Coquillam River at Westminster Junction, for 1916.  
(Drainage area, 115 square miles.)

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	1.6	60	1.5	50	2.4	350	2.2	250	3.2	1,100	2.9	720
2	1.6	60	3.4	1,400	2.2	250	2.2	250	3.4	1,400	2.8	640
3	1.6	60	6.8	9,700	2.1	200	2.2	250	3.7	1,850	2.8	640
4	1.6	60	6.4	8,500	2.1	200	2.9	720	3.7	1,850	3.0	800
5	1.5	50	6.1	7,600	1.9	110	2.8	640	3.6	1,700	3.2	1,100
6	1.5	50	5.8	6,700	1.8	80	2.8	640	3.7	1,850	3.1	950
7	1.5	50	5.6	6,180	2.0	150	2.7	560	3.6	1,700	3.0	800
8	1.5	50	4.9	4,350	3.8	2,000	2.8	640	3.5	1,550	3.0	800
9	1.5	50	4.3	2,900	5.1	4,800	3.0	800	3.3	1,250	3.1	950
10	1.5	50	4.0	2,300	5.6	6,180	3.5	1,500	3.1	950	3.0	800
11	1.5	50	4.0	2,300	6.1	7,000	3.4	1,400	2.9	720	2.9	720
12	1.5	50	3.8	2,000	6.0	5,300	3.3	1,250	2.8	640	3.1	950
13	1.5	50	3.8	2,000	5.2	3,120	3.2	1,100	2.7	560	3.3	1,250
14	1.5	50	3.8	2,000	1.8	4,100	3.1	950	2.6	480	3.5	1,550
15	1.5	50	3.7	1,850	4.4	3,100	2.9	720	2.8	640	3.8	2,000
16	1.5	50	3.7	1,850	3.6	1,700	2.8	640	2.9	720	4.0	2,300
17	1.5	50	3.6	1,700	3.6	1,700	3.1	1,400	3.2	1,100	4.2	2,700
18	1.5	50	3.6	1,700	3.6	1,700	3.2	1,100	3.2	1,100		
19	1.5	50	3.6	1,700	3.8	2,000	3.0	800	3.3	1,250		
20	1.5	50	3.6	1,700	4.6	3,600	3.2	1,100	3.1	950		
21	1.5	50	3.6	1,700	4.8	4,100	3.4	1,400	3.1	950		
22	1.5	50	3.5	1,550	4.6	3,600	3.5	1,550	2.9	720		
23	1.5	50	3.5	1,550	3.9	2,150	3.4	1,400	2.8	640		
24	1.5	50	3.2	1,100	3.5	1,550	3.6	1,700	2.9	720		
25	1.5	50	3.2	1,100	3.2	1,100	3.5	1,550	2.9	720		
26	1.5	50	3.0	800	2.9	720	3.5	1,550	3.2	1,100		
27	1.5	50	2.9	720	2.8	640	3.6	1,700	3.2	1,100		
28	1.5	50	2.7	560	2.5	400	3.7	1,850	3.2	1,100		
29	1.5	50	2.5	400	2.4	350	3.5	1,550	3.2	1,100		
30	1.5	50			2.3	300	3.2	1,100	3.1	950		
31	1.5	50			2.3	300			3.0	800		
	July.		August.		September.		October.		November.		December.	
1			2.70	560	1.00	15	1.00	15	2.40	350		
2			2.50	400	1.00	15	0.90	10	2.90	720		
3			2.40	350	0.90	10	0.90	10	3.40	1,400		
4			2.30	300	0.90	10	1.00	15	3.10	950		
5			2.30	300	0.90	10	0.90	10	3.10	950		
6	3.10	950	2.30	300	1.00	15	0.90	10	2.90	720		
7	3.10	950	2.20	250	0.90	10	0.90	10	3.30	1,250		
8	3.10	950	2.20	250	1.00	15	0.90	10	3.20	1,100		
9	3.20	1,100	2.10	200	1.00	15	0.90	10	3.10	950		
10	3.00	800	2.00	150	1.00	15	0.90	10	2.90	720		
11	3.10	950	1.90	110	1.00	15	0.90	10	2.70	560		
12	3.10	950	1.80	80	1.00	15	0.90	10	2.90	720		
13	3.00	800	1.60	60	1.00	15	0.90	10	2.80	640		
14	3.10	950	1.50	50	1.00	15	0.90	10	2.80	640		
15	3.10	950	1.50	50	0.90	10	0.90	10	2.80	640		
16	3.50	1,550	1.10	40	0.90	10	0.90	10	2.80	640		
17	3.90	2,150	1.30	50	0.90	10	0.90	10	2.80	640		
18	3.70	1,850	1.20	25	1.00	15	0.90	10	2.50	400		
19	4.00	2,300	1.10	20	1.00	15	0.90	10	1.40	40		
20	3.90	2,150	1.00	15	0.90	10	0.90	10	1.20	25		
21	3.70	1,850	0.90	10	0.90	10	0.90	10	1.10	20		
22	3.50	1,580	0.90	10	0.90	10	0.90	10	1.20	25		
23	3.50	1,550	0.90	10	0.90	10	0.90	10	1.20	25		
24	3.40	1,400	0.90	15	0.90	10	0.90	10	1.20	25		
25	3.30	1,550	1.00	15	1.20	25	1.00	15	1.60	60		
26	3.50	1,550	1.00	15	1.40	40	1.10	20	2.40	350		
27	3.20	1,100	1.00	15	1.20	20	1.00	15	2.80	640		
28	3.10	950	1.00	15	1.00	15	1.00	15	2.80	640		
29	2.90	720	1.00	15	1.00	15	2.30	300	2.60	480		
30	2.80	640	1.00	15	1.00	15	2.40	350				
31	2.80	640	1.00	15			2.40	350				

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*Monthly Discharge of Coquitlam River at Westminster Junction, for 1916.*

(Drainage area, 115 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	60	50	51	0.44	0.51	3,140
February	9,700	50	2,690	23.40	25.20	155,000
March	7,600	80	2,180	19.00	21.90	134,000
April	1,850	250	1,070	9.30	10.40	63,700
May	1,850	480	1,070	9.30	10.70	65,800
June			1,520	13.20	14.70	90,500
July		640	1,220	10.60	12.20	75,000
August	560	16	119	1.03	1.19	7,320
September	40	10	14	0.12	0.13	833
October	350	10	42	0.36	0.42	2,580
November	1,400	20	562	4.90	5.47	33,400
December						
The year	9,700	10	958	8.33	102.82	631,273

NOTE.—Gauge out June 18—replaced July 6. Station discontinued Nov. 30.

Discharge estimated from climatic conditions:

June 18—June 30	2,000 c.f.s.
July 1—July 5	10,000 c.f.s.

## FLUME CREEK (1062).

*Location.*—Five miles from Wigwam Inn, Indian river; and near the mouth of the stream.

*Records Available.*—Daily discharges from July 1915 to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff gauge. The gauge reader is Mr. J. L. Davis. Gauge readings are taken twice a week.

*Channel.*—Solid rock, good control.

*Discharge Measurements.*—Four discharge measurements were taken in 1915 and 1916, giving a fairly well defined rating curve.

*Winter Flow.*—Fairly heavy snowfall, but practically open-water conditions all winter.

*Accuracy.*—"D" because of infrequent gauge readings (twice a week).

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

*Discharge Measurements of Flume Creek River at Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 11	Baird and Hughes	1046	4.5	2.27	0.76	0.11	1.72

## Daily Gauge Height and Discharge of Flume Creek near Indian River, for 1916.

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		16.0		12		41		52	1.90	64	2.3	80
2		14.0		12		35		60		78		84
3	0.40	11.0		11	0.95	28	2.00	68		93		88
4		11.0	0.40	11		26		66	3.00	108		92
5		12.0		11		25		65		98	2.7	96
6		12.0		11	0.80	24	1.90	64		88		95
7	0.45	12.5	0.40	11		39		55		78		83
8		12.0		22		54		47	2.00	68	2.6	92
9	0.40	11.0		33		69		39		62		94
10		11.0		44	2.40	84	1.00	80		56		96
11		11.0	1.70	56		81		32	1.50	49		98
12		11.0		94		78		34		47	2.8	100
13		11.0	3.60	132		76	1.20	37		45		113
14	0.40	11.0		155		74		46		43		132
15		11.0		178	2.10	72		55	1.30	41	4.0	148
16		11.0	5.3	200		70		64		55		137
17	0.40	11.0		174		67	2.10	72		71		126
18		11.0	4.0	148	1.00	64		73	2.45	86		115
19		11.0		116		74		75		86	2.9	104
20		11.0	2.4	84	2.40	84	2.20	76		87		107
21	0.40	11.0		76		81		68		88		100
22		39.0		68		70		60	2.50	88		112
23	2.00	68.0		60	2.20	76		53		90	3.1	112
24		59.0		52		68	1.40	45		92		112
25		50.0	1.4	45		59		60	2.65	94		112
26		41.0		47		50		76		88	3.1	112
27		32.0		50	1.30	41	2.60	92		81		104
28	0.80	24.0	1.6	53		40		85		74		96
29		19.0		47		38		78	2.00	68	2.5	88
30	0.50	14.0		47	1.20	37		71		72		95
31		13.0				44				76		
	July.		August.		September.		October.		November.		December.	
1		102		65		25		11.0		77		90
2		109		67		25	0.30	9.0	2.30	80		80
3	3.20	116	2.00	68		26		7.0		96		70
4		108		70	0.90	27		5.0		112	1.80	60
5		100		72		28	0.00	3.0		128		50
6	2.60	92		74		29		3.0	3.90	144		40
7		88	2.20	76	1.00	30		3.0		130	1.00	30
8		85		72		27		3.0		136		26
9		82		68		25		3.0	3.00	132		22
10	2.30	80	1.90	64		23		3.0		106		15
11		83		58	0.70	21	0.11	1.9		80	0.50	14
12		85		52		19		1.9		55		13
13	2.50	88		46		18		1.9	1.00	30		12
14		102	1.30	41	0.60	17		2.0		29	0.40	11
15		116		39		16		2.0		28		13
16		130		38		16	0.10	2.0		28		16
17	3.90	144	1.20	37		15		2.0	0.90	27		18
18		128		35	0.50	14		1.5		26	0.70	21
19		113		32		14	0.15	1.5		25		21
20	2.75	98		29		14		1.5	0.80	24		21
21		96	0.90	27	0.50	14		1.3		23	0.70	21
22		93		28		14		1.0		22		20
23		90		20		14	0.20	1.0	0.70	21		19
24	2.50	88	1.00	30		15		1.3		28		18
25		92		29	0.54	15		1.6		35		18
26		98		28		15	0.10	2.0		42		17
27	2.85	102		28		16		20.0	1.50	49	0.60	17
28		92	0.90	27	0.60	17		38.0		66		17
29		82		26		15		55.0		83		17
30		73		25		13	2.10	72.0	2.80	100	0.60	17
31	1.90	64	0.80	24				75.0				17

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*Monthly Discharge of Flume Creek near Indian River, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January.....	68	11	19			1,170
February.....	200	11	69			3,970
March.....	84	24	57			3,500
April.....	92	30	60			3,570
May.....	108	41	75			4,610
June.....	148	80	105			6,250
July.....	144	64	97			5,960
August.....	76	24	45			2,770
September.....	30	13	19			1,130
October.....	75	1	11			676
November.....	144	21	66			3,930
December.....	90	11	27			1,660
The year.....	200	1	54			39,196

## FRASER RIVER AT HOPE (1007).

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

*Records Available.*—Daily discharges from March 1912 to December 1916.

*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. Daily gauge readings by Mr. F. Nicholson. Cable gauge established on Kettle Valley Railway Bridge, same section and same datum, August 19, 1916.

*Channel.*—About 900 feet wide, permanent, swift at higher stages.

*Discharge Measurements.*—Ten meter measurements, made during 1912–15, give a well defined rating curve. Some of these measurements were made by using floats.

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

*Accuracy.*—"B."

Daily Gauge Height and Discharge of Fraser River at Hope, for 1916.

(Drainage area, 85,000 square miles.)

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	9.5	15,500	11.1	26,900	11.50	33,200	10.50	22,500	15.7	84,200	20.50	170,000
2	9.3	14,100	11.0	26,000	11.70	32,300	10.70	23,900	16.4	95,800	20.70	174,000
3	9.2	13,400	10.9	25,300	11.50	30,500	10.90	25,300	17.4	113,000	21.00	180,000
4	9.1	12,700	11.2	27,800	11.20	27,800	11.20	27,800	18.0	124,000	21.50	190,000
5	9.1	12,700	11.1	26,900	11.20	27,800	11.40	29,600	19.0	142,000	21.80	195,000
6	9.1	12,700	11.3	28,700	11.20	27,800	11.80	33,200	19.6	153,000	21.50	190,000
7	9.1	12,700	11.3	28,700	11.10	26,900	12.20	37,200	20.6	172,000	22.00	199,000
8	9.0	12,000	11.5	30,000	11.00	26,000	12.60	41,600	20.8	176,000	22.50	208,000
9	9.5	15,000	11.7	32,300	10.80	24,600	12.80	43,800	20.2	164,000	22.80	214,000
10	9.9	18,300	12.0	35,000	10.90	25,300	13.00	46,000	19.0	142,000	21.00	180,000
11	9.8	17,600	12.1	36,100	11.60	31,400	13.20	48,600	18.8	138,000	21.00	180,000
12	9.8	17,600	12.4	39,400	11.80	33,200	13.35	50,500	18.4	131,000	21.00	180,000
13	10.0	19,000	12.4	39,400	11.50	33,200	13.60	53,800	17.5	115,000	21.40	188,000
14	10.0	19,000	12.5	40,500	11.60	31,400	13.80	56,400	17.5	115,000	21.70	193,000
15	9.9	18,300	12.6	41,600	11.50	30,500	13.60	53,800	17.5	115,000	22.00	199,000
16	9.9	18,300	12.6	41,600	11.30	28,700	13.30	49,900	17.8	120,000	23.00	218,000
17	10.0	19,000	12.4	39,400	11.20	27,800	10.30	49,900	17.8	120,000	23.90	233,000
18	10.2	20,400	12.0	35,000	11.00	26,000	13.45	51,800	17.8	120,000	26.10	250,000
19	10.2	20,400	12.0	35,000	11.20	27,800	13.35	50,500	18.0	124,000	25.00	238,000
20	10.2	20,400	12.0	35,000	11.25	28,200	13.20	48,600	18.2	128,000	24.80	234,000
21	10.0	19,000	11.8	32,200	11.30	28,700	13.10	47,300	18.5	133,000	25.25	263,000
22	10.0	19,000	11.8	32,200	11.50	30,500	13.60	46,000	18.5	138,000	26.20	282,000
23	10.4	21,800	11.6	31,400	11.20	27,800	13.90	46,000	19.0	142,000	26.70	292,000
24	10.6	23,200	11.5	30,500	11.00	26,000	13.10	47,300	19.5	149,000	27.10	300,000
25	10.6	23,200	11.7	32,300	10.90	25,300	13.15	47,900	19.4	140,000	27.70	302,000
26	10.8	24,600	11.7	32,300	10.70	23,900	13.10	47,300	19.5	151,000	27.50	308,000
27	10.9	25,300	11.8	33,200	10.60	23,200	13.30	49,900	19.5	151,000	27.15	301,000
28	10.9	25,300	12.0	35,000	10.60	23,200	13.50	52,500	19.5	151,000	26.85	295,000
29	11.2	27,800	12.0	35,000	10.40	21,800	14.40	59,000	19.8	156,000	26.40	286,000
30	11.2	27,800	.....	.....	10.30	21,100	14.50	56,000	20.9	160,000	26.10	278,000
31	11.2	27,800	.....	.....	10.50	22,500	.....	.....	20.5	170,000	.....	.....

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	25.90	276,000	20.40	168,000	11.55	116,000	14.20	61,800	13.80	56,400	11.20	27,800
2	25.65	271,000	20.00	160,000	17.50	115,100	14.10	60,400	13.60	53,800	11.15	27,300
3	25.50	268,000	19.50	156,000	17.65	118,000	14.00	59,000	13.50	52,500	11.30	28,700
4	25.00	258,000	19.40	149,000	17.15	114,000	13.90	57,700	13.20	48,600	11.40	29,600
5	24.90	256,000	19.40	149,000	17.30	111,000	13.70	55,100	13.00	46,000	11.20	27,800
6	23.90	236,000	19.60	153,000	17.20	110,000	13.50	52,500	12.90	44,900	11.60	26,000
7	24.25	243,000	19.60	153,000	17.00	106,000	13.25	49,200	12.90	44,900	10.90	25,300
8	24.40	246,000	19.80	156,000	16.90	104,000	13.20	48,600	13.30	49,000	10.60	23,200
9	24.15	241,000	20.00	160,000	10.75	102,000	13.10	47,300	13.10	47,300	10.40	21,800
10	23.65	231,000	19.80	156,000	16.50	97,500	13.00	46,000	12.80	43,800	10.50	21,100
11	23.25	223,000	19.70	155,000	16.20	92,400	12.90	44,900	12.60	41,600	10.40	21,800
12	23.50	228,000	16.60	153,000	15.80	85,800	12.90	44,900	12.40	39,400	10.40	21,800
13	24.00	238,000	19.50	151,000	15.60	82,600	12.80	43,500	12.00	35,000	10.20	20,400
14	24.40	246,000	19.40	148,000	15.45	80,200	12.70	42,700	11.80	33,200	10.20	20,400
15	24.00	238,000	19.30	147,000	15.25	77,000	12.70	42,700	11.55	30,900	10.10	19,700
16	24.00	238,000	19.20	146,000	15.10	74,600	13.00	46,000	11.30	28,700	10.00	19,000
17	24.00	238,000	19.20	146,000	15.00	73,000	13.00	46,000	11.10	26,900	10.00	19,000
18	23.60	230,000	19.00	142,000	14.80	70,200	13.15	51,800	11.10	26,900	10.15	20,000
19	23.30	224,000	18.70	137,000	14.75	69,500	13.45	59,200	11.20	27,800	10.30	21,100
20	23.20	222,000	18.35	130,000	14.50	66,000	16.40	95,800	11.20	27,800	10.30	21,100
21	23.00	218,000	18.60	124,000	14.35	63,900	15.90	87,400	11.20	27,800	10.20	20,400
22	22.80	214,000	17.80	120,000	14.30	63,200	15.40	79,400	11.50	30,500	10.20	20,400
23	22.60	210,000	17.55	116,000	14.30	63,200	14.70	68,800	11.50	30,500	10.15	20,000
24	22.60	210,000	17.35	112,000	14.40	64,600	14.40	64,600	11.60	31,400	10.10	19,700
25	22.60	210,000	17.20	110,000	14.40	64,600	14.20	61,800	11.30	28,700	10.10	19,700
26	22.40	207,000	17.20	110,000	14.30	63,200	13.90	57,700	11.20	27,800	10.50	22,500
27	22.20	203,000	17.40	113,000	14.20	61,800	13.90	57,700	11.30	28,700	10.70	23,900
28	22.00	199,000	17.60	117,000	14.10	60,400	13.80	56,400	11.50	30,500	10.70	23,900
29	22.00	199,000	17.80	120,000	14.60	65,000	13.50	52,500	11.45	30,000	10.70	23,900
30	21.00	180,000	17.85	121,000	14.20	61,800	13.50	52,500	11.20	27,800	10.63	23,500
31	20.60	172,000	17.70	119,000	.....	.....	13.40	56,400	.....	.....	10.40	23,200

SESSIONAL PAPER No. 25d

## Monthly Discharge of Fraser River at Hope, for 1916.

(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...	27,800	12,000	19,200	0.22	0.25	1,180,000
February...	41,600	25,300	33,400	0.39	0.42	1,920,000
March...	33,200	21,100	27,600	0.32	0.37	1,700,000
April...	66,000	22,500	45,100	0.53	0.59	2,680,000
May...	176,000	84,200	137,000	1.60	1.84	8,420,000
June...	308,000	170,000	232,000	2.71	3.02	13,800,000
July...	276,000	172,000	228,000	2.56	3.07	14,000,000
August...	168,000	110,000	139,000	1.62	1.87	8,550,000
September...	118,000	59,000	83,000	0.97	1.08	4,940,000
October...	95,800	42,700	57,100	0.67	0.77	3,510,000
November	56,400	26,900	36,700	0.43	0.48	2,180,000
December	29,600	15,000	22,700	0.26	0.30	1,400,000
The year	308,000	12,000	88,400	1.03	14.06	64,280,000

## HIXON CREEK ABOVE BELKNAP CREEK (1064).

*Location.*—About 1 mile above the mouth of Belknep creek, in section 36, township 5, range 7, west of the 7th meridian.

*Records Available.*—Daily discharges from April to September 1914 and from May to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff, nailed to tree. Gauge readings are taken twice a week by Mr. J. L. Davis.

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

*Discharge Measurements.*—Seven discharge measurements, taken during 1913-16, give a fairly well defined rating curve.

*Winter Flow.*—Very heavy snowfall, and some ice in winter.

*Accuracy.*—"D" because of infrequency of gauge readings (about twice a week).

*Co-operation.*—Gauge readings taken by the employees of the Westminster Power Company.

## Discharge Measurements of Hixon Creek above Belknep, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. Ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 16	Balls and Hughes	1046	17	7.85	0.30	0.40	2.38

DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1916

Daily Gauge Height and Discharge of Hixon Creek above Belknap, for 1916.

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		2.5		2.5		5.0						
2		2.5		2.5		5.0		21.0		26.0		18.0
3		2.5		2.5	0.80	5.0		27.0	1.20	22.0	1.20	22.0
4	0.50	2.5		2.5		4.8		32.0		36.0		20.0
5		2.5		2.5		4.6	1.40	38.0		51.0		18.0
6	0.50	2.5		2.5		4.5		32.0	1.75	66.5		18.0
7		2.5		2.4	0.75	4.3		27.0		69.0	1.10	16.0
8		2.5		2.4		21.0	1.20	22.0		71.0		17.0
9		2.5		2.4		38.0		19.0		73.0		18.0
10		2.5	0.40	2.4	1.60	54.0		16.0	1.85	75.5	1.15	19.0
		2.5		4.0		48.0		13.0		63.0		23.0
11	0.50	2.5		5.6		41.0	1.00	10.5		50.0		28.0
12		2.5		7.2		35.0		14.0	1.40	38.0		33.0
13	0.50	2.5		8.8		28.0		18.0		34.0	1.40	38.0
14		2.5	1.00	10.5	1.20	22.0	1.20	22.0		30.0		52.0
15		2.5		37.0		22.0		26.0		26.0		68.0
16		2.4		54.0		22.0		30.0	1.20	22.0	1.90	80.0
17		2.4	1.80	71.0	1.20	22.0		34.0		19.0		73.0
18	0.40	2.4		62.0		20.5	1.40	38.0		17.0		67.0
19		2.4		53.0		19.0		40.0	1.07	14.3		60.0
20	0.40	2.4		44.0		17.5		43.0		13.4	1.60	54.0
21		4.0		35.0	1.10	16.0	1.50	46.0		12.4		60.0
22		5.5	1.25	26.0		16.0		39.0		11.5		65.0
23	0.90	7.0		24.0		16.0		31.0	1.00	10.5	1.80	71.0
24		6.2	1.20	22.0	1.10	16.0		24.0		12.3		83.0
25		5.3		18.0		17.5	1.10	16.0		14.1		55.0
26		4.4		14.0		19.0		23.0	1.10	16.0		47.0
27	0.70	3.6		10.0		20.5		31.0		13.9	1.40	38.0
28		3.3	0.80	5.0	1.20	22.0	1.40	38.0		12.8		43.0
29		3.0		5.0		20.0		31.0		11.6		48.0
30		2.8		5.0		18.0		30.0	1.00	10.5	1.60	54.0
31	0.50	2.5			1.10	16.0				14.0		

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	1.10	16	1.00	10.5		3.7		47	1.60	54.0
2		35		18		10.5		3.1		54		46.0
3		25		20		10.5		2.5	1.70	62		38.0
4	1.1	16	1.20	22		10.5	0.50	2.5		64		30.0
5		13		22	1.00	10.5		2.5		67	1.20	22.0
6		10		22		12.3		2.5		69		16.0
7	0.9	7		22		14.1	0.50	2.5		71		10.0
8		11	1.20	22	1.10	16.0		2.5	1.80	82	0.80	5.0
9		15		20		14.7		2.5		54		4.6
10		18		18		13.3		2.5	1.50	46		4.3
11	1.2	22	1.10	16		11.9		2.5		40		4.0
12		18		16	1.00	10.5		2.5		34	0.70	3.6
13		14		17		9.4		2.4		28		3.3
14	1.0	10		18		8.2		2.4	1.20	22		3.0
15		21	1.15	19	0.90	7.0		2.4		19	0.60	2.8
16		32		21		6.1	0.40	2.4		16		3.0
17		43		23		5.3	0.40	2.4		13		3.2
18	1.6	54	1.25	26		4.4		2.4	1.00	10		3.4
19		49		22	0.70	3.6		2.4		9	0.70	3.6
20		44		18		3.6	0.40	2.4		8		3.6
21	1.4	38		14		3.6		2.4		7		3.6
22		36	1.00	10	0.70	3.6		2.4	0.90	6		3.6
23		34		12		3.7		2.4		6	0.70	3.6
24		32		14		3.9	0.40	2.4		5		3.4
25	1.3	30	1.10	16		4.1		2.4	0.80	5		3.4
26		28		13	0.75	4.3		2.5		13		3.2
27		25		11		4.5		2.5		21		3.0
28	1.2	22		9		4.7	0.50	2.5		29		2.9
29		20	0.90	7	0.80	5.0		12.5	1.40	38	0.60	2.8
30		19		8		4.3		22.0		43		2.8
31		18		9			1.45	32.0		48		2.8



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## Monthly Discharge of Hixon Creek above Belknap, for 1916.

MONTH.	DISCHARGE IN SECOND-FOOT.			RUN-OFF.		
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January.....	7.0	2.4	3.13			192
February.....	71.0	2.4	18.60			1,070
March.....	54.0	4.3	20.50			1,260
April.....	46.0	10.5	27.80			1,650
May.....	75.5	16.0	31.00			1,910
June.....	80.0	7.0	42.80			2,550
July.....	54.0	7.0	26.00			1,600
August.....	26.0	3.6	17.00			1,050
September.....	16.0	2.4	5.70			464
October.....	42.0	5.0	34.00			350
November.....	71.0	2.8	9.60			2,020
December.....	54.0					590
The year.....	80.0	2.4	20.30			14,708

## JONES CREEK (1010).

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

*Records Available.*—Daily discharges from April 1911 to December 1916.

*Drainage Area.*—Twenty-five square miles, determined by triangulation survey by Anderson & Warden, Civil Engineers, Vancouver, B.C.

*Gauge.*—Vertical staff fastened to rock-filled crib. Daily gauge readings by Mr. R. Barr, of Ruby Creek, B.C. A Gurley automatic gauge was installed in November 1916, at same section and same datum as staff gauge.

*Channel.*—Uniform section, deep water, good control.

*Discharge Measurements.*—Seven discharge measurements, made during 1911-16, give a well defined rating curve.

*Winter Flow.*—Open water practically all winter.

*Accuracy.*—"B." One measurement in 1916.

*Co-operation.*—Gauge read by employee of Anderson & Warden, Civil Engineers, for the Vancouver Power Company.

## Discharge Measurements of Jones Creek at Jones Lake, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 14	Balls and Milner.....	1633	51	162	1.90	1.80	309

Daily Gauge Height and Discharge of Jones Creek at Jones Lake, for 1916.

(Drainage area, 25 square miles.)

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	0.80	85	0.50	50	1.05	130	1.00	120	1.40	215	1.55	255
2	0.80		0.45	47	1.00	120	1.00	120	1.40	215	1.55	255
3	0.75		0.45	47	1.00	120	1.05	130	1.65	282	1.60	270
4	0.70	70	0.45	47	0.95	110	1.10	140	1.80	325	1.70	295
5	0	70	0.45	47	0.90	100	1.10	140	1.80	325	1.85	342
6	0.65	65	0.45	47	0.90	100	1.10	140	1.85	342	1.80	325
7	0.65	65	0.45	47	0.85	92	1.10	140	1.95	375	1.70	295
8	0.65	65	0.50	50	0.95	110	1.10	140	1.80	325	1.70	295
9	0.60	60	0.50	50	1.15	152	1.10	140	1.70	295	1.75	310
10	0.60	60	0.50	50	1.45	227	1.20	165	1.60	270	1.70	295
11	0.60	60	0.60	60	1.70	295	1.30	190	1.50	240	1.65	282
12	0.55	55	0.60	60	2.40	530	1.30	190	1.40	215	1.70	295
13	0.55	55	0.60	60	2.30	495	1.20	165	1.35	202	1.80	325
14	0.55	55	0.60	60	2.00	390	1.20	165	1.30	190	2.00	390
15	0.50	50	0.90	100	1.80	325	1.30	190	1.30	190	2.25	477
16	0.50	50	1.85	342	1.65	282	1.25	177	1.35	202	2.55	582
17	0.50	50	2.00	390	1.60	270	1.20	165	1.45	227	2.70	640
18	0.50	50	1.75	310	1.45	227	1.15	152	1.50	240	2.75	680
19	0.50	50	1.60	270	1.40	215	1.15	152	1.55	255	2.55	582
20	0.50	50	1.50	240	1.35	202	1.15	152	1.55	255	2.25	477
21	0.50	50	1.45	227	1.45	227	1.10	140	1.65	282	2.05	407
22	0.50	50	1.40	215	1.45	227	1.10	140	1.65	282	1.95	375
23	0.60	60	1.35	202	1.40	215	1.3	160	1.60	270	1.95	375
24	0.65	65	1.25	177	1.30	190	1.00	120	1.50	240	2.00	390
25	0.60	60	1.20	165	1.25	177	1.00	120	1.50	240	2.10	425
26	0.60	60	1.20	165	1.20	165	1.05	130	1.60	270	2.30	495
27	0.55	55	1.15	152	1.20	165	1.25	177	1.60	270	2.50	565
28	0.50	50	1.15	152	1.20	165	1.45	227	1.70	295	2.40	530
29	0.50	50	1.10	140	1.10	140	1.45	227	1.65	282	2.25	477
30	0.60	60	.....	.....	1.05	130	1.40	215	1.65	282	2.05	407
31	0.50	50	.....	.....	1.05	130	.....	.....	1.60	270	.....	.....
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	1.95	375	1.55	255	1.15	152	0.80	85	1.50	240	0.95	110
2	2.00	390	1.50	240	1.20	165	0.75	78	1.60	270	0.90	100
3	2.10	425	1.60	270	1.20	165	0.70	70	1.80	325	0.95	110
4	2.10	425	1.55	255	1.15	152	0.70	70	1.90	360	1.00	120
5	2.00	390	1.50	240	1.10	140	0.70	70	1.80	325	1.00	120
6	1.90	360	1.45	228	1.05	130	0.60	60	1.70	295	0.95	110
7	1.80	325	1.50	240	1.00	120	0.60	60	1.60	270	0.90	100
8	1.90	360	1.50	240	1.05	130	0.60	60	1.60	270	0.85	92
9	1.95	375	1.50	240	1.00	120	0.60	60	2.20	490	0.85	92
10	1.90	360	1.45	228	1.00	120	0.60	60	2.30	495	0.85	92
11	1.90	360	1.45	228	0.95	110	0.55	55	2.15	441	0.85	92
12	1.95	375	1.45	228	0.90	100	0.50	50	1.90	360	0.85	92
13	1.95	375	1.45	228	0.85	92	0.50	50	1.70	295	0.80	85
14	1.80	325	1.45	228	0.85	92	0.50	50	1.60	270	0.80	85
15	1.70	295	1.45	228	0.80	85	0.50	50	1.50	240	0.75	78
16	1.75	310	1.40	215	0.80	85	0.50	50	1.40	215	0.75	78
17	1.95	375	1.30	190	0.80	85	0.55	55	1.30	190	0.70	70
18	2.05	407	1.25	178	0.80	85	0.55	55	1.20	165	0.75	78
19	2.00	390	1.15	152	0.80	85	0.55	55	1.10	140	0.80	85
20	2.00	390	1.10	140	0.75	78	0.50	50	1.05	130	0.75	78
21	1.90	360	1.05	130	0.75	78	0.50	50	1.00	120	0.75	78
22	2.05	407	1.05	130	0.85	92	0.50	50	0.95	110	0.75	78
23	2.10	425	1.10	140	0.85	92	0.50	50	0.95	110	0.70	70
24	1.95	375	1.10	140	0.80	85	0.50	50	0.90	100	0.70	70
25	2.00	390	1.20	165	0.90	100	0.55	55	0.90	100	0.70	70
26	1.85	342	1.25	178	0.85	92	0.90	100	1.05	130	0.70	70
27	1.75	310	1.30	190	1.00	120	1.10	140	1.15	152	0.65	65
28	1.65	282	1.30	190	0.90	100	1.10	140	1.10	140	0.60	60
29	1.60	270	1.30	190	0.90	100	1.20	165	1.05	130	0.60	60
30	1.55	255	1.30	190	0.90	100	1.30	190	1.00	120	0.60	60
31	1.60	270	1.25	178	.....	.....	1.40	215	.....	.....	0.55	55

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## Monthly Discharge of Jones Creek near Jones Lake, for 1916.

(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.
January.....	85	50	59	2.36	2.72	3,630
February.....	390	47	137	5.48	5.91	7,880
March.....	530	92	207	8.28	9.55	12,700
April.....	227	120	157	6.28	7.01	9,340
May.....	375	190	263	10.50	12.10	16,200
June.....	660	255	403	16.10	18.00	24,000
July.....	425	255	357	14.30	16.50	22,000
August.....	270	130	202	8.08	9.32	12,400
September.....	165	78	138	4.32	4.82	6,430
October.....	215	50	77	3.08	3.55	4,730
November.....	495	100	232	9.28	10.40	13,600
December.....	120	55	84	3.36	3.87	5,100
The year.....	660	47	190	7.62	103.75	138,270

## LYNN CREEK (1046).

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

*Records Available.*—Daily discharges from June 1914 to December 1916.

*Drainage Area.*—Fourteen square miles, estimated by the engineers of the Provincial Water Rights Branch.

*Gauge.*—Cable gauge on flume bridge. Gauge read twice daily by Mr. J. Kirkland.

*Channel.*—Boulders and solid rock.

*Discharge Measurements.*—Ten measurements, made during 1914-16, give a well defined rating curve.

*Winter Flow.*—Open water all year.

*Accuracy.*—"B."

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

## Discharge Measurements of Lynn Creek below Intake, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 18	Balls and Hughes.....	1,046	45 0	104 0	2.66	6.00	277.0
June 16	Balls and MacLachlan.....	1,633	50 0	129 0	3.91	6.65	495.0
Sept. 13	Balls and Hughes.....	1,633	9 3	15 2	0.73	4.12	11.1

## Daily Gauge Height and Discharge of Lynn Creek below City Intake, for 1916.

(Drainage area, 14 square miles.)

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	5 60	185	3 20	1	5 45	156	6 15	325	5 90	250	6 20	340
2	5 75	215	3 20	1	5 45	156	6 16	325	5 90	250	6 00	280
3	5 60	185	3 00	1	5 15	107	6 00	280	5 95	265	6 30	370
4	5 40	147	3 00	1	5 15	107	6 00	280	6 05	295	6 30	370
5	5 40	147	2 95	1	5 15	107	5 95	265	6 20	340	6 60	470
6	5 40	147	2 90	1	5 45	156	6 20	340	5 90	250	6 00	280
7	5 25	138	1 75	5	5 80	225	6 60	470	5 90	250	5 90	250
8	5 30	130	4 95	81	6 00	280	6 80	545	5 90	250	6 00	280
9	5 30	130	4 75	60	6 65	487	7 15	685	5 90	250	6 00	280
10	5 60	185	4 00	12	7 30	745	7 30	745	6 45	417	6 00	280
11	5 60	185	3 90	9	7 95	1,010	6 95	605	6 50	435	6 20	340
12	5 40	147	3 75	5	8 00	1,030	6 90	585	6 00	280	6 00	280
13	5 40	147	4 30	26	7 90	985	6 30	370	6 00	280	6 00	280
14	5 20	115	5 30	130	7 10	665	6 40	400	6 20	340	6 60	470
15	5 20	115	6 90	585	7 00	625	6 00	280	6 40	400	6 65	487
16	5 20	115	8 65	1,290	6 95	605	5 90	250	6 00	280	6 60	470
17	4 90	75	7 65	885	6 75	525	5 95	265	5 90	250	6 00	280
18	4 75	60	6 95	605	6 10	310	5 95	265	5 90	250	6 10	310
19	4 45	36	6 30	370	6 30	370	6 30	370	5 90	250	6 00	280
20	4 30	26	6 00	280	6 80	545	6 00	280	5 90	250	6 10	310
21	4 00	12	6 30	370	7 00	625	6 00	280	6 10	310	5 90	250
22	4 55	81	6 30	370	6 95	605	6 30	370	6 30	370	5 95	265
23	5 75	215	6 00	280	6 90	585	6 00	280	6 00	280	6 00	280
24	5 90	250	6 00	280	7 20	705	6 00	280	6 00	280	6 00	280
25	5 00	87	5 95	265	7 30	745	5 90	250	6 30	370	6 20	340
26	4 60	47	6 00	280	7 75	925	5 75	315	6 00	390	6 70	505
27	4 00	12	5 75	215	8 20	1,110	6 20	340	5 90	250	6 40	400
28	3 90	9	5 60	185	7 90	985	6 00	280	5 90	250	6 40	400
29	3 60	3	5 45	156	7 00	625	6 00	280	5 95	265	6 50	435
30	3 20	1	.....	.....	6 90	585	6 00	280	6 00	280	6 50	435
31	3 10	1	.....	.....	6 90	585	.....	.....	6 00	280	.....	.....

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 30	370	5 90	250	4 90	75	4 00	12	6 00	280	4 90	75
2	6 50	435	5 90	250	4 70	55	4 00	12	6 00	280	4 90	75
3	6 60	470	5 75	215	4 70	55	4 00	12	5 90	250	4 60	47
4	6 10	310	5 60	185	4 55	44	3 90	9	5 90	250	4 60	47
5	6 20	340	5 50	165	4 50	40	3 90	9	5 65	195	4 60	47
6	6 40	400	5 75	215	4 20	20	3 90	9	5 50	165	4 60	47
7	6 00	280	5 95	265	4 00	12	3 75	5	5 40	147	4 50	26
8	6 00	280	6 10	310	3 90	9	3 80	6	5 40	147	4 60	47
9	5 90	250	6 30	370	3 90	9	3 80	6	5 20	115	4 75	60
10	5 90	250	6 65	485	4 00	12	3 80	6	5 00	87	4 90	75
11	5 95	265	6 20	340	4 20	20	3 80	6	5 00	87	4 95	82
12	5 90	250	6 00	280	3 95	11	3 85	8	5 10	100	4 90	75
13	5 95	265	5 75	215	3 95	11	3 80	6	5 65	195	4 90	75
14	6 30	370	5 30	130	3 95	11	3 80	6	6 50	435	4 60	47
15	6 65	488	5 20	115	3 95	11	3 80	6	6 75	525	4 60	47
16	6 75	525	5 00	87	3 90	9	3 80	6	6 30	370	4 60	47
17	6 95	605	4 90	75	3 90	9	3 80	6	6 00	280	4 60	47
18	7 00	625	4 65	51	3 90	9	3 80	6	5 90	250	4 60	47
19	6 75	525	4 60	47	3 90	9	3 80	6	5 20	115	4 60	47
20	6 20	340	4 60	47	3 85	8	3 80	6	5 00	87	4 30	26
21	5 90	250	4 60	47	3 85	8	3 80	6	4 95	82	4 30	26
22	5 95	265	4 60	47	3 60	3	3 60	6	4 90	75	4 00	12
23	6 45	418	4 55	44	3 60	3	3 60	6	5 05	93	4 15	17
24	6 95	605	4 55	44	3 60	3	3 75	5	5 00	87	4 30	26
25	6 00	280	4 50	40	3 60	3	3 80	6	5 10	100	4 45	36
26	6 00	280	5 00	87	4 70	55	3 80	6	5 50	165	4 80	65
27	5 75	215	5 40	147	4 60	47	3 90	9	6 00	280	5 10	100
28	5 60	185	5 40	147	4 20	20	6 00	280	5 75	215	5 00	87
29	5 50	165	5 10	100	4 00	12	7 55	845	5 60	185	5 00	87
30	6 10	310	5 00	87	4 00	12	7 70	905	5 00	87	4 80	65
31	6 00	280	4 90	75	.....	.....	6 20	340	.....	.....	4 90	75

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## Monthly Discharge of Lynn Creek below City Intake, for 1916.

(Drainage area, 14 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	250	1	108	7.71	8.89	6,640
February	1,290	1	233	16.60	17.90	13,400
March	1,110	107	557	39.80	45.90	34,200
April	745	215	580	25.70	28.70	21,400
May	435	250	292	20.90	24.10	18,000
June	505	250	343	24.50	27.30	20,400
July	625	165	351	25.10	28.90	21,600
August	488	40	160	11.40	13.10	9,840
September	75	3	20	1.43	1.60	1,190
October	905	3	83	5.93	6.84	5,100
November	525	75	191	13.60	15.20	11,400
December	100	12	54	3.86	4.45	3,320
The year	1,290	1	230	16.40	22.58	166,490

## MESILOET RIVER (1011).

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

*Records Available.*—Daily discharges from October 1912 to December 1916.

*Drainage Area.*—Estimated at 65 square miles.

*Gauge.*—Vertical staff gauge bolted to rock. Gauge readings taken twice a week by Mr. J. L. Davis.

*Channel.*—Boulders and gravel, permanent control.

*Discharge Measurements.* Fifteen discharge measurements, taken during 1912-16, give a well defined rating curve.

*Winter Flow.*—Open-water conditions all year.

*Accuracy.*—"C" because of infrequent gauge readings (twice a week).

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

## Discharge Measurements of Mesiloet River 8 Miles above Mouth, for 1916.

Date.	Engineer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 12	Balls and Hughes	1046	57	63.0	0.75	1.39	47.6 <sup>1</sup>

<sup>1</sup> Wading.

## Daily Gauge Height and Discharge of Mesliloot River 8 Miles above Mouth, for 1916.

(Drainage area, 65 square miles.)

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		120		76		290		420	3 1	540	3 1	540
2		110		74		219		180		615		585
3	1 80	105		72	2 20	195	3 1	540		750		630
4		104	1 80	70		195		522	3 6	800		675
5		103		65	2 20	195		504		860	3 4	720
6		103		63		360		485		800		680
7	1 78	102	1 50	60		320	3 9	161		860		640
8		104		225		680		437	3 6	800	3 2	600
9	1 80	105		390		840		418		635		630
10		100		555	3 80	1,010	2 8	390		510		660
11		95	3 40	720		950		122	3 0	485		690
12		90		1,300		890		454		440	3 4	720
13		85	5 00	1,880		830	3 0	485		435		960
14	1 65	80		2,150		780		485		410		1,200
15		76		2,120	3 40	720		685	2 8	390	4 4	1,440
16		73	6 00	2,880		640		485		480		1,250
17	1 90	70		2,200		560	3 0	485		570		1,020
18		70	4 80	1,720	3 00	485		504	3 3	660		810
19		70		1,220		670		522		645	3 2	600
20		70	3 40	720	3 80	860	3 1	540		630		660
21	1 60	70		645		810		190		615		720
22		278		370		750		142	3 2	600	3 5	790
23	3 00	485		495	3 10	720		390		620		860
24		415		120		625	2 7	115		640		650
25		345	2 70	345		530		590	3 3	660		1,040
26		275		360		440		835		615	3 9	1,080
27		265		375	2 70	345	3 9	1,080		570		880
28	1 95	135	2 80	300		333		900		525		680
29		107		340		322		720	3 0	485	3 0	485
30	1 65	80			2 80	310		600		500		575
31		78				365				520		
	July.		August.		September.		October.		November.		December.	
1		670		390		180		70		100		550
2		765		390		170	1 60	79	3 00	185		500
3	3 00	800	2 80	380		160		60		500		400
4		670		100	2 00	145		50		600	2 50	280
5		550		150		150	1 40	50		700		290
6	3 00	485		150		160		50	3 00	800		150
7		500	3 00	485	2 10	170		50		800	1 90	125
8		525		450		150		50		750		120
9		550		400		130		50	3 10	720		110
10	3 15	570	2 70	354		110		50		600		100
11		600		310	1 75	98		50		500	1 75	98
12		700		330		90	1 39	49		300		90
13	3 50	790		320		90		60	2 10	170		85
14		900	2 60	310	1 65	80		70		160	1 65	80
15		1,000		300		85		80		160		90
16		1,200		280		90	1 70	90		150		90
17	1 30	1,370	2 10	250		95		90	2 00	145		90
18		1,200		240	1 75	98		80		140	1 75	98
19		1,000		230		98	1 65	80		130		90
20	3 90	800		200		98		70	1 90	125		90
21		800	2 10	170	1 75	98		60		120	1 65	80
22		700		180		90		50		110		80
23		790		180		90	1 39	49	1 80	195		79
24	3 30	660	2 20	195		90		40		105		70
25		600		195	1 68	80		50		150		60
26		500		195		90	1 40	50		250		60
27	2 90	435		195		90		50	2 60	310	1 50	60
28		400	2 20	195	1 70	90		100		400		60
29		409		190		98		200		500		60
30		400		190		80	2 80	390	3 20	600	1 50	60
31	2 80	390	2 15	183				440				60

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## Monthly Discharge of Mestiloet River 8 Miles above Mouth, for 1916.

Drainage area, 63 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	485	70	139	2.14	2.47	8,550
February	2,680	60	779	12.00	12.00	44,800
March	1,010	195	563	8.66	9.98	34,600
April	1,980	343	530	8.15	9.09	31,500
May	860	390	610	9.38	10.80	37,500
June	1,440	485	790	12.20	13.60	47,000
July	1,370	400	701	10.80	12.50	43,100
August	485	170	201	4.48	5.17	17,900
September	180	40	112	1.72	1.92	6,600
October	140	40	80	1.37	1.58	5,470
November	860	105	370	5.69	6.35	22,000
December	550	60	134	2.06	2.38	8,240
The year	2,680	60	420	6.55	88.74	307,320

## NICOLUM RIVER (1058).

*Location.*—At the pack trail bridge 9 miles from Hope, and 4 miles from the mouth of the river in section 27, township 1, range 5, west of 6th meridian.

*Records Available.*—Daily discharges from August 1914 to December 1915; June 11 to December 31, 1916. Not sufficient records January to June to determine discharge during that period.

*Drainage Area.*—Thirty square miles, above gauging station.

*Gauge.*—Vertical staff gauge. Readings irregular. Gauge readers are Mr. W. H. Robinson and Mr. W. N. Thacker, up till September 20, 1916; daily readings after that date by Mr. Geo. Murphy.

*Channel.*—Rocky, water swift at high stages.

*Discharge Measurements.*—Nine meter measurements, taken during 1914–16, give a well defined rating curve.

*Winter Flow.*—The gauge height-discharge relation is affected by anchor ice in very cold weather.

*Accuracy.*—The discharge curve is well defined except for highest stage. Accuracy for discharge data is low during July to September, due to infrequent gauge readings. Accuracy "B" October to December.

## Discharge Measurements of Nicolum River 4 Miles from Mouth, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 4	H. C. Hughes	1,046	36	40.0	2.93	1.76	117.0
July 12	Balls and Milner	1,634	34	52.1	4.94	2.20	258.0
Aug. 17	Webb and Balls	1,623	30	32.0	2.36	1.50	76.1

NOTE.—Measurement from highway bridge 9 M.

## Daily Gauge Height and Discharge of Nicolium River 4 Miles above Mouth, for 1916.

(Drainage area, 30 square miles.)

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					1.4				2.1			
3												
4	1.3		1.0				1.60					
5							1.76					
6	1.3											
7												
8												
9												
10												
11											2.1	222
12											2.1	222
13											2.3	206
14											2.3	206
15											2.6	420
16					1.8						2.6	420
17					1.8						2.8	504
18					1.7						2.9	540
19											2.5	378
20												357
21									2.0		2.4	336
22					1.7							364
23					1.6		1.60		2.0			392
24							1.70				2.6	420
25											2.5	378
26											2.7	462
27	1.1						1.90		2.1		2.6	420
28							2.00				2.5	378
29					1.6				2.1			406
30	1.1								2.1			134
31									2.1			

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	2.7	162		130		50	1.25	39	1.15	30	1.10	26
2	2.6	420		130		50	1.10	26	1.70	102	1.05	23
3	2.6	420	1.8	126		45	1.10	26	1.35	49	1.15	30
4	2.5	378		130	1.3	44	1.05	23	1.15	41	1.10	26
5	2.3	206		130		41	1.00	20	1.30	44	1.10	26
6	2.2	258		140		44	1.00	20	1.20	34	1.05	23
7	2.2	258		140	1.1	44	1.05	23	1.20	34	1.05	23
8	2.2	258	1.9	154		40	1.05	23	1.20	31	1.05	23
9	2.1	222		140		35	1.00	20	1.85	140	1.05	23
10		230	1.8	126	1.2	34	1.05	23	1.45	61	1.05	21
11		240		126		34	1.00	20	1.35	49	1.05	23
12	2.2	258	1.8	126		34	1.05	23	1.30	44	1.05	23
13		220		120	1.2	34	1.00	20	1.25	39	1.05	23
14	2.0	188		120		30	1.05	23	1.20	34	1.05	23
15	2.0	188		110	1.1	26	1.00	20	1.20	34	1.05	23
16	2.0	188	1.7	102		26	1.00	20	1.15	30	1.05	21
17		188	1.7	102	1.1	26	1.00	20	1.15	30	1.05	23
18	2.0	188		90		30	1.00	20	1.15	30	1.05	23
19		188		90		30	1.00	20	1.15	30	1.05	23
20	2.0	188	1.6	82		40	1.00	20	1.10	26	1.05	23
21	1.9	154		75		40	1.00	20	1.10	26	1.05	23
22	2.0	188	1.5	68	1.3	44	1.00	20	1.10	26	1.00	20
23	2.0	188	1.4	54		40	1.00	20	1.10	26	1.00	20
24	1.9	154		54	1.2	34	1.00	20	1.10	26	1.00	20
25		154		54	1.2	34	1.05	23	1.10	26	1.00	20
26	1.9	154	1.4	54		34	1.05	23	1.10	26	1.00	20
27		150		54	1.2	34	1.10	26	1.20	34	1.00	20
28		140		54	1.2	34	1.10	26	1.15	30	0.95	18
29		140	1.4	54	1.2	34	1.15	30	1.10	26	0.95	18
30		130		54	1.2	34	1.10	26	1.10	26	0.95	18
31		130	1.4	54			1.30	44			1.00	20



SESSIONAL PAPER No. 25d

*Monthly Discharge of Nicolom River 4 Miles above Mouth, for 1916.*

(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 Acro-feet.
July . . . . .	462	130	223	7.43	8.57	13,700
August . . . . .	154	54	98	3.27	3.77	6,030
September . . . . .	50	26	37	1.23	1.37	2,200
October . . . . .	44	20	23	0.77	0.89	1,410
November . . . . .	140	28	40	1.33	1.48	2,380
December . . . . .	30	18	22	0.73	0.84	1,350
The period . . . . .	462	18	74	2.46	16.92	27,070

## NORTON CREEK (1013).

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

*Records Available.*—Daily discharge from October 1912 to December 1916.

*Drainage Area.*—The exact drainage area is not known, but it is very small.

*Gauge.*—Vertical staff. Gauge readings are taken twice a week by Mr. J. L. Davis.

*Channel.*—Boulders. The control is good.

*Discharge Measurements.*—Sixteen meter measurements, made during 1912-16, give a well defined rating curve.

*Winter Flow.*—The lake freezes over, but the stream is free of ice at the gauge throughout the winter.

*Accuracy.*—Low because of infrequent gauge readings. The discharge curve is well defined.

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

*Discharge Measurements of Norton Creek at Norton Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 16	Balls and Hughes . . . . .	1046	2.5	0.83	8.19	1.69	0.23 <sup>1</sup>

<sup>1</sup> Wading below regular section.

## Daily Gauge Height and Discharge of Norton Creek at Norton Lake, for 1916.

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		6.0	2.20	2.7	2.50	6.7		13.0		29		17.0
2		4.0	2.29	2.7	2.50	6.7		15.0		32	3.00	22.0
3	2.20	2.7	2.20	2.7		6.5		19.0	3.20	35		20.0
4	2.20	2.7		2.7		6.4	3.00	22.0		38		20.0
5	2.15	2.3		2.7		6.2		17.0	3.10	41		20.0
6	2.15	2.3		2.7	2.45	6.0		12.0		42	2.30	18.0
7		2.4		2.7	2.45	6.0	2.60	8.6		43		18.0
8		2.7	2.20	2.7	2.55	7.7		8.0		45		16.0
9		3.0	2.20	2.7	2.70	11.0		7.0	3.5	46	2.85	16.0
10	2.25	3.2	2.40	5.2		11.0		6.0		30		15.0
11	2.25	3.2		6.0		11.0		11.0		20		13.0
12	2.18	2.5		7.0		11.0	2.40	5.2		11	2.70	11.0
13	2.16	2.4		8.0		11.0		6.0	2.70	11		11.0
14		2.2	2.60	8.6	2.70	11.0		7.0		12	2.70	11.0
15		2.0	2.70	11.0		11.0	2.60	8.6		13		13.0
16		1.8		30.0		11.0		10.0		15		15.0
17	2.05	1.6	3.60	50.0	2.70	11.0		11.0	2.85	16	2.90	18.0
18	2.05	1.6	3.35	39.0		11.0		12.0		16		17.0
19	2.05	1.6		30.0		11.0	2.80	14.0		16		16.0
20	2.05	1.6		25.0		11.0		15.0	2.85	16		13.0
21	2.05	1.6	2.90	18.0	2.70	11.0		17.0		15	2.70	11.0
22		3.6	2.90	18.0		12.0		18.0		14		13.0
23		6.0	2.85	16.0		12.0		17.0		13		14.0
24	2.60	8.6	2.90	18.0	2.75	12.5		16.0	2.70	11	2.80	14.0
25	2.60	8.6		16.0		13.0		15.0		12		12.0
26	2.55	7.7		13.0		13.0	2.80	14.0		13		10.0
27	2.53	7.3		10.0		14.0		16.0	2.80	14		9.0
28		3.0	2.55	7.7	2.80	14.0		18.0		13	2.60	8.6
29		4.0	2.55	7.7		14.0	3.00	22.0		12		9.0
30	2.20	2.7		7.7		12.0		24.0		11		10.0
31	2.20	2.7			2.70	11.0		26.0	2.70	11	2.70	11.0
										14		

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		11.0	2.50	6.7	2.9	18.0		0.10		16.0	2.30	3.70
2		11.0		7.0		14.0		0.08		19.0		3.00
3		11.0		7.8		10.0	1.30	0.67	3.00	22.0		2.40
4	2.7	11.0	2.60	8.6		6.0		0.66		18.0		1.80
5		9.0		9.0	2.0	1.2		0.66		14.0	2.00	1.20
6		8.0		9.5		1.4	1.20	0.05		10.0		1.00
7	2.5	6.7		10.4		1.7		0.05	2.50	6.7		0.80
8		7.0	2.70	11.0	2.1	1.9		0.05		6.5	1.90	0.70
9		7.5		10.0		1.7		0.05		6.3		0.50
10		8.0		9.0		1.5		0.10	2.15	6.0		0.40
11	2.6	8.6	2.6	8.6		1.4		0.10		5.0		0.30
12		8.0		7.0	2.0	1.2		0.10		4.0	1.60	0.20
13		7.4		5.0		1.2		0.10		3.5		0.20
14	2.5	6.7		3.0		1.2		0.20	3.20	2.7		0.15
15		9.0	2.0	1.2	2.0	1.2		0.20		2.5	1.50	0.15
16		12.0		1.2		1.0	1.69	0.25		2.3		0.15
17		15.0		1.2		0.8	1.70	0.25		2.1		0.15
18	2.9	18.0	2.0	1.2		0.6		0.25	2.10	1.9		0.15
19		16.0		1.2	1.78	0.4		0.25		1.7	1.50	0.15
20		14.0		1.2		0.4	1.70	0.25		1.5		0.15
21	2.7	11.0		1.2		0.4		0.25	2.60	1.2		0.15
22		11.0	2.0	1.2	1.78	0.4		0.25		1.0		0.13
23		11.0		1.5		0.4		0.25		0.9	1.50	0.13
24		11.0		1.7		0.4	1.70	0.25	1.90	0.7		0.13
25	2.7	11.0	2.10	1.9		0.4		0.30		1.0		0.15
26		10.0		1.4	1.80	0.4		0.33		1.5		0.15
27		9.0		1.0		0.4	1.75	0.33		2.0		0.15
28	2.6	8.6		0.8		0.5		3.00	2.20	2.7	1.50	0.15
29		8.0	1.85	0.5	1.85	0.5		6.00		3.0		0.20
30		5		6.0		0.3		9.00		3.3		0.20
31		7.0		12.0			2.80	14.00				0.20

SESSIONAL PAPER No. 25d

*Monthly Discharge of Norton Creek at Norton Lake, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	8.6	1.60	3.50			215
February	50.0	2.70	13.00			748
March	14.0	6.00	10.40			640
April	26.0	5.20	14.00			833
May	46.0	11.00	22.00			1,350
June	22.0	8.60	13.60			774
July	18.0	6.70	10.00			615
August	12.0	0.50	4.80			295
September	15.0	0.50	2.40			143
October	14.0	0.05	1.18			73
November	22.0	0.70	5.69			333
December	3.7	0.15	0.62			38
The year	50.0	0.05	8.40			6,037

## SEYMOUR CREEK (1022).

*Location.*—Above the Vancouver waterworks intake, about 7 miles from the mouth.

*Records Available.*—Daily discharges from November 1913 to December 1916.

*Drainage Area.*—Above the intake 69 square miles, estimated by the Provincial Water Rights Branch.

*Gauge.*—Vertical staff gauge spiked to the cribbing at the intake. Gauge readings are taken daily by Mr. G. Skinner.

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

*Discharge Measurements.*—Eleven discharge measurements during 1913-16 give a well defined rating curve.

*Winter Flow.*—May be affected by ice for short periods during coldest weather.

*Accuracy.*—"B" except where records are affected by ice conditions.

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

*Discharge Measurements of Seymour Creek above City Intake, for 1916.*

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sq. ft.
July 28	Hughes and Hall		134	333	1.69	2.03	562

## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1916

## Daily Gauge Height and Discharge of Seymour Creek above City Intake, for 1916.

(Drainage area, 69 square miles.)

DAY.	January.		Februr. .		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	1.10	130	0.90	95	1.60	290	1.80	390	2.35	850	2.20	710
2	1.05	120	0.85	88	1.50	250	1.90	460	2.85	1,480	2.45	950
3	1.00	110	0.85	88	1.45	230	2.15	665	3.00	1,750	2.50	1,000
4	1.20	150	0.80	80	1.48	242	2.25	755	2.80	1,400	2.85	1,050
5	1.00	110	0.80	80	1.30	180	2.15	665	2.60	1,100	2.50	1,000
6	1.00	110	0.60	80	1.30	180	2.00	530	2.70	1,250	2.20	710
7	0.95	102	0.75	75	1.35	180	2.00	530	2.60	1,100	2.15	665
8	0.90	95	0.75	75	1.77	375	2.10	620	2.45	950	2.40	900
9	1.00	110	0.70	70	3.30	2,350	2.10	620	2.30	800	2.45	950
10	0.90	95	0.65	495	3.35	2,480	2.45	950	2.10	620	2.20	710
11	Ice	95	2.45	950	4.00	3,950	2.20	710	1.90	460	2.30	800
12	.....	95	1.80	390	3.45	3,600	2.00	530	1.80	390	2.55	1,050
13	.....	95	1.97	509	2.70	1,250	2.05	575	1.80	390	2.80	1,400
14	.....	95	3.85	3,600	2.30	300	2.35	850	1.90	460	2.90	1,550
15	.....	95	6.55	11,400	2.00	530	2.35	850	2.20	710	3.20	2,150
16	.....	95	4.40	4,950	2.20	710	2.15	665	2.55	1,050	3.15	2,050
17	.....	95	3.00	1,750	2.20	710	2.25	755	2.70	1,250	3.20	2,150
18	.....	95	2.60	1,100	1.90	460	2.50	1,000	2.50	1,000	3.10	1,950
19	.....	95	2.50	1,000	1.75	365	2.30	800	2.60	1,000	2.70	1,250
20	1.00	110	2.55	1,050	3.50	2,800	2.30	800	2.30	800	2.70	800
21	1.00	110	2.50	1,030	3.00	1,750	2.15	665	2.30	800	2.40	900
22	1.00	110	2.50	1,000	2.70	1,250	2.05	575	2.10	620	2.40	900
23	.....	300	2.20	710	2.40	900	1.90	460	2.00	530	2.55	1,050
24	2.00	530	2.00	530	2.10	620	1.90	460	2.00	530	2.60	1,100
25	1.50	250	1.90	460	1.90	460	2.00	530	2.50	1,000	2.70	1,250
26	1.30	180	2.00	530	2.10	620	2.25	755	2.80	1,400	2.95	1,550
27	1.20	150	2.00	530	2.30	800	2.80	1,400	2.40	900	2.95	1,650
28	1.10	130	1.85	425	2.10	620	2.60	1,100	2.35	850	2.80	1,400
29	1.00	110	1.70	340	1.95	485	2.35	850	2.15	665	2.55	1,050
30	1.00	110	.....	.....	1.75	365	2.15	665	2.10	620	2.40	900
31	.....	100	.....	.....	1.70	340	.....	.....	2.10	620	.....	.....
	July.		August.		Septemoer.		October.		November.		December.	
1	2.60	1,100	1.97	509	0.90	95	0.60	60	2.30	800	1.50	250
2	2.65	1,180	1.80	390	1.20	150	0.55	58	3.60	3,000	1.75	365
3	2.70	1,250	2.00	530	0.95	102	0.50	55	2.82	1,430	3.40	2,600
4	2.60	1,000	1.80	390	1.00	110	0.50	55	2.70	1,250	2.42	920
5	2.30	800	1.80	390	0.85	88	0.50	55	2.55	1,050	1.95	495
6	2.25	755	1.95	495	0.80	80	0.48	54	2.10	620	1.75	365
7	2.35	850	1.85	425	0.75	75	0.47	54	1.75	365	1.50	250
8	2.50	1,000	1.85	425	0.80	80	0.45	52	1.85	475	1.35	195
9	2.50	1,000	1.70	340	0.70	70	0.42	51	2.60	1,100	1.25	165
10	2.35	850	1.60	290	0.65	65	0.42	51	2.10	620	1.20	150
11	2.40	900	1.70	340	0.65	65	0.42	51	1.70	340	1.15	140
12	2.40	900	1.65	315	0.60	60	0.42	51	1.50	250	1.10	130
13	2.30	800	1.65	315	0.65	65	0.50	55	1.35	195	1.10	130
14	2.10	620	1.60	290	0.65	65	0.50	55	1.20	150	1.00	110
15	2.45	950	1.50	250	0.65	65	0.50	55	1.15	140	1.00	110
16	3.20	2,150	1.40	210	0.65	65	0.50	55	1.10	130	1.00	110
17	3.30	2,350	1.40	210	0.60	60	0.50	55	1.10	130	1.00	110
18	2.60	1,100	1.30	180	0.60	60	0.50	55	1.15	140	1.45	230
19	2.05	1,650	1.20	150	0.58	59	0.48	54	1.10	130	1.50	250
20	2.70	1,250	1.15	140	0.55	58	0.46	52	1.00	110	1.30	180
21	2.35	850	1.10	130	0.55	58	0.42	51	1.00	110	1.20	150
22	2.60	1,100	1.20	180	0.55	58	0.42	51	1.05	120	1.10	130
23	2.35	850	1.20	150	0.58	59	0.40	50	1.05	120	1.00	110
24	2.20	710	1.25	175	0.55	55	0.40	50	1.02	114	1.00	110
25	2.40	900	1.20	150	0.60	60	0.48	54	1.25	165	1.00	110
26	2.30	800	1.20	150	0.88	92	0.58	50	1.60	290	0.90	95
27	2.20	710	1.15	140	0.85	88	0.58	59	1.80	390	0.85	85
28	2.05	575	1.10	130	0.70	70	0.62	62	1.92	474	0.88	92
29	2.00	530	1.05	120	0.65	65	2.80	1,400	1.70	240	0.85	92
30	2.00	530	1.00	110	0.60	60	2.50	1,000	1.65	315	0.80	80
31	2.20	710	0.95	102	.....	.....	3.00	1,750	.....	.....	0.80	80

SESSIONAL PAPER No. 25d

*Monthly Discharge of Seymour Creek above City Intake, for 1916.*

(Drainage area, 69 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			135	1.96	2.26	8,300
February	11,400	70	1,150	16.70	18.00	66,200
March	3,950	180	973	14.10	16.30	59,800
April	1,400	390	706	10.20	11.40	42,000
May	1,750	390	882	12.80	14.80	54,200
June	2,150	665	1,190	17.30	19.30	70,800
July	2,350	530	991	14.40	16.60	60,900
August	530	102	260	3.77	4.35	16,000
September	150	58	74	1.07	1.19	4,400
October	1,750	50	183	2.65	3.06	11,300
November	3,000	110	494	7.16	7.99	29,400
December	2,600	80	271	3.93	4.53	16,700
The year	11,400	50	600	8.84	119.78	440,000

NOTE.—Gauge height-discharge relation affected by ice January 11 to 19, also January 23 and 31. Discharge estimated from gauge heights and climatic conditions.

## ALOUETTE RIVER (1089).

(South Lillooet.)

*Location.*—At outlet from Alouette lake, township 4, range 4, west 7th meridian.

*Records Available.*—Daily discharges January 1 to December 31 1916.

NOTE.—Daily discharge available for station No. 1,018 (7 miles below Lillooet lake) October 1911 to December 1915. There is practically no difference in discharge between these two stations.

*Drainage Area.*—One hundred and forty square miles, estimated by the Burrard Power Company.

*Gauge.*—Vertical staff. Gauge read daily by Wright & Greaves.

*Channel.*—Channel is regular above and below metering section.

*Discharge Measurements.*—Distributed over a period of six years. The rating has never varied.

*Winter Flow.*—Not affected by ice.

*Co-operation.*—Data supplied by the Burrard Power Company.

*Daily Gauge Height and Discharge of Alouette River (South Lillooet) at Burrard  
Power Company's Gauging Station, for 1916.*

(Drainage area, 140 square miles—estimated.)

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	6.05	413	5.80	335	6.55	600	6.95	784	7.90	1,348	6.90	759
2	6.00	397	5.90	365	6.40	539	6.85	735	7.30	1,348	6.90	759
3	5.90	365	5.65	293	6.30	501	6.80	711	8.05	1,452	6.90	759
4	5.70	307	5.50	255	6.20	465	7.10	862	8.00	1,417	6.95	784
5	5.65	293	5.45	243	6.05	413	7.15	880	7.90	1,348	7.10	862
6	5.55	267	5.40	231	6.00	397	7.10	862	7.90	1,348	7.05	835
7	5.50	255	5.45	243	6.10	430	6.95	784	7.90	1,848	7.00	809
8	5.50	255	5.40	231	6.50	579	7.00	809	8.00	1,417	6.95	784
9	5.50	255	5.40	231	8.20	1,559	7.00	809	7.90	1,348	7.00	809
10	5.50	255	5.55	267	9.70	2,886	7.55	1,123	7.75	1,249	6.95	784
11	5.40	231	6.35	520	11.70	5,390	7.80	1,282	7.50	1,033	6.85	735
12	5.30	208	6.45	559	12.00	5,828	7.60	1,154	7.20	917	6.85	735
13	5.25	197	6.50	579	10.70	4,039	7.30	974	7.05	835	7.05	835
14	5.15	175	7.45	1,062	9.50	2,682	7.35	1,003	6.95	784	7.25	945
15	5.05	155	12.20	6,100	8.70	1,950	7.40	1,033	6.95	784	7.50	1,093
16	4.95	137	12.70	6,800	8.30	1,633	7.30	974	7.05	835	7.80	1,282
17	4.90	128	11.15	4,626	8.00	1,417	7.30	974	7.30	974	7.90	1,348
18	4.85	119	9.90	3,099	7.80	1,154	7.40	1,033	7.35	1,003	7.95	1,382
19	4.80	111	9.15	2,345	7.30	974	7.50	1,093	7.40	1,033	7.80	1,282
20	4.80	111	8.70	1,950	7.70	1,217	7.50	1,093	7.35	1,003	7.50	1,093
21	4.90	128	8.35	1,671	8.90	2,120	7.40	1,033	7.30	974	7.20	917
22	5.35	219	8.10	1,487	8.80	2,034	7.30	974	7.30	974	7.00	809
23	7.40	1,033	7.90	1,282	8.55	1,827	7.10	862	7.10	862	6.95	784
24	8.00	1,417	7.50	1,093	8.05	1,452	7.00	809	6.90	759	7.00	809
25	7.00	1,154	7.20	917	7.75	1,249	7.15	880	6.90	759	7.05	835
26	7.40	1,033	7.00	809	7.65	1,186	7.55	1,123	7.20	917	7.10	862
27	6.90	759	6.90	759	8.00	1,417	8.15	1,523	7.20	917	7.30	974
28	6.60	621	6.80	711	7.95	1,382	8.70	1,950	7.20	917	7.40	1,033
29	6.35	520	6.70	665	7.65	1,186	8.45	1,748	7.10	862	7.40	1,033
30	6.15	447	.....	.....	7.35	1,003	8.10	1,487	7.00	809	7.20	917
31	6.00	397	.....	.....	7.05	835	.....	.....	6.95	784	.....	.....
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	7.10	862	6.50	579	5.15	175	4.80	111	7.90	1,348	6.55	600
2	7.10	862	6.45	559	5.15	175	4.80	111	8.20	1,559	6.75	688
3	7.10	862	6.30	501	5.15	175	4.75	103	8.25	1,596	7.70	1,217
4	7.20	917	6.30	501	5.15	175	4.70	96	9.10	2,298	7.90	1,348
5	7.10	862	6.15	417	5.10	165	4.70	96	9.00	2,208	7.70	1,217
6	6.90	759	6.10	430	5.10	165	4.60	82	8.50	1,787	7.25	945
7	6.85	735	6.00	397	5.10	165	4.60	82	8.00	1,417	7.00	809
8	6.80	711	5.95	381	5.05	155	4.50	70	8.50	1,787	6.90	759
9	6.80	711	5.90	365	5.00	146	4.50	70	8.90	2,120	6.60	621
10	6.60	621	5.90	365	4.95	137	4.50	70	8.70	1,950	6.40	539
11	6.60	621	5.80	335	4.90	128	4.50	70	8.10	1,487	6.25	483
12	6.50	579	5.80	335	4.85	119	4.50	70	7.55	1,123	6.15	447
13	6.55	600	5.75	321	4.85	110	4.45	65	7.20	917	6.00	397
14	6.50	579	5.70	307	4.80	111	4.45	65	6.80	711	5.90	365
15	6.45	559	5.65	293	4.75	103	4.40	60	6.55	600	5.80	335
16	6.80	711	5.65	293	4.75	103	4.40	60	6.35	520	5.75	321
17	7.30	974	5.60	280	4.75	103	4.40	60	6.15	447	5.65	293
18	7.75	1,249	5.55	267	4.65	89	4.40	60	6.05	413	6.00	365
19	7.50	1,093	5.50	255	4.65	89	4.40	60	5.95	381	6.35	520
20	8.05	1,452	5.40	231	4.60	82	4.40	60	5.80	335	6.40	539
21	7.80	1,282	5.40	231	4.60	82	4.40	60	5.70	307	6.30	501
22	7.80	1,282	5.30	208	4.60	82	4.35	55	5.65	293	6.20	465
23	7.90	1,345	5.30	208	4.60	82	4.35	55	5.50	255	6.10	430
24	7.80	1,282	5.25	197	4.60	82	4.30	50	5.50	255	6.00	397
25	7.40	1,033	5.25	197	4.60	82	4.35	55	5.75	321	5.90	365
26	7.30	974	5.25	197	4.75	103	4.50	70	5.00	397	5.75	321
27	7.10	862	5.25	197	4.85	119	4.50	70	6.30	501	5.60	280
28	6.95	784	5.25	197	4.80	111	4.50	70	6.75	688	5.55	267
29	6.80	711	5.20	186	4.80	111	5.55	267	6.75	688	5.50	255
30	6.60	621	5.20	186	4.80	111	6.00	397	6.70	605	5.40	231
31	6.45	559	5.20	186	.....	.....	7.20	917	.....	.....	5.40	231

SESSIONAL PAPER No. 25d

*Monthly Discharge of Alouette River (South Lillooet) at Burrard Power Company's Gauging Station, for 1916.*

(Drainage area, 140 square miles—estimated.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January .....	1,417	111	309	2.85	3.29	24,500
February .....	6,800	231	1,370	9.78	10.50	78,800
March .....	5,828	397	1,620	11.60	13.40	99,600
April .....	1,950	711	1,050	7.50	8.37	62,500
May .....	1,452	759	1,040	7.43	8.57	64,000
June .....	1,382	735	922	6.59	7.35	54,900
July .....	1,452	539	873	6.24	7.19	53,700
August .....	579	186	311	2.22	2.56	19,100
September .....	175	82	121	0.86	0.96	7,220
October .....	917	50	116	0.83	0.96	7,130
November .....	2,208	255	979	7.00	7.81	58,300
December .....	1,348	231	534	3.81	4.39	32,800
The year .....	6,800	50	778	5.56	75.35	562,550

NOTE.—These data supplied by the Burrard Power Company.

## SUMALLO RIVER (1056).

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

*Records Available.*—Daily discharges from July 1914 to November 1916 (no gauge reader available for winter of 1916-17).

*Drainage Area.*—Above the mouth 70 square miles.

*Gauge.*—Vertical staff. Gauge readings are taken daily by Mr. W. H. Robinson.

*Channel.*—Straight for 200 feet above and below section. Boulders in stream bed, good control.

*Discharge Measurements.*—Twelve meter measurements during 1914-16 give a well defined rating curve.

*Winter Flow.*—Stream open all winter, but during very cold weather anchor ice affects the relation between gauge height and discharge.

*Accuracy.*—"A" up to discharge of 400 cubic feet per second; "B" from discharge of 400 to 800 cubic feet per second; "D" above discharge of 800 cubic feet per second.

*Discharge Measurements of Sumallo River 1 Mile from Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 1	H. C. Hughes .....	1,046	44	88	2.74	1.49	241
July 9	Balls and Milner .....	1,633	52	163	5.53	3.05	903
July 11	Balls and Milner .....	1,633	52	159	4.72	2.95	752
Aug. 16	Webb and Balls .....	1,623	45	85	2.53	1.38	216

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## Daily Gauge Height and Discharge of Sumallo River 1 Mile from Mouth, for 1918.

(Drainage area, 70 square miles.)

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	0.7	106	0.3	62	1.4	223	1.4	223	2.7	620	2.7	620
2	0.7	106	0.3	62	1.3	204	1.5	244	3.1	880	2.8	670
3	0.6	94	0.3	62	1.2	186	1.7	288	3.7	1,420	3.0	800
4	0.6	94	0.3	62	1.1	168	1.9	334	3.7	1,420	3.3	1,060
5	0.5	82	0.2	53	1.1	168	1.9	334	3.6	1,330	2.4	1,150
6	0.5	82	0.2	53	1.1	168	1.8	310	3.4	1,150	3.1	880
7	0.5	82	0.2	53	1.0	150	1.9	334	3.1	880	3.0	800
8	0.5	82	0.2	53	1.0	150	2.0	360	2.9	730	3.4	1,150
9	0.5	82	0.2	53	1.2	184	2.1	388	2.7	620	3.3	1,060
10	0.5	82	0.2	53	1.6	266	2.1	388	2.5	523	3.3	1,060
11	0.4	71	0.2	53	1.9	334	2.1	388	2.2	416	3.1	880
12	0.4	71	0.2	53	3.1	880	2.0	360	2.1	388	3.3	1,060
13	0.4	71	0.2	53	2.8	670	1.9	334	2.0	360	3.3	1,060
14	0.3	62	0.3	62	2.4	485	2.0	360	2.0	360	4.2	1,870
15	0.3	62	0.8	120	2.2	416	2.0	360	2.0	360	5.1	2,680
16	0.3	62	1.9	334	2.0	360	2.0	360	2.2	416	5.4	2,950
17	0.3	62	2.1	388	2.0	360	1.9	334	2.5	523	5.2	2,770
18	0.3	62	1.9	334	1.9	334	1.9	334	2.7	620	4.4	2,250
19	0.3	62	1.7	288	1.9	334	1.8	310	2.9	730	3.7	1,420
20	0.2	53	1.7	288	1.9	334	1.8	310	2.9	730	3.1	880
21	0.2	53	1.7	288	1.8	310	1.6	266	2.8	670	3.2	970
22	0.2	53	1.7	288	1.8	310	1.5	244	2.7	620	3.2	970
23	0.3	62	1.6	266	1.7	288	1.5	244	2.8	670	3.8	1,510
24	0.3	62	1.6	266	1.7	288	1.6	266	2.8	670	3.8	1,510
25	0.4	71	1.5	244	1.6	266	1.6	266	2.5	670	4.6	2,230
26	0.4	71	1.5	244	1.6	266	1.8	310	2.8	670	4.5	2,140
27	0.4	71	1.5	244	1.6	266	2.0	360	2.7	620	4.3	1,960
28	0.4	71	1.5	244	1.5	244	2.1	388	2.7	620	3.9	1,600
29	0.4	71	1.5	244	1.5	244	2.5	523	2.7	620	3.7	1,420
30	0.3	62	.....	.....	1.4	223	2.5	523	2.7	620	3.6	1,330
31	0.3	62	.....	.....	1.4	223	.....	.....	2.7	620	.....	.....
	July.		August.		September.		October.		November.		December.	
1	3.3	1,060	1.8	310	1.0	150	0.5	82	0.3	62	.....	.....
2	3.4	1,150	1.8	310	1.0	150	0.5	82	0.4	71	.....	.....
3	3.5	1,240	1.7	288	1.0	150	0.4	71	0.4	71	.....	.....
4	3.5	1,240	1.7	288	0.9	134	0.4	71	0.4	71	.....	.....
5	3.4	1,150	1.6	266	0.9	134	0.4	71	0.4	71	.....	.....
6	3.2	970	1.6	266	0.9	134	0.4	71	0.4	71	.....	.....
7	2.9	730	1.6	266	0.8	120	0.3	62	0.4	71	.....	.....
8	3.1	880	1.6	266	0.8	120	0.3	62	0.4	71	.....	.....
9	3.0	800	1.6	266	0.8	120	0.3	62	1.3	204	.....	.....
10	3.1	880	1.6	266	0.7	106	0.3	62	1.2	186	.....	.....
11	3.0	800	1.5	244	0.7	106	0.3	62	0.9	134	.....	.....
12	3.0	800	1.5	244	0.7	106	0.3	62	0.8	120	.....	.....
13	3.0	800	1.5	244	0.6	94	0.3	62	0.8	120	.....	.....
14	2.6	570	1.5	244	0.6	94	0.3	62	0.8	120	.....	.....
15	2.5	523	1.4	223	0.6	94	0.2	53	0.7	106	.....	.....
16	2.5	523	1.4	223	0.5	82	0.2	53	0.7	106	.....	.....
17	2.6	570	1.3	204	0.5	82	0.2	53	0.7	106	.....	.....
18	2.5	523	1.2	186	0.5	82	0.2	53	0.7	106	.....	.....
19	2.4	485	1.1	168	0.5	82	0.2	53	0.7	106	.....	.....
20	2.4	485	1.1	168	0.5	82	0.2	53	0.7	106	.....	.....
21	2.3	450	1.0	150	0.5	82	0.2	53	0.7	106	.....	.....
22	2.3	450	1.0	150	0.7	106	0.2	53	0.7	106	.....	.....
23	2.3	450	1.0	150	0.6	94	0.2	53	.....	.....	.....	.....
24	2.2	415	1.0	150	0.6	94	0.2	53	.....	.....	.....	.....
25	2.1	388	1.1	168	0.5	82	0.3	62	.....	.....	.....	.....
26	2.0	360	1.2	186	0.5	82	0.4	71	.....	.....	.....	.....
27	2.0	360	1.2	186	0.5	82	0.3	62	.....	.....	.....	.....
28	1.9	334	1.1	168	0.5	82	0.3	62	.....	.....	.....	.....
29	1.9	334	1.1	168	0.5	82	0.3	62	.....	.....	.....	.....
30	1.8	310	1.1	168	0.5	82	0.3	62	.....	.....	.....	.....
31	1.8	310	1.0	150	.....	.....	0.3	62	.....	.....	.....	.....



SESSIONAL PAPER No. 25d

Monthly Discharge of Sumallo River 1 Mile from Mouth, for 1916.

(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.
January	106	53	72	1.03	1.19	4,430
February	388	33	168	2.40	2.59	9,560
March	880	150	309	4.28	4.93	18,400
April	525	223	333	4.79	5.34	19,900
May	1,420	360	695	9.93	11.40	42,700
June	2,950	620	1,120	20.30	22.70	84,500
July	1,240	310	656	9.57	10.80	40,300
August	310	150	217	3.10	3.57	13,300
September	150	82	103	1.47	1.64	6,130
October	82	53	62	0.89	1.03	3,810
November			98	1.40	1.56	5,830
December			70	1.00	1.15	4,300
The year	2,950	53	650	5.00	67.90	252,200

Note.—No gauge reader available after November 22. Discharge estimated from climatic records:  
 November 23 to November 30 ..... 80 c.f.s.  
 December 1 to December 31 ..... 70 c.f.s.

SUMALLO RIVER (1057).

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

**Records Available.**—Irregular records from July 1914 to November 1916 (no gauge reader available for winter of 1916-17).

**Drainage Area.**—Seventeen square miles (measured from Dominion map of 1913, scale 3 miles to the inch).

**Gauge.**—Vertical staff. Gauge readings taken by W. H. Robinson and W. N. Thacker. Gauge readings are very irregular.

**Channel.**—Straight 100 feet above and below measurement section. Fine gravel bed.

**Discharge Measurements.**—Nine meter measurements, made during 1914-16, give a well defined rating curve, except for high stage.

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

**Accuracy.**—"D" because of infrequent gauge readings.

Discharge Measurements of Sumallo River 8 Miles from Mouth, for 1916.

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 2	H. C. Hughes	1040	49	67	2.18	1.80	146
Aug. 16	Webb and Bill	1623	38	74	2.01	11.76	149

S GEORGE V. A. 1918

## Daily Gauge Height and Discharge of Sumallo River 8 Miles from Mouth, for 1916.

(Drainage area, 17 square miles)

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 5	120	1 8	166	2 4	272		
3												
4			0 7	16								
5	0 9	38										
6												
7	1 0	50										
8												
9												
10												
11											2 8	354
12											3 0	390
13											3 4	442
14											4 4	642
15											5 1	768
16					2 2	236						
17					2 2	236						
18					2 1	218						
19												
20												
21												
22					2 0	266			2 3	254		
23							1 7	150	2 4	272		
24					1 8	166	1 7	150				
25												
26	0 8	27										
27							2 1	218	2 6	308		
28							2 4	272	2 7	336		
29					1 9	135						
30									2 6	308		
31	0 8	27							2 6	308		
	July		August.		September.		October.		November.		December	
1		570		230		110	1 00	50		32		
2		560		230		110	0 90	38	0 90	38		
3		530	2 15	227		160		38		35		
4		540		220	1 30	90		38		30		
5		530		210		90		38	0 80	27		
6		520		205		95		38		30		
7		510	2 00	200	1 30	90	0 90	38		34		
8		500		200		85		38		40		
9		450		180		80	0 90	38		166		
10		4 0		190	1 20	75		25		55		
11		470	1 90	182		70	0 70	16		16		
12	3 4	462	1 90	182		65	0 90	38	1 10	70		
13		440		170	1 10	62		32		62		
14		415		170		62	0 80	27		62		
15	3 0	390		170	1 10	62	0 70	16	1 10	62		
16	3 0	390	1 75	160		62	0 80	27				
17		380	1 70	156	1 10	62		25				
18	2 9	372		140		62		20				
19		350		130		65	0 70	16				
20	2 7	336	1 50	120		70		18				
21	2 6	308		120		70		20				
22		306	1 50	120	1 20	75		22				
23	2 5	288	1 55	128		70		24				
24	2 5	290		128	1 10	62		26				
25		290		128	1 10	62		28				
26	2 5	290	1 55	128		55		30				
27		280		125	1 00	50		30				
28		270		123	1 00	50		29				
29		260	1 50	120	1 00	50		28				
30		250		120	1 00	50	0 80	27				
31		240	1.50	120				30				

SESSIONAL PAPER No. 25d

*Monthly Discharge of Sumallo River 8 Miles from Mouth, for 1916.*

(Drainage area, 17 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			398	23 40	27 00	24,600
August			162	9 53	11 00	9,960
September			72	4 23	4 72	4,280
October			29	1 71	1 97	1,780
The period					44 69	40,620

NOTE.—Insufficient gauge readings to estimate monthly discharges January to June. No gauge reader available after November 15.

## YOUNG CREEK (1020).

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

*Records Available.*—Daily discharges from October 1912 to December 1916.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff. Gauge readings are taken twice a week by Mr. J. L. Davis.

*Channel.*—Solid rock.

*Discharge Measurements.*—Thirteen meter measurements, made during 1912-16, give a well defined rating curve.

*Winter Flow.*—Very heavy snowfall but little ice, so that open-water conditions prevail all winter.

*Accuracy.*—"C" and "D" because of infrequent gauge readings.

*Co-operation.*—Gauge readings maintained by the Westminister Power Company.

*Discharge Measurements of Young Creek at Mouth, for 1916.*

Date	Engineer.	Meter No.	Width.	Area of Section	Mean Velocity	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 14	Fuller and Hughes	1046	8 00	7 50	0 10	0 70	0 80

S GEORGE V, A. 1918

## Daily Gauge Height and Discharge of Young Creek at Mouth, for 1916.

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		6.0		4.2		1.9		2.4		3.5		1.9
2		6.0		4.2	1.30	1.7		3.0	1.60	3.5	1.40	3.2
3		4.0	0.90	4.2		1.6		3.7		4.1		3.0
4	0.83	3.9		4.2		1.5	1.70	4.4		4.7		1.9
5		3.0		6.3		1.4		3.9	1.80	5.3		1.6
6	0.84	3.1		7.3	1.20	1.3		3.3		5.6	1.30	1.7
7		3.1		6.4		3.3	1.50	3.9		6.0		1.6
8		3.3		9.4		5.3		3.8	1.90	6.2		1.6
9		3.3		10.5	2.00	7.3		3.8		5.2	1.35	1.9
10		3.3	1.15	11.5		6.6		2.8		4.2		3.0
11	0.65	3.3		15.0		6.2	1.50	3.8		3.2		4.1
12		3.8		18.0		5.6		3.0	1.40	2.2	1.80	5.3
13	0.80	2.4		31.0		5.0		3.2		2.0		6.2
14		3.7		24.0	1.70	4.4	1.60	3.5		1.9		7.3
15		3.1	1.50	28.0		3.9		3.7		1.8		8.2
16		3.4		36.0		3.3		3.9	1.30	1.7	2.20	9.2
17		3.8		44.0	1.50	2.8		4.1		1.6		8.2
18	0.90	4.2	1.80	53.0		2.8	1.70	4.4		1.5		7.2
19		4.3		47.0		2.8		4.7	1.34	1.5		6.2
20	0.90	4.3		41.0		3.8		5.0		1.4	1.80	5.3
21		14.0	1.60	35.0	1.50	2.8	1.80	5.3		1.4		6.0
22		24.0		35.0		2.9		4.6		1.3		6.7
23		34.0		35.0		3.0		4.0	1.30	1.3	2.00	7.3
24	1.70	44.0	1.60	35.0	1.55	3.1		3.4		1.4		7.0
25		37.0		31.0		2.9	1.50	2.8		1.6		6.8
26		29.0		28.0		2.7		3.0	1.30	1.7		6.5
27	1.40	22.0		25.0		2.5		3.2		1.8	1.90	6.3
28		17.0	1.40	22.0	1.40	--	1.60	3.5		1.5		6.6
29		13.0		20.0		2.0		3.5		1.4		7.0
30		8.0				1.8		3.5	1.20	1.3	2.00	7.3
31	0.90	4.2			1.30	1.7				1.6		
	July.		August.		September.		October.		November.		December.	
1		5.5	1.10	1.0	1.00	7.0		1.6		5.3	1.80	5.3
2		4.0		1.1		7.0		1.2		5.8		5.0
3		2.5		1.2		7.0	0.70	0.8	1.90	6.3		4.5
4	1.20	1.3	1.20	1.3		7.0		0.7		6.3		4.0
5		1.1		1.3	1.00	7.0		0.5		6.3	1.60	3.5
6		9		1.2		8.0	0.50	0.4		6.3		2.7
7	1.00	7		1.1		9.0		0.3	1.90	6.3		2.0
8		8	1.10	1.0	1.10	10.0		0.3		5.8	1.20	1.3
9		9		9		10.0		0.6		5.4		1.0
10		1.1		8		9.0		0.6	1.75	4.9		7
11	1.20	1.3	1.00	7		8.0		0.7		3.9		5
12		1.2		7	1.00	7.0		0.7		2.9	0.90	4.2
13		1.1		7		6.0		0.8		1.9		2.5
14	1.10	1.0		7		5.0	0.70	0.8	1.20	1.3	0.70	0.8
15		1.5	1.09	7	0.80	4.2		0.8		1.2		0.7
16		2.0		8		3.3		0.8		1.0		0.7
17		2.7		9		2.2	0.70	0.8		9		0.7
18	1.60	3.5	1.10	1.0		1.3		0.8	1.00	7		0.7
19		3.0		9	0.70	0.8		0.8		6	0.60	0.6
20		2.6		8		0.8	0.70	0.8		5		0.6
21	1.40	2.2		8		0.8		0.8	0.90	4		0.6
22		2.2	1.00	7	0.70	0.8		0.8		3		0.6
23		2.2		8		1.0		0.8		3	0.60	0.6
24		2.2		9		1.2	0.70	0.8	0.80	2		0.6
25	1.40	2.2	1.10	1.0		1.4		1.3		1.0		0.6
26		1.8		8	0.75	1.6		1.8		1.8		0.6
27		1.5		7		1.8	0.80	2.4		2.6		0.6
28	1.20	1.3		5		2.0		12.0	1.60	3.5	0.60	0.6
29		1.2	0.90	4	0.80	2.4		23.0		4.2		0.8
30		1.1		5		2.0		35.6		4.8		1.0
31		1.0		6			1.75	49.0				1.4

*Monthly Discharge of Young River at Mouth, for 1916.*

MONTH.	DISCHARGE IN SECOND FEET				RUN-OFF	
	Maxim	min	Mean	Per square Mile	Depth in inches on Drainage Area.	Total in Acre-feet.
January						
February		1				637
March		13				1,320
April		11				1,070
May	3	4	7			2,140
June	7	1	7			1,640
July	7	7	10			3,090
August		4	8			1,170
September		4	4			492
October		0	1			365
November	49	4	4			243
December	19	0	11			1,840
	7	10	10			646
The year	32		21			15,506

## LILLOOET DISTRICT.

## BRANDYWINE RIVER (1065).

*Location.*—Highway bridge above falls, 27 miles from Squamish.

*Records Available.*—Daily discharges from May 26 to December 31 1915; May 5 to September 9 1916. It has been impossible to obtain gauge records throughout the year. No reader available.

*Drainage Area.*—Not known.

*Gauge.*—Vertical staff. Gauge readings are taken daily by Mr. J. C. Conroy.

*Channel.*—Rocky and covered with boulders. The control is good.

*Discharge Measurements.*—Ten measurements during 1915 and 1916 give a well defined curve.

*Winter Flow.*—The stream is affected by ice during winter months.

*Accuracy.*—"B."

## Discharge Measurements of Brandywine River above Falls, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 15	H. C. Hughes	1505	29 6	87 5	2 00	2 60	175
May 16	H. C. Hughes	1505	29 6	100 0	2 16	2 82	216
June 5	Swan and Milner	1931	27 5	105 8	2 56	3 00	268
June 6	Swan and Milner	1931	27 5	106 0	2 36	2 90	248

## Daily Gauge Height and Discharge of Brandywine River above Falls, for 1916.

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		350	2 8	225	4 2	690	3 8	530	2 8	225		
2		350	3 3	370	4 5	810	3 6	460	2 7	200		
3		350	3 5	430	3 8	520	3 8	530	2 6	180		
4		350	3 5	430	3 4	400	3 6	460	2 6	180		
5	3 2	340	3 0	280	3 6	400	3 4	400	2 5	160		
6	3 3	370	2 9	250	3 6	460	3 5	430	2 4	140		
7	3 3	370	3 0	280	3 6	460	3 4	400	2 5	160		
8	2 7	200	3 2	340	3 6	460	3 6	460	2 5	160		
9	2 4	110	3 2	340	3 7	490	3 8	530	2 4	140		
10	2 3	125	3 1	310	3 5	430	3 4	400				
11	2 1	95	3 3	370	3 9	570	3 5	370				
12	2 2	110	3 3	370	3 8	530	3 7	490				
13	2 1	95	3 7	490	3 8	530	3 6	460				
14	2 2	110	4 7	800	3 3	370	3 4	400				
15	2 4	140	4 8	930	3 8	530	3 3	370				
16	2 4	140	4 9	970	3 9	570	3 6	460				
17	3 0	280	4 5	810	3 4	400	3 8	530				
18	2 9	250	4 6	850	3 3	370	3 4	400				
19	3 0	280	3 8	530	3 6	460	3 4	400				
20	2 9	250	3 6	460	3 8	530	3 6	460				
21	2 7	200	3 8	530	3 6	460	3 6	460				
22	2 5	160	3 6	460	3 8	530	3 4	400				
23	2 7	200	3 7	490	3 6	460	3 8	530				
24	2 6	180	3 7	490	3 6	460	3 7	460				
25	2 8	225	3 9	570	3 8	530	3 6	460				
26	3 2	310	4 8	930	3 6	460	3 4	400				
27	3 1	310	3 9	570	3 4	400	5 1	600				
28	3 0	280	3 9	570	3 6	460	3 2	340				
29	2 8	225	3 6	460	3 8	530	3 4	400				
30	2 9	250	3 6	460	3 8	530	3 2	340				
31	3 2	310			3 7	490	3 0	280				



BRANDYWINE FALLS, 190-foot fall.

*Monthly Discharge of Brandywine River above Falls, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total Acre-feet.
May.....	370	95	230			14,700
June.....	970	225	519			30,900
July.....	810	370	496			30,500
August.....	530	280	434			26,700
The period.....	970	95	422			102,800

NOTE.—No gauge reader available for balance of year.

**BRIDGE RIVER (1045).**

*Location.*—Thirty miles above mouth and 10 miles from Mission on Seton lake.

*Records Available.*—Daily discharges from October 7 1913 to December 31 1916.

*Drainage Area.*—The Provincial map (scale 17.75 miles to the inch) shows a drainage area of 1,900 square miles above gauging station.

*Gauge.*—Vertical staff. Readings are taken twice a day by Mr. A. Vierra.

*Channel.*—Wide and deep with sand and mud bottom, and excellent measuring section.

*Discharge Measurements.*—Thirteen meter measurements, taken during 1913-16, give a well defined rating curve.

*Winter Flow.*—The stream is frozen over during the colder winter months.

*Accuracy.*—"B." The rating curve has been slightly revised below discharge of 1,780 cubic feet per second. Revised data for 1914 and 1915 accompany this report.

*Co-operation.*—Gauge records supplied by the Bridge River Power Company.



BRITISH COLUMBIA HYDROMETRIC SURVEY

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SESSIONAL PAPER No. 25d

Daily Gauge Height and Discharge of Bridge River 30 Miles above Mouth, for 1914.

(Drainage area, 1,900 square miles.)

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	870	0 80	700	0 80	700	1 10	870	2 75	2,400	4 75	5,100
2	1 10	870	0 80	700	0 80	700	1 10	870	3 45	3,100	5 15	6,800
3	1 10	870	0 80	700	0 80	700	1 15	900	3 05	3,000	6 75	8,700
4	1 10	870	0 80	700	0 80	700	1 15	900	3 70	3,600	7 00	9,300
5	1 10	870	0 80	700	0 80	700	1 25	960	3 55	3,400	6 00	7,300
6	1 10	870	0 80	700	0 80	700	1 55	1,200	3 40	3,200	5 35	6,100
7	1 15	900	0 80	700	0 80	700	1 75	1,300	3 40	3,200	5 15	5,800
8	1 20	930	0 80	700	0 80	700	1 85	1,460	3 40	3,200	5 00	5,500
9	1 20	930	0 80	700	0 80	700	1 90	1,500	3 45	3,200	4 80	5,200
10	1 20	930	0 80	700	0 80	700	2 10	1,680	3 80	3,700	5 05	5,600
11	1 10	870	0 80	700	0 80	700	2 15	1,730	4 35	4,500	5 55	6,400
12	1 10	870	0 80	700	0 80	700	2 20	1,780	4 05	3,400	6 10	7,500
13	1 10	870	0 80	700	0 80	700	2 25	1,840	5 35	6,100	0 95	9,200
14	0 90	750	0 80	700	0 85	720	2 30	1,890	5 00	7,100	7 55	10,500
15	0 80	700	0 80	700	1 10	870	2 35	1,940	6 50	8,200	8 50	12,700
16	0 80	700	0 80	700	1 10	870	2 40	2,000	6 40	8,000	9 15	14,400
17	0 80	700	0 80	700	1 10	870	2 30	1,890	5 80	6,900	9 05	15,800
18	0 80	700	0 80	700	1 15	900	2 20	1,780	5 50	6,400	9 70	18,800
19	0 80	700	0 80	700	1 30	1,000	2 40	2,000	5 35	6,100	9 20	14,500
20	0 80	700	0 80	700	1 45	1,120	2 55	2,180	5 30	6,000	8 30	12,300
21	0 80	700	0 80	700	1 50	1,160	2 45	2,050	5 55	6,100	7 35	10,000
22	0 80	700	0 80	700	1 50	1,160	2 30	1,890	6 10	7,500	6 40	8,000
23	0 80	700	0 80	700	1 50	1,160	2 35	1,940	6 10	6,600	5 80	6,900
24	0 75	720	0 80	700	1 35	1,040	2 30	1,890	7 30	9,000	5 70	6,700
25	0 70	650	0 80	700	1 35	1,040	2 25	1,840	7 15	9,600	6 05	7,400
26	0 70	650	0 80	700	1 20	900	2 20	1,780	6 35	7,900	6 05	8,500
27	0 70	650	0 80	700	1 20	900	2 20	1,780	5 45	6,300	7 10	9,500
28	0 70	650	0 80	700	1 20	900	2 20	1,780	4 70	5,000	7 20	9,700
29	0 70	650	0 80	700	1 20	900	2 20	1,780	4 10	4,100	7 45	10,300
30	0 80	700	0 80	700	1 20	900	2 35	1,890	4 10	4,100	7 70	10,800
31	0 80	700	0 80	700	1 15	900	2 35	1,890	4 20	4,300	.....	.....
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	8 40	12,500	5 80	6,900	5 00	5,500	4 45	4,100	3 75	3,620	2 00	1,500
2	8 05	13,300	6 00	8,400	5 00	7,500	2 95	2,600	3 50	3,800	2 00	1,500
3	9 35	14,900	6 75	8,700	5 10	7,000	2 65	2,300	4 25	2,980	2 00	1,500
4	9 70	18,800	6 80	8,800	4 45	4,600	2 50	2,100	2 00	1,500	1 90	1,500
5	9 60	15,000	6 85	8,900	4 60	4,900	2 40	2,000	2 00	1,500	1 75	1,600
6	9 35	14,900	6 90	9,000	4 60	4,900	2 40	2,000	2 75	2,400	1 70	1,320
7	8 70	13,200	6 95	9,200	4 75	5,100	2 40	2,000	2 70	2,450	1 60	1,240
8	8 50	12,700	6 25	7,700	4 80	5,200	2 45	2,000	2 70	2,350	1 60	1,240
9	8 25	12,100	5 50	6,400	4 40	4,600	2 55	2,100	2 80	2,450	1 45	1,120
10	8 55	12,300	5 35	6,100	4 90	4,900	2 75	2,400	2 75	2,400	1 45	1,040
11	9 00	14,900	5 80	6,900	3 65	3,500	2 70	2,300	2 65	2,300	0 70	650
12	9 35	14,000	6 35	7,900	3 85	4,800	2 55	2,400	2 65	2,050	.....	.....
13	9 35	14,800	6 20	7,600	3 20	2,980	2 80	2,400	2 40	2,000	.....	.....
14	9 25	14,000	6 05	8,500	4 15	4,800	6 00	8,000	2 15	1,790	.....	.....
15	9 20	14,500	6 90	9,000	4 10	4,800	7 80	11,100	2 60	1,500	.....	.....
16	9 00	14,000	6 75	8,700	4 10	4,800	7 02	9,300	2 00	1,500	.....	.....
17	8 05	13,100	6 55	8,300	2 75	2,400	6 95	9,200	2 00	1,500	.....	.....
18	8 75	11,300	6 15	7,500	2 60	2,200	6 25	7,700	2 00	1,500	.....	.....
19	8 95	11,900	6 30	7,800	2 70	2,300	5 90	5,500	2 10	1,680	.....	.....
20	9 30	11,800	6 50	8,800	2 85	2,900	4 30	4,100	2 25	1,840	.....	.....
21	8 85	13,600	6 05	8,500	2 70	2,300	4 80	4,700	2 15	1,730	.....	.....
22	7 40	10,100	6 55	8,300	2 50	2,400	4 45	4,200	2 10	1,680	.....	.....
23	6 95	9,200	6 15	7,500	2 60	2,300	4 25	3,600	2 10	1,680	.....	.....
24	7 00	9,300	5 85	6,800	2 75	2,400	5 05	4,700	2 00	1,500	.....	.....
25	7 00	9,300	5 80	6,900	2 90	2,600	4 60	4,300	2 20	1,780	.....	.....
26	6 35	9,300	5 85	6,800	4 45	4,100	2 00	2,500	1 90	1,500	.....	.....
27	6 75	8,700	6 00	7,300	4 35	4,100	2 00	2,500	2 15	2,050	.....	.....
28	5 80	6,900	6 15	7,500	4 40	4,200	2 00	2,500	2 30	1,800	.....	.....
29	5 55	6,400	6 00	7,300	4 20	3,900	2 00	2,500	2 05	1,600	.....	.....
30	5 55	6,400	5 65	6,600	3 60	3,500	3 20	2,900	2 00	1,500	.....	.....
31	5 70	6,700	5 20	5,800	.....	.....	1 26	1,100	.....	.....	.....	.....

*Monthly Discharge of Bridge River 30 Miles above Mouth, for 1914.*

(Drainage area, 1,900 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 .....	920	650	772	0.41	0.47	47,500
February .....	700	700	700	0.37	0.38	38,900
March .....	1,160	700	857	0.46	0.52	52,700
April .....	2,180	870	1,650	0.87	0.97	98,200
May .....	9,900	2,400	5,530	2.91	3.36	340,000
June .....	18,800	5,100	9,180	4.83	5.40	546,000
July .....	14,900	6,400	12,200	6.42	7.40	750,000
August .....	9,200	5,800	7,760	4.08	4.70	477,000
September .....	3,700	2,100	3,520	1.86	2.04	209,000
October .....	11,100	2,000	3,790	1.99	2.29	233,000
November .....	3,620	1,590	2,030	1.07	1.19	121,000
December .....	1,690	650	879	0.46	0.53	54,000
The year .....	18,800	650	4,072	2.14	29.27	3,067,300

NOTE.—Gauge height-discharge relation affected by ice from December 12 to December 31. Daily discharge estimated at 650 c.f.s. from December 12 to December 31.

SESSIONAL PAPER No. 25d

Daily Gauge Height and Discharge of Bridge River 30 Miles above Mouth, for 1915.

(Drainage area, 1,900 square miles.)

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						600	1 40	1,080	2 55	2,300	4 30	4,400
2						600	1 45	1,120	2 65	2,300	4 35	4,480
3						600	2 35	1,940	2 75	2,400	4 45	4,620
4						600	2 40	2,000	3 05	2,750	4 70	5,050
5						700	2 35	1,940	3 55	3,350	5 65	6,620
6						700						
7						700	2 20	1,780	4 55	4,800	6 55	9,000
8						700	2 20	1,780	5 30	6,000	7 40	10,200
9						700	2 20	1,780	5 90	7,100	7 10	9,500
10					0 80	700	2 10	1,580	6 10	7,500	6 35	7,900
					0 90	750	2 00	1,590	5 70	6,700	5 60	6,550
11					0 90	750	2 00	1,590	5 20	5,850	5 15	5,780
12					0 90	750	2 00	1,590	4 70	5,050	5 40	6,200
13					0 90	750	2 25	1,640	4 45	4,620	6 00	7,300
14					0 90	750	2 30	1,890	4 40	4,550	6 50	8,200
15					1 00	810	2 30	1,890	4 35	4,480	6 95	9,200
16					1 25	960	2 55	2,500	3 60	3,400	7 40	10,200
17					1 30	1,000	2 55	2,500	3 55	3,760	7 50	10,400
18					1 45	1,040	3 15	2,850	3 95	3,920	7 70	10,800
19					1 30	1,000	3 40	3,150	4 65	5,280	7 00	9,300
20					1 25	960	3 80	3,700	5 45	6,280	7 60	8,700
21					1 25	960	3 60	3,400	5 70	6,700	6 70	8,700
22					1 35	1,040	3 25	2,900	5 60	6,550	6 90	9,100
23					1 50	1,160	3 05	2,750	5 35	6,100	7 05	9,400
24					1 60	1,240	3 05	2,750	5 05	5,600	7 15	9,600
25					1 50	1,160	3 00	2,700	5 00	5,500	7 35	10,100
26					1 40	1,080	3 00	2,700	4 95	5,420	6 80	8,900
27					1 35	1,040	3 60	2,700	4 75	5,120	6 20	7,650
28					1 35	1,040	3 00	2,700	4 90	5,350	6 20	7,650
29					1 40	1,080	2 45	2,050	4 75	5,120	6 65	8,570
30					1 40	1,080	3 65	2,750	4 40	4,550	7 30	10,000
31					1 40	1,080			4 35	4,450		

	July		August		September		October		November		December	
1	7 95	11,400	8 70	11,200	7 20	9,700	3 60	3,400	2 00	1,500		
2	8 35	12,400	8 90	11,700	6 65	7,460	3 25	2,970	1 80	1,410		
3	8 65	13,100	9 00	14,400	5 80	6,900	2 90	2,550	1 70	1,320		
4	8 95	13,800	8 50	12,700	6 65	7,400	2 80	2,450	1 65	1,280		
5	9 15	14,400	7 60	10,600	6 75	8,700	2 30	1,800	1 60	1,240		
6	9 30	14,800	7 30	10,000	5 75	6,800	2 30	1,890	1 45	1,120		
7	8 85	13,600	6 95	9,200	4 75	5,120	2 05	1,640	1 20	930		
8	8 20	12,000	6 95	9,200	4 05	4,650	2 00	1,590	1 15	900		
9	7 95	11,400	6 55	8,000	3 75	3,550	1 95	1,540	1 20	930		
10	7 65	10,700	6 95	9,200	3 45	3,200	1 89	1,410	1 20	930		
11	6 80	8,960	7 20	9,700	3 40	3,150	1 70	1,320	1 20	930		
12	6 20	7,650	7 25	9,820	3 40	3,150	1 70	1,320	0 75	680		
13	6 15	7,570	6 60	9,100	3 15	2,850	1 60	1,240	0 50	570		
14	6 20	7,650	7 00	9,400	2 99	2,550	1 60	1,240				
15	6 40	8,000	7 35	10,100	3 50	3,300	1 60	1,240				
16	6 65	8,570	7 60	10,600	4 00	4,000	1 50	1,160				
17	6 40	8,000	7 55	10,500	4 50	4,700	1 85	1,460				
18	6 25	7,730	8 00	11,500	4 55	4,800	2 10	1,680				
19	6 59	8,200	7 85	11,200	4 75	5,120	2 20	1,780				
20	6 80	8,900	8 75	12,400	4 35	4,480	1 80	1,410				
21	7 25	9,820	9 05	14,100	3 90	3,850	1 70	1,320				
22	7 75	10,900	9 60	15,500	3 90	3,800	2 50	2,100				
23	7 90	11,300	9 25	11,700	3 80	3,700	2 15	1,730				
24	7 90	11,600	9 00	14,600	3 90	3,850	1 95	1,540				
25	7 60	10,600	8 80	13,500	3 60	3,400	1 85	1,460				
26	7 55	10,700	8 45	12,600	3 50	3,300	1 80	1,500				
27	7 95	11,400	7 60	10,600	3 40	3,150	2 95	2,620				
28	8 35	12,400	7 20	9,700	3 10	2,900	2 80	2,450				
29	8 35	12,400	7 50	10,000	3 00	2,700	2 75	2,400				
30	7 95	11,400	7 55	10,500	3 55	3,350	2 25	1,840				
31	8 15	11,900	8 15	11,900			2 65	1,640				

## DEPARTMENT OF THE INTERIOR

8 GEORGE V, A. 1918

## Monthly Discharge of Bridge River 30 Miles above Mouth, for 1915.

(Drainage area, 1,900 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			650	0.34	0.39	40,000
February			600	0.32	0.33	33,300
March	1,240	600	883	0.46	0.53	54,300
April	3,700	1,080	2,250	1.18	1.32	134,600
May	7,500	2,300	4,939	2.60	3.06	304,000
June	10,800	4,400	8,136	4.28	4.77	484,000
July	14,800	7,570	10,720	5.64	6.50	658,100
August	15,500	9,100	11,340	5.97	6.88	697,300
September	9,700	2,550	4,497	2.37	2.64	267,600
October	5,400	1,160	1,800	0.95	1.09	111,000
November			767	0.40	0.45	45,600
December			530	0.28	0.32	32,600
The year			3,926	2.07	28.22	2,862,800

NOTE.—Gauge height-discharge relation affected by ice from January 1 to March 8, also from November 14 to December 31. Daily discharge estimated from gauge heights and climatic conditions:

January 1 to December 31	650 c.f.s.
February 1 to March 4	600 c.f.s.
March 5 to March 8	700 c.f.s.
November 14 to November 30	840 c.f.s.
December 1 to December 31	530 c.f.s.

## Discharge Measurements of Bridge River 30 Miles above Mouth, for 1916.

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet				
July 24	C. Hughes	1505	156	1260	3.33	4.55	4,200
Sept 24	Balls and Milner	1633	156	2340	6.80	9.75	15,910
Sept 27	M. Balls	1046	156	1060	2.47	3.15	2,630
Dec 1	Beeston and Hughes	1049	156			1.05	467

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S GEORGE V, A. 1916

## Monthly Discharge of Bridge River 30 Miles above Mouth, for 1916.

(Drainage area, 1,000 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			520	0.27	0.311	32,000
February	1,730	520	858	0.45	0.480	49,400
March	1,540	810	1,000	0.53	0.611	61,500
April	1,730	1,040	1,320	0.60	0.770	78,000
May	6,700	2,180	4,000	2.10	2.420	246,000
June	19,800	5,000	12,000	6.32	7.050	714,000
July	15,400	6,620	11,300	5.95	6.860	695,000
August	11,800	5,420	9,300	4.80	5.640	572,000
September	9,820	2,350	4,710	2.48	2.770	280,000
October	3,300	1,240	1,800	0.95	1.080	111,000
November	1,240	400	728	0.38	0.420	43,300
December			466	0.25	0.300	28,700
The year			4,000	2.10	28.710	2,911,500

NOTE.—Gauge height-discharge relation affected by ice from January 4 to February 10; from November 13 to December 31. Monthly mean discharge for January and December estimated from gauge heights and climatic conditions. Also daily discharge.

February 1 to February 10 ..... 620 c.f.s.  
November 13 to November 30 ..... 450 c.f.s.

## CAYUSE CREEK (1048).

*Location.*—At the Pacific Great Eastern Railway trestle, 2 miles from mouth, and 2½ miles from Lillooet.

*Records Available.*—Daily discharges from April 8 1914 to December 31 1916.

*Drainage Area.*—Three hundred and fifty square miles (measured from the provincial map of 1912, scale 12 miles to the inch).

*Gauge.*—Vertical staff gauge, nailed to a pile of the false work of the trestle. Daily gauge readings are taken by Mr. S. Marshall.

*Channel.*—Wide and of moderate depth, strewn with boulders and coarse gravel. The current is swift at the higher stages. The metering section is a good one.

*Discharge Measurements.*—Fifteen discharge measurements, taken during 1914-16, give a well defined rating curve.

*Winter Flow.*—The stream is affected by ice conditions during the winter months.

*Accuracy.*—"B" up to discharge of 2,000 cubic feet per second "D" above discharge of 2,000 cubic feet per second. Curve revised for 1916.

## Discharge Measurements of Cayuse Creek above Seton Creek, for 1916.

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 30	H. C. Hughes	1,505	72	194	2.07	0.85	101
June 10	Swan and Milner	1,911	78	275	5.97	2.00	1,640
June 26	Balls and Milner	1,633	94	190	11.14	3.95	5,470
Sept. 25	M. Balls	1,046	98	212	2.26	0.97	479
Dec. 9	Beeston and Hughes	1,016	55	136	1.20	0.22	181

SESSIONAL PAPER No. 26d

Daily Gauge Height and Discharge of Cayuse Creek above Selon Creek, for 1916.

(Drainage area, 350 square miles.)

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 1	155	Ice		0 20	105	0 50	260	1 00	500	1 70	1,110
2	0 1	155			0 20	105	0 50	260	1 20	630	2 10	1,600
3	0 1	155			0 20	105	0 50	260	1 55	955	2 10	1,600
4	0 1	155			0 20	105	0 50	260	1 00	1,000	2 10	1,600
5	Ice.				0 10	120	0 50	260	1 80	1,230	2 10	1,600
6					0 10	120	0 50	260	1 80	1,230	2 10	1,600
7					0 00	135	0 50	260	1 80	1,230	2 00	1,500
8					0 00	135	0 50	260	1 70	1,110	2 10	1,600
9					0 10	155	0 50	260	1 50	900	2 10	1,600
10					0 10	155	0 50	300	1 30	710	2 10	1,600
11					0 10	155	0 60	300	1 20	630	2 00	1,500
12			0 1	155	0 50	260	0 55	280	1 20	630	1 00	1,300
13			0 0	135	0 00	410	0 55	280	1 10	560	2 20	1,800
14			0 0	135	0 85	415	0 60	300	1 10	560	2 50	2,140
15			0 1	120	0 85	415	0 60	300	1 10	560	3 10	2,500
16			0 1	120	0 80	390	0 60	300	1 20	630	3 10	3,810
17			0 1	120	0 80	390	0 60	300	1 40	800	3 20	4,080
18			0 1	120	0 80	390	0 60	300	1 50	900	3 30	4,320
19			0 1	120	0 80	390	0 60	300	1 60	1,000	3 10	3,840
20			0 1	120	0 75	365	0 60	300	1 60	1,000	3 00	5,040
21			0 0	135	0 75	365	0 60	300	1 60	1,000	3 50	4,800
22			0 0	135	0 60	300	0 60	300	1 60	1,000	3 60	5,040
23			0 0	135	0 55	280	0 60	300	1 60	1,000	3 60	5,040
24			0 1	155	0 55	280	0 60	300	1 60	1,000	3 70	5,280
25			0 1	155	0 50	260	0 65	320	1 50	900	3 70	5,280
26			0 0	135	0 50	260	0 70	340	1 60	1,000	4 00	6,000
27			0 1	120	0 50	260	0 65	320	1 00	1,360	4 50	5,280
28			0 1	120	0 50	260	0 70	340	2 00	1,500	3 70	5,280
29			0 2	105	0 50	260	0 75	365	1 80	1,230	4 70	5,280
30					0 50	260	0 85	415	1 70	1,110	3 10	3,810
31					0 50	260			1 80	1,230		

	July.		August.		September.		October.		November.		December.	
1	3 1	3,840	2 4	3,220	2 1	1,660			0 1	230	0 2	175
2	3 1	3,840	2 4	2,220	2 1	1,660			0 1	230	0 20	175
3	3 1	3,840	2 3	2,020	2 0	1,500			0 4	230	0 20	175
4	3 1	3,840	2 3	2,020	1 9	1,360			0 1	230	0 20	175
5	3 0	3,600	2 3	2,020	1 8	1,230			0 5	260	0 20	175
6	3 0	3,600	2 4	2,220	1 5	900			0 5	260	0 20	175
7	3 0	3,600	2 5	2,440	1 5	900			0 5	260	0 20	175
8	3 0	3,600	2 6	2,660	1 5	900			0 4	230	0 20	175
9	3 0	3,600	2 6	2,660	1 5	900			0 1	230	0 20	175
10	3 1	3,840	2 6	2,660	1 3	710			0 1	230	0 20	175
11	3 2	4,080	2 5	2,440	1 1	500			0 3	215	0 20	175
12	3 1	3,840	2 5	2,110	0 9	410			0 3	200	0 20	175
13	3 1	3,840	2 5	2,410	0 6	300			0 3	200	0 20	175
14	3 0	3,600	2 4	2,220	0 3	200			0 3	200	0 20	175
15	3 0	3,600	2 3	2,020	0 1	155			0 3	200	0 10	155
16	2 0	3,360	2 3	2,020	0 1	155			0 3	200	0 10	155
17	2 0	3,360	2 2	1,840	0 2	175			0 2	175	0 10	155
18	2 0	3,360	2 1	1,660	0 3	260			0 2	175	0 10	155
19	2 0	3,360	2 1	1,660	0 4	230			0 2	175	0 10	155
20	2 0	3,360	2 1	1,660	0 5	260			0 2	175	0 10	155
21	2 0	3,360	2 2	1,840	0 6	300			0 1	155	0 10	155
22	2 0	3,360	2 3	2,020	0 7	410			0 1	155	0 10	155
23	2 7	2,800	2 4	2,220	0 8	490			0 1	155	0 10	155
24	2 5	2,440	2 5	2,440	0 8	490			0 1	155	0 10	155
25	2 5	2,440	2 4	2,220	0 9	440			0 1	155	0 10	155
26	2 4	2,220	2 2	1,840	1 0	500			0 2	175	0 10	155
27	2 3	2,020	2 2	1,840	1 1	560			0 2	175	0 10	155
28	2 2	1,840	2 1	1,660	1 2	630			0 2	175	0 05	145
29	2 3	2,020	2 1	1,660	1 3	710			0 2	175	0 05	145
30	2 1	2,220	2 1	1,660	1 1	800			0 2	175	0 05	145
31	2 5	2,440	2 1	1,660							0 10	155

## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1916

## Monthly Discharge of Cayuse Creek above Seton Creek, for 1916.

(Drainage area, 380 square miles.)

MONTH	DISCHARGE IN SECONDS-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January			125	0.36	0.42	7,000
February			126	0.36	0.30	7,250
March	440	105	255	0.73	0.84	15,700
April	415	201	297	0.84	0.94	17,700
May	430	300	339	2.08	3.09	57,700
June	5,000	1,100	3,330	9.52	10.00	199,000
July	4,080	1,840	3,230	9.23	0.00	199,000
August	2,600	1,000	2,090	5.94	0.85	128,000
September	1,000	155	640	1.86	2.08	38,000
October		155	380	0.86	0.99	18,000
November	200	155	180	0.57	0.61	11,800
December	175	145	165	0.47	0.54	10,000
The year	6,000	105	975	2.79	47.98	799,800

NOTE.—Gauge height-discharge relation affected by ice, January 5 to February 11.  
Discharge estimated from gauge records and climatic conditions:

January 5 to February 11 ..... 120 c.f.s.  
Monthly mean discharge for October estimated by interpolation.

NOTE.—105 c.f.s. is minimum observed discharge.

NOTE.—New rating curve for 1916 records.

## FOSTER BAR CREEK (1074).

*Location.*—Above irrigation ditches, 19 miles below Lillooet.

*Records Available.*—Daily discharges from June 22 to September 30, 1915, April 1 to October 31, 1916. Irrigation stream.

*Drainage Area.*—Twenty square miles.

*Gauge.*—Vertical staff gauge. Daily gauge readings are taken by Mr. C. McGillivray.

*Channel.*—Boulders and gravel. Control changes with every freshet.

*Discharge Measurements.*—Four discharge measurements during 1916 give a rating curve for the stream.

*Winter Flow.*—Irrigation stream. The gauge is only read during the irrigation season.

*Accuracy.*—"B."

NOTE.—New rating curve for 1916 records.

## Discharge Measurements of Foster Bar Creek above Irrigation Ditches, for 1916.

Date	Engineer	Meter No.	Width, Feet	Area of Section, Sq. ft.	Mean Velocity, Ft. per sec.	Gauge Height, Feet.	Discharge, Sec.-ft.
May 3	H. C. Hughes	1,705	7.0	3.65	2.36	1.00	8.02
June 28	Balls and Milner	1,643	7.3	3.74	2.81	1.10	10.88
Oct. 1	M. Balls	1,948	7.8	3.76	1.12	0.52	2.08
Dec. 15	Beeston and Hughes	1,916	6.0	1.51	1.12	0.43	1.00



BRITISH COLUMBIA HYDROMETRIC SURVEY

SESSIONAL PAPER No. 264

Daily Gauge Height and Discharge of Foster Bar Creek above Ditches, for 1916.

(Drainage area, 20 square miles.)

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							0.5	2.0	0.8	4.8	1.3	13.2
2							0.5	2.0	0.9	6.5	1.4	15.2
3							0.5	2.0	1.0	8.5	1.2	15.2
4							0.6	2.6	1.1	10.8	1.3	15.2
5							0.6	2.6	1.2	13.0	1.3	15.2
6							0.6	2.6	1.2	13.0	1.3	15.2
7							0.6	2.6	1.1	10.8	1.2	13.0
8							0.6	2.6	1.1	10.8	1.2	13.0
9							0.7	3.5	1.0	8.5	1.1	10.8
10							0.7	3.5	1.0	8.5	1.1	10.8
11							0.6	2.6	1.0	8.5	1.1	10.8
12							0.6	2.6	1.0	8.5	1.2	12.0
13							0.6	2.6	1.0	8.5	1.3	15.2
14							0.6	2.6	1.1	10.8	1.3	15.2
15							0.6	2.6	1.1	10.8	1.4	17.4
16												
17							0.6	2.6	1.1	10.8	1.4	17.4
18							0.6	2.6	1.0	8.5	1.4	17.4
19							0.6	2.6	1.0	8.5	1.3	15.2
20							0.6	2.6	1.0	8.5	1.3	15.2
21							0.6	2.6	1.0	8.5	1.2	13.0
22							0.6	2.6	1.0	8.5	1.2	13.0
23							0.7	3.5	1.0	8.5	1.2	13.0
24							0.7	3.5	1.1	10.8	1.2	13.0
25							0.7	3.5	1.1	10.8	1.2	13.0
26							0.7	3.5	1.1	10.8	1.2	13.0
27							0.7	3.5	1.1	10.8	1.2	13.0
28							0.7	3.5	1.1	10.8	1.2	13.0
29							0.7	3.5	1.1	10.8	1.1	10.8
30							0.8	4.8	1.2	13.0	1.1	10.8
31							0.8	4.8	1.2	13.0	1.1	10.8

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	1.1	10.8	0.7	3.5	0.6	2.6	0.5	2.0				
2	1.1	10.8	0.7	3.5	0.6	2.6	0.5	2.0				
3	1.1	10.8	0.7	3.5	0.6	2.6	0.5	2.0				
4	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
5	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
6	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
7	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
8	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
9	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
10	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
11	1.0	8.5	0.7	3.5	0.6	2.6	0.5	2.0				
12	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
13	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
14	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
15	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
16	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
17	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
18	0.9	6.5	0.7	3.5	0.6	2.6	0.5	2.0				
19	0.8	4.8	0.7	3.5	0.6	2.6	0.5	2.0				
20	0.8	4.8	0.7	3.5	0.6	2.6	0.5	2.0				
21	0.8	4.8	0.7	3.5	0.6	2.6	0.5	2.0				
22	0.7	3.5	0.7	3.5	0.6	2.6	0.5	2.0				
23	0.7	3.5	0.7	3.5	0.6	2.6	0.5	2.0				
24	0.7	3.5	0.7	3.5	0.6	2.6	0.5	2.0				
25	0.7	3.5	0.7	3.5	0.6	2.6	0.5	2.0				
26	0.7	3.5	0.7	3.5	0.6	2.6	0.5	2.0				
27	0.7	3.5	0.6	2.6	0.6	2.6	0.5	2.0				
28	0.7	3.5	0.6	2.6	0.6	2.6	0.5	2.0				
29	0.7	3.5	0.6	2.6	0.6	2.6	0.5	2.0				
30	0.7	3.5	0.6	2.6	0.5	2.0	0.5	2.0				
31	0.7	3.2	0.6	2.6	0.5	2.0	0.5	2.0				



# MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



4.5

5.0

5.6

6.3

7.1

8.0

9.0

10



**APPLIED IMAGE Inc**

1653 East Main Street  
Rochester, New York 14609 USA  
(716) 482 - 0300 - Phone  
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*Monthly Discharge of Foster Bar Creek above Ditches, for 1916.*

(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.
April.....	4.8	2.0	2.9	0.15	0.17	173
May.....	13.0	4.8	9.9	0.50	0.58	608
June.....	17.4	10.8	13.7	0.68	0.76	815
July.....	10.8	3.5	6.3	0.32	0.37	387
August.....	3.5	2.6	3.4	0.17	0.20	209
September.....	2.6	2.6	2.6	0.13	0.15	155
October.....	2.0	2.0	2.0	0.10	0.12	123
The period.....	17.4	2.0	5.8	0.29	2.35	2,470

**GREEN RIVER AT NAIRN FALLS (1035).**

*Location.*—Five miles from the mouth, 3 miles from Pemberton.

*Records Available.*—Daily discharges from November 1913 to December 1916.

*Drainage Area.*—Drainage area, as measured from the provincial map of 1912 (scale 17.75 miles to the inch), is 180 square miles.

*Gauge.*—Sloping staff gauge bolted to rocks. Daily gauge readings are taken by Mr. W. Hill.

*Channel.*—Wide and fairly deep, rock and gravel bottom. A good metering section with a good control.

*Discharge Measurements.*—Twenty-five meter measurements, taken during 1913-16, give a very well defined rating curve.

*Winter Flow.*—Stream is affected by ice during the winter months.

*Accuracy.*—"B" below discharge of 3,000 cubic feet per second; "C" above discharge of 3,000 cubic feet per second.

NOTE.—Rating curve revised 1916, below discharge of 270 cubic feet per second, giving weight to measurement of December 6, 1916.

*Discharge Measurements of Green River at Nairn Falls, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 25	H. C. Hughes.....	1,046	82	367	3.00	4.30	1,100
May 11	H. C. Hughes.....	1,505	81	398	3.47	4.70	1,340
Dec. 6	Beeston and Hughes.....	1,046	80	202	0.97	1.80	197

## BRITISH COLUMBIA HYDROMETRIC SURVEY

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SESSIONAL PAPER No. 25d

## Daily Gauge Height and Discharge of Green River at Nairn Falls, for 1916.

(Drainage area, 180 square miles.)

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	2.4	320	1.5	130	3.3	670	3.4	710	5.8	2,060	7.0	3,090
2	2.4	320	1.6	130	3.2	630	3.8	870	6.8	2,900	6.8	2,900
3	2.4	320	1.5	130	3.1	590	4.0	970	7.6	3,690	7.2	3,290
4	2.4	320	1.5	130	3.0	550	4.3	1,120	8.0	4,130	6.8	2,900
5	2.4	320	1.5	130	2.9	510	4.6	1,280	7.8	3,910	6.7	2,910
5	2.3	290	1.5	130	2.8	470	4.7	1,340	7.6	3,590	6.8	2,000
7	2.3	290	1.5	130	2.8	470	4.7	1,340	7.3	3,390	6.8	2,900
8	2.3	290	1.5	130	3.4	710	4.7	1,340	6.0	2,210	6.8	2,900
9	2.3	290	1.5	130	4.3	1,120	4.9	1,460	5.5	1,850	7.0	3,090
10	2.2	270	1.5	130	5.3	1,710	5.1	1,580	5.0	1,520	6.7	2,810
11	2.2	270	1.5	130	6.4	2,540	5.1	1,580	4.8	1,400	6.7	2,810
12	2.2	270	1.5	130	7.3	3,390	5.3	1,710	4.8	1,400	7.0	3,090
13	2.1	250	1.5	130	6.8	2,900	5.4	1,780	4.7	1,340	8.0	4,130
14	2.1	250	2.0	230	5.9	2,130	5.6	1,920	4.8	1,400	8.5	4,820
15	2.1	250	4.3	1,400	5.2	1,540	5.4	1,780	5.8	2,060	9.0	5,300
15	2.0	230	7.0	3,090	4.8	1,400	5.0	1,520	6.4	2,540	10.0	6,500
17	2.0	230	6.2	2,370	4.5	1,220	4.8	1,460	6.9	2,990	10.4	6,980
18	2.0	230	5.7	1,990	4.0	970	4.6	1,280	6.7	2,810	10.4	6,980
19	2.0	230	5.2	1,540	3.8	870	4.4	1,170	5.4	2,540	9.3	5,660
20	2.0	230	4.8	1,400	3.8	870	4.2	1,070	6.2	2,370	8.0	4,130
21	2.0	230	4.5	1,220	4.2	1,070	4.0	970	6.0	2,210	8.2	4,350
22	2.0	230	4.2	1,070	4.2	1,070	3.8	870	5.7	1,990	9.2	5,540
23	1.9	210	4.0	970	4.0	970	4.0	970	5.3	1,710	9.0	5,300
24	1.8	190	3.9	920	3.7	830	4.2	1,070	5.2	1,640	9.0	5,300
25	1.8	190	3.8	870	3.4	710	4.2	1,070	6.0	2,210	9.2	5,540
25	1.7	170	3.7	830	3.2	630	4.2	1,070	6.5	2,630	9.7	6,140
27	1.7	170	3.6	790	3.2	630	4.6	1,280	7.0	3,090	9.8	6,260
28	1.5	150	3.5	750	3.2	630	4.9	1,460	7.0	3,090	9.3	5,660
29	1.5	130	3.4	710	3.2	630	5.2	1,640	6.7	2,810	8.7	4,940
30	1.5	130	.....	.....	3.2	630	5.5	1,850	6.6	2,720	8.0	4,130
31	1.5	130	.....	.....	3.3	670	.....	.....	6.7	2,810	.....	.....
<hr/>												
	July.		August.		September.		October.		November.		December.	
1	8.0	4,130	7.8	3,910	6.8	2,900	3.4	710	2.8	470	2.2	270
2	8.5	4,700	7.5	3,590	5.5	2,270	3.4	710	2.8	470	2.2	270
3	9.7	6,140	7.0	3,090	5.3	2,450	3.4	710	2.8	470	2.1	250
4	9.0	5,300	7.0	3,090	6.0	2,210	3.4	710	2.8	470	2.1	250
5	8.0	4,130	6.8	2,900	5.5	1,850	3.4	710	2.8	470	2.0	230
5	5.8	2,900	7.0	3,090	5.3	1,710	3.4	710	2.4	320	1.9	210
7	5.5	2,720	7.0	3,090	5.2	1,640	3.4	710	2.4	320	2.0	230
8	7.7	3,800	7.2	3,290	6.0	1,520	3.3	670	2.2	270	1.9	210
9	8.5	4,700	7.4	3,490	4.8	1,400	3.2	630	2.3	290	1.9	210
10	8.7	4,940	7.5	3,590	4.4	1,170	3.2	630	2.3	290	1.9	210
11	8.5	4,700	7.5	3,590	4.4	1,170	3.2	630	2.3	290	1.9	210
12	8.8	5,060	7.6	3,690	4.7	1,340	3.2	630	2.3	290	1.9	210
13	8.5	4,700	7.3	3,690	4.5	1,220	3.6	790	2.3	290	1.8	190
14	8.0	4,130	7.7	3,300	4.4	1,170	3.8	870	2.2	270	1.8	190
15	7.4	3,490	7.5	3,590	4.4	1,170	3.9	920	2.2	270	1.8	190
16	8.0	4,130	7.3	3,390	4.5	1,280	4.0	970	2.2	270	1.8	190
17	8.4	4,580	5.8	2,900	4.8	1,400	4.3	1,120	2.2	270	1.8	190
18	8.4	4,580	5.2	2,370	4.8	1,400	4.0	970	2.1	250	1.8	190
19	8.6	4,820	6.2	2,370	4.8	1,400	4.0	970	2.2	270	1.8	190
20	8.8	5,060	5.3	2,450	4.8	1,400	3.6	790	2.2	270	1.7	170
21	8.4	4,580	5.6	2,530	5.2	1,640	3.4	710	2.2	270	1.7	170
22	8.2	4,350	6.7	2,810	5.6	1,920	3.4	710	2.1	260	1.8	190
23	7.8	3,910	6.8	2,900	5.0	1,520	3.2	630	2.1	250	1.8	190
24	7.3	3,390	7.0	3,090	4.6	1,280	3.2	630	2.1	250	1.7	170
25	6.8	2,900	7.2	3,209	4.5	1,220	3.0	550	2.1	250	1.7	170
25	6.8	2,900	7.4	3,490	4.3	1,120	3.0	550	2.1	250	1.6	150
27	5.5	2,720	7.5	3,590	4.0	970	3.0	550	2.2	270	1.6	150
28	6.5	2,530	7.4	3,490	3.9	920	2.8	470	2.2	270	1.7	170
29	6.7	2,810	7.3	3,390	3.7	830	2.8	470	2.2	270	1.7	170
30	7.2	3,290	7.2	3,290	3.6	750	2.8	470	2.2	270	1.6	150
31	8.0	4,130	7.0	3,090	.....	.....	2.8	470	2.2	270	1.7	170



UPPER NAIRN FALLS—Green River.

SESSIONAL PAPER No. 25d

*Monthly Discharge of Green River at Nairn Falls, for 1916.*

(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.
January.....	320	130	239	1.33	1.53	14,700
February.....	3,090	130	757	4.21	4.54	43,500
March.....	3,390	470	1,090	6.06	6.99	67,000
April.....	1,920	710	1,320	7.34	9.19	78,600
May.....	4,130	2,060	2,490	13.90	16.00	153,000
June.....	6,980	2,810	4,440	24.70	27.60	294,000
July.....	6,140	2,630	4,080	22.70	26.20	251,000
August.....	3,910	2,370	3,230	18.00	20.80	199,000
September.....	2,900	750	1,490	8.28	9.24	88,700
October.....	1,120	470	702	3.90	4.50	43,200
November.....	470	250	306	1.70	1.90	18,200
December.....	270	150	198	1.10	1.27	12,200
The year.....	6,980	130	1,700	9.44	128.76	1,233,100

## 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 to September 1914; April to December 1915; June to December 1916. Irrigation stream.

*Drainage Area.*—Twenty square miles (measured from the provincial map of 1913—scale 12 miles to the inch).

*Gauge.*—Vertical staff gauge. Daily gauge readings taken by Mr. J. E. Maher.

*Channel.*—Shallow and strewn with boulders and coarse gravel. The current is fairly swift. The metering section is good.

*Discharge Measurements.*—Three meter measurements, taken during 1916, give a well defined rating curve.

*Winter Flow.*—Stream affected by ice in winter months.

*Accuracy.*—"B."

NOTE.—No daily discharges available before June 6, 1916, due to shifting of control and stream bed in spring freshet.

*Discharge Measurements of Luluwissin Creek above Irrigation Ditches, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 23	Balls and Milner	1,533	8.5	6.75	3.70	1.60	25.00
Oct. 1	Balls	1,046	6.6	3.45	1.78	1.22	4.15
Dec. 15	Beeston and Hughes	1,046	6.6	3.07	1.20	1.09	3.67

*Daily Gauge Height and Discharge of Luluwissin Creek above Irrigation Ditches, for 1916.*

(Drainage area, 20 square miles.)

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 00	47 5
2											1 85	51 2
3											2 00	55 0
4											2 00	55 0
5											2 00	55 0
6											2 00	55 0
7											1 90	47 5
8											1 90	47 5
9											1 90	47 5
10											1 90	47 5
11											1 85	43 8
12											1 85	43 8
13											1 85	43 8
14											1 85	43 8
15											1 90	47 5
16											1 90	47 5
17											1 85	43 8
18											1 85	43 8
19											1 80	40 0
20											1 80	40 0
21											1 75	36 2
22											1 75	36 2
23											1 70	32 5
24											1 65	28 8
25											1 65	28 8
26											1 65	28 8
27											1 65	28 8
28											1 70	32 5
29											1 70	32 5
30											1 70	32 5
31											1 70	32 5
	July.		August.		September.		October.		November.		December.	
1	1 65	28 8	1 50	17 5	1 30	8 5	1 20	5 6	1 20	5 6	1 10	3 7
2	1 65	28 8	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7
3	1 65	28 8	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7
4	1 60	25 0	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7
5	1 60	25 0	1 49	17 0	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7
6	1 60	25 0	1 48	16 5	1 30	8 5	1 20	5 6	1 15	4 6	1 10	3 7
7	1 60	25 0	1 48	16 5	1 30	8 5	1 20	5 6	1 15	4 6	1 10	3 7
8	1 60	25 0	1 45	14 9	1 30	8 5	1 20	5 6	1 15	4 6	1 10	3 7
9	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 15	4 6	1 05	3 2
10	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 10	3 7	1 05	3 2
11	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 10	3 7	1 05	3 2
12	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 10	3 7	1 10	3 7
13	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 10	3 7	1 10	3 7
14	1 55	21 2	1 45	14 9	1 30	8 5	1 20	5 6	1 10	3 7	1 10	3 7
15	1 55	21 2	1 40	12 3	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
16	1 50	17 5	1 40	12 3	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
17	1 50	17 5	1 40	12 3	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
18	1 50	17 5	1 40	12 3	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
19	1 50	17 5	1 40	12 3	1 20	5 6	1 20	5 6	1 10	3 7	1 10	3 7
20	1 50	17 5	1 40	12 3	1 20	5 6	1 20	5 6	1 10	3 7	1 10	3 7
21	1 50	17 5	1 40	12 3	1 20	5 6	1 20	5 6	1 10	3 7	1 10	3 7
22	1 50	17 5	1 40	12 3	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
23	1 50	17 5	1 35	10 4	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
24	1 50	17 5	1 35	10 4	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
25	1 50	17 5	1 35	10 4	1 25	7 0	1 20	5 6	1 10	3 7	1 10	3 7
26	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7	1 10	3 7
27	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7	1 00	2 7
28	1 50	17 5	1 35	10 4	1 20	5 8	1 20	5 6	1 10	3 7	1 00	2 7
29	1 50	17 5	1 35	10 4	1 20	5 6	1 20	5 6	1 10	3 7	1 00	2 7
30	1 50	17 5	1 30	8 5	1 20	5 6	1 20	5 6	1 10	3 7	1 00	2 7
31	1 50	17 5	1 30	8 5	1 20	5 6	1 20	5 6	1 10	3 7	1 00	2 7



SESSIONAL PAPER No. 25d

*Monthly Discharge of Lahuwissin Creek above Irrigation Ditches, for 1916.*

(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.
June.....	55.0	28.8	42.2	2.11	2.35	2,510
July.....	28.8	17.5	20.6	1.03	1.18	1,270
August.....	17.5	8.5	13.3	0.67	0.77	818
September.....	19.4	5.6	7.6	0.38	0.42	452
October.....	5.6	5.6	5.6	0.28	0.32	344
November.....	5.6	3.7	4.2	0.21	0.23	250
December.....	3.7	2.7	3.5	0.18	0.21	215
The period.....	55.0	2.7	13.9	0.69	5.48	5,859

NOTE.—No daily discharges before June 1 because of channel change and insufficient measurements for a rating curve.

## LILLOOET RIVER (1038).

*Location.*—Government highway bridge at Agerton, 1 mile from Pemberton and 8 miles above Lillooet lake.

*Records Available.*—Daily discharges from November 16, 1913 to December 31, 1916.

*Drainage Area.*—Eight hundred square miles.

*Gauge.*—Vertical staff gauge nailed to the central pier of the bridge. Daily gauge readings are taken by Mr. N. J. Baker.

*Channel.*—Wide and deep with smooth, sandy bottom. An excellent measuring section.

*Discharge Measurements.*—Five meter measurements, taken during 1916, give a well defined rating curve.

*Winter Flow.*—The stream is affected by ice conditions during the winter months.

*Accuracy.*—“B” below discharge of 6,000 cubic feet per second; “D” above discharge of 6,000 cubic feet per second. Change in control August 20, 1915, made revision of rating curve necessary. Also revision has been made for low-water stage in 1914 and 1915 data. The revised records for 1914 and 1915 accompany this report.

## Daily Gauge Height and Discharge of Lillooet River at Agerton, for 1914.

(Drainage area, 800 square miles.)

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	1.5	1,200	.....	.....	1.0	700	2.0	1,700	4.0	3,750	6.0	6,250
2	1.6	1,300	.....	.....	1.4	1,100	2.0	1,700	4.8	4,690	7.5	8,820
3	1.6	1,300	.....	.....	1.4	1,100	2.0	1,700	4.6	4,440	8.0	9,970
4	1.6	1,300	.....	.....	1.4	1,100	2.0	1,700	4.5	4,320	7.5	8,820
5	1.6	1,300	.....	.....	1.4	1,100	2.0	1,700	4.5	4,320	6.9	7,660
6	1.6	1,300	.....	.....	1.4	1,100	3.0	2,670	4.5	4,320	6.5	6,690
7	1.7	1,400	.....	.....	1.4	1,100	3.2	2,870	4.5	4,320	5.5	5,570
8	1.7	1,400	.....	.....	1.4	1,100	3.2	2,870	4.5	4,320	5.0	4,930
9	1.7	1,400	.....	.....	1.4	1,100	3.2	2,870	4.8	4,690	5.0	4,930
10	1.7	1,400	.....	.....	1.4	1,100	3.5	3,200	5.0	4,930	5.8	5,970
11	1.7	1,400	.....	.....	1.4	1,100	3.5	3,200	5.5	5,570	6.4	6,840
12	1.7	1,400	.....	.....	1.5	1,200	3.5	3,200	5.5	5,570	6.8	7,490
13	1.6	1,300	.....	.....	1.5	1,200	3.8	3,530	6.0	6,250	7.7	9,250
14	1.6	1,300	.....	.....	2.0	1,700	3.8	3,530	7.0	7,850	8.2	10,500
15	1.6	1,300	.....	.....	2.0	1,700	4.0	3,750	7.0	7,850	9.5	13,900
16	1.6	1,300	.....	.....	2.0	1,700	4.0	3,750	6.5	6,990	10.1	15,600
17	1.6	1,300	.....	.....	2.4	2,090	3.8	3,530	5.9	6,110	10.4	16,500
18	1.6	1,300	.....	.....	2.0	1,700	3.5	3,200	5.7	5,830	9.7	14,500
19	1.6	1,300	.....	.....	2.2	1,900	3.5	3,200	5.7	5,830	9.0	12,500
20	1.5	1,200	.....	.....	2.6	2,280	3.5	3,200	6.2	5,540	8.3	10,700
21	1.4	1,100	Frozen	.....	2.8	2,470	3.6	3,310	7.0	7,850	7.8	9,500
22	1.4	1,100	1.0	700	2.8	2,470	3.5	3,200	7.0	7,850	7.2	8,230
23	1.2	900	1.0	700	3.0	2,670	3.2	2,870	7.5	8,820	6.8	7,480
24	1.0	700	1.0	700	3.0	2,670	3.2	2,870	7.7	9,250	6.5	6,990
25	1.0	700	1.0	700	3.0	2,670	3.2	2,870	7.0	7,850	6.8	7,480
26	Frozen	.....	1.0	700	2.8	2,470	3.0	2,670	6.7	7,310	7.4	8,620
27	.....	.....	1.0	700	2.8	2,470	3.0	2,670	6.0	6,250	7.4	8,620
28	.....	.....	1.0	700	2.8	2,470	3.0	2,670	5.0	4,930	7.8	9,490
29	.....	.....	.....	.....	2.0	1,700	3.0	2,670	4.8	4,690	8.0	9,970
30	.....	.....	.....	.....	2.0	1,700	3.2	2,870	4.8	4,690	8.2	10,400
31	.....	.....	.....	.....	2.0	1,700	.....	.....	5.0	4,930	.....	.....

	July.		August.		September.		October.		November.		December.	
1	9.4	13,600	8.0	10,000	6.8	7,500	4.00	3,750	5.0	4,930	3.5	3,200
2	9.9	15,000	8.5	11,200	6.8	7,500	3.80	3,530	5.0	4,930	3.2	2,870
3	10.8	17,700	9.2	13,100	7.0	7,850	3.50	3,200	4.6	4,440	3.0	2,670
4	10.8	17,700	9.6	14,200	6.8	7,500	3.00	2,670	4.5	4,320	3.0	2,670
5	9.8	14,700	9.0	12,500	6.7	7,300	3.20	2,870	4.5	4,320	2.8	2,470
6	9.4	13,600	8.9	12,300	6.4	6,840	3.40	2,990	4.0	3,750	2.7	2,380
7	8.7	11,700	7.6	10,000	6.0	6,250	3.40	2,990	3.8	3,530	2.7	2,380
8	8.7	11,700	6.6	7,200	6.5	7,000	3.80	3,530	3.7	3,420	2.8	2,470
9	8.8	12,000	7.4	8,600	6.0	6,250	3.90	3,640	4.7	4,570	2.6	2,280
10	9.5	13,900	7.8	9,500	5.8	5,970	4.00	3,750	4.0	3,750	2.3	2,000
11	10.0	15,300	8.2	10,400	5.2	5,180	4.00	3,750	4.2	3,970	2.0	1,700
12	9.8	14,700	8.6	11,500	5.0	4,930	5.00	4,930	3.8	3,530	2.0	1,700
13	10.6	17,100	9.0	12,500	4.4	4,200	8.55	11,300	3.8	3,530	2.0	1,700
14	10.5	16,800	9.8	14,700	4.2	3,970	11.30	19,200	3.6	3,310	1.8	1,500
15	10.0	15,300	9.2	13,100	4.1	3,860	10.80	17,700	3.3	2,980	1.8	1,500
16	9.2	13,100	9.0	12,500	3.5	3,200	11.00	18,300	3.0	2,670	1.8	1,500
17	9.5	13,900	8.6	11,500	3.8	3,530	11.20	18,900	3.0	2,670	1.8	1,500
18	10.0	15,300	8.0	10,000	4.0	3,750	7.80	9,500	2.8	2,470	1.7	1,400
19	10.8	17,700	8.5	11,200	3.8	3,530	6.40	6,840	2.8	2,470	1.7	1,400
20	11.0	18,300	9.0	12,500	3.5	3,200	5.80	6,000	2.8	2,470	1.7	1,400
21	9.0	12,500	9.0	12,500	3.5	3,200	5.40	5,440	2.8	2,470	1.7	1,400
22	7.5	8,800	9.0	12,500	3.8	3,530	4.80	4,690	3.0	2,670	1.7	1,400
23	7.5	8,820	8.4	11,000	3.8	3,530	4.50	4,320	3.0	2,670	1.8	1,500
24	5.0	16,000	7.8	9,500	4.0	3,750	4.00	3,750	3.2	2,870	1.8	1,500
25	8.4	10,900	7.8	9,500	4.5	4,320	4.00	3,750	4.4	4,200	1.8	1,500
26	8.7	11,700	7.5	8,820	5.0	4,930	4.20	3,970	4.8	4,700	1.8	1,500
27	8.0	10,000	7.8	9,500	5.0	4,930	4.30	4,080	4.2	3,970	1.9	1,600
28	6.4	6,800	7.6	9,000	4.8	4,700	4.20	3,970	4.2	3,970	1.9	1,600
29	6.8	7,500	6.8	7,500	4.5	4,320	5.00	4,930	3.8	3,530	1.8	1,500
30	7.2	8,200	6.8	7,500	4.5	4,320	7.00	7,850	3.5	3,200	1.8	1,500
31	7.5	8,800	6.8	7,500	.....	.....	7.20	8,230	.....	.....	1.8	1,500

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*Monthly Discharge of Lillooet River at Agerton, for 1914. (Revised March 1916).*

(Drainage area, 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.....	1,400		1,130	1.41	1.63	69,500
February.....			700	0.88	0.92	38,900
March.....	2,670	700	1,700	2.12	2.44	105,000
April.....	3,750	1,700	2,860	3.58	3.99	170,000
May.....	9,250	3,750	5,870	7.34	8.46	361,000
June.....	16,500	4,930	9,140	11.42	12.74	554,000
July.....	18,300	6,800	13,010	16.25	19.98	799,000
August.....	14,700	7,500	10,560	13.20	15.22	648,000
September.....	7,850	3,200	5,030	6.29	7.02	299,000
October.....	19,200	2,670	6,590	8.24	9.50	405,000
November.....	4,930	2,470	3,540	4.42	4.93	211,000
December.....	3,200	1,400	1,840	2.30	2.65	113,000
The year.....	19,200		5,164	6.45	69.48	3,763,400

NOTE.—Gauge height-discharge relation affected by ice from January 26 to February 21.

Daily discharges estimated:

January 26 to January 31..... 700 c.f.s.

February 1 to February 21..... 700 c.f.s.

Daily Gauge Height and Discharge of Lillooet River 6 Miles above Lillooet Lake, for 1915.

(Drainage area, 800 square miles)

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 8	2,470			1 2	900	3 0	2,670				
2	2 8	2,470			1 2	900	3 4	2,990	3 2	2,870	5 0	4,930
3	2 7	2,380			1 3	1,000	5 1	3,950	3 1	2,770	5 4	5,440
4	2 7	2,380			1 3	1,000	4 5	4,320	3 5	2,770	5 4	5,440
5	2 6	2,380			1 3	1,000	4 0	3,750	3 8	3,200	6 8	7,480
6	2 4	2,090			1 3	1,000	3 7	3,420	5 4	5,440	7 6	9,030
7	2 3	2,000			1 2	900	3 5	3,200	7 0	7,850	7 6	9,030
8	2 3	2,000			1 2	900	3 2	2,870	6 8	7,480	7 0	7,850
9	2 0	1,700			1 2	900	3 0	2,670	6 8	7,480	6 4	7,840
10	2 0	1,700			1 2	900	3 0	2,670	6 4	6,840	5 9	6,110
11	1 8	1,500			1 3	1,000	3 4	2,990	6 0	6,250	6 0	6,250
12	1 8	1,500			1 3	1,000	3 4	2,990	5 3	5,210	6 9	7,660
13	1 5	1,200	1 0	700	1 3	1,000	3 9	3,640	5 2	5,180	6 9	7,660
14	1 5	1,200	1 0	700	1 5	1,200	3 6	3,340	5 0	4,930	7 3	8,420
15	1 3	1,000	1 0	700	2 1	1,800	3 5	3,200	4 9	4,810	8.1	10,210
16	1 3	1,000	1 0	700	2 1	1,800	4 0	3,750	4 8	4,600	8.3	10,700
17	1 3	1,000	1 0	700	2 2	1,900	4 3	4,080	4 5	4,320	8.2	10,450
18	1 3	1,000	1 0	700	2 3	2,000	4 6	4,440	4 5	4,320	7.6	9,030
19	1 2	900	1 0	700	2 5	2,190	4 6	4,440	5 4	5,440	7 3	8,420
20	1 2	900	1 0	700	2 6	2,280	4 5	4,320	5.8	5,970	7 5	8,820
21	1 1	800	1 0	700	2 8	2,470	4 5	4,320	6 2	5,540	7 6	9,030
22	1 0	700	1 0	700	3 0	2,670	4 2	3,970	5 9	6,110	8 0	9,970
23	1 0	700	1 0	700	3 0	2,670	4 0	3,750	5 7	5,830	8 0	9,970
24	1 0	700	1 1	800	3 0	2,670	4 0	3,750	5 4	5,440	8 1	10,210
25			1 2	900	2 8	2,470	3 8	3,530	5 4	5,440	7 5	8,820
26			1 2	900	2 8	2,470	3 8	3,530	5 4	5,440	7 1	8,040
27			1 2	900	2 5	2,190	3 7	3,420	5 4	5,440	7.4	8,620
28			1 2	900	2 5	2,190	3 7	3,420	5 2	5,180	7.4	8,620
29					2 3	2,000	3 5	3,200	5 2	5,180	8 1	10,210
30					2 3	2,000	3 2	2,870	4 9	4,810	9 0	12,520
31					2 3	2,000			4 9	4,810		
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	9 6	14,180	11 1	18,600	7 4	7,590	5 3	4,460	3 5	2,400	1 6	680
2	10 0	15,510	11 3	19,200	7 4	7,590	4 8	3,860	3 2	2,100	1 6	680
3	11 0	18,300	10 5	16,800	8 2	9,220	4 6	3,620	3 0	1,900	1 7	760
4	11 2	18,900	8 6	9,970	9 3	11,700	3 6	2,500	2 7	1,630	1 7	760
5	11 3	19,200	7 5	8,820	8 5	9,870	3 7	2,610	2 6	1,540	1 8	840
6	10 8	17,700	7 8	9,490	7 1	7,020	3 2	2,100	2 7	1,620	2 0	1,000
7	10 5	16,800	8 0	9,970	5 9	5,262	3 0	1,900	2 4	1,360	2 0	1,000
8	10 0	15,510	7 9	9,750	5 2	4,340	2 8	1,720	2 3	1,270	1 8	840
9	8 8	11,980	8 2	10,400	4 8	3,860	2 6	1,540	2 2	1,180	1 8	840
10	8 3	10,700	9 5	13,900	5 0	4,100	2 5	1,450	2 0	1,000	1 7	760
11	7 8	9,490	7 6	9,030	5 5	4,700	2 4	1,360	2 0	1,000	1 6	680
12	7 4	8,620	7 6	9,030	5 2	4,340	2 2	1,180	1 9	920	1 6	680
13	7 0	7,850	8 6	11,490	4 6	3,620	2 1	1,090	2 0	1,000	1 6	680
14	7 7	9,250	9 8	14,700	5 6	4,160	2 1	1,090	2 0	1,000	1 6	680
15	8 4	10,950	10 0	15,300	5 4	4,580	2 0	1,000	1 9	920	1 5	600
16	8 0	9,970	9 5	13,900	5 8	5,090	2 2	1,180	1 9	920	1 5	600
17	7 8	9,190	10 1	15,600	6 9	6,680	2 5	1,450	1 9	920	1 5	600
18	7 4	8,620	9 0	12,500	7 0	6,850	3 2	2,100	1 9	920	1 5	600
19	8 2	10,450	10 3	16,200	6 3	5,760	3 0	1,900	1 8	840	1 5	600
20	9 0	12,520	11 1	18,600	6 0	5,350	2 8	1,720	1 7	760	1 6	680
21	8 7	11,710	11 4	17,000	5 7	4,960	3 6	2,500	1 7	760	1 6	680
22	8 8	11,980	11 3	17,500	5 4	4,580	4 4	3,380	1 7	760	1 6	680
23	9 0	12,520	11 1	16,700	5 1	4,220	3 3	2,200	1 7	760	1 6	680
24	9 6	12,520	11 3	16,700	5 5	4,700	3 1	2,000	1 7	760	1 5	600
25	9 1	12,790	10 9	16,100	6 0	5,350	2 7	1,630	1 7	760		
26	9 1	12,790	9 0	11,000	4 6	3,620	4 1	3,050	1 8	840		
27	10 3	16,200	7 9	8,590	4 9	3,980	5 4	4,580	1 7	760		
28	9 8	14,740	8 8	10,600	4 4	3,380	6 8	6,510	1 6	680		
29	10 1	15,600	9 2	11,500	4 4	3,380	4 9	3,980	1 6	680		
30	10 2	15,900	9 0	11,000	4 2	3,160	3 9	2,830	1 6	680		
31	11 1	18,600	8 4	9,650			3 6	2,500				

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*Monthly Discharge of Lillooet River 6 Miles above Lillooet Lake, for 1915.  
(Revised March 1916.)*

(Drainage area, 800 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				R. S. O. F.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	2,470	700	1,316	1 64	1 89	80,600
February	900	730	730	0 91	0 95	40,500
March	2,670	900	1,680	2 08	2 40	102,000
April	3,050	2,670	3,350	4 44	4 95	211,000
May	7,850	2,770	5,180	6 48	7 47	318,000
June	12,320	4,930	8,470	10 60	11 83	504,000
July	19,200	7,850	13,200	16 50	19 00	812,000
August	19,200	8,590	13,200	16 50	19 00	812,000
September	11,700	3,160	5,430	6 79	7 58	323,000
October	6,510	1,000	2,420	3 02	3 48	149,000
November	2,400	680	1,090	1 36	1 52	64,900
December	1,000	.....	690	0 86	0 99	42,400
The year	19 200	.....	4,744	5 93	81 00	3,450,400

NOTE.—Gauge-height discharge relation affected by ice from January 25 to February 12 and from December 21 to December 31. Discharge estimated:

January 25 to January 31 ..... 700 c.f.s.

February 1 to February 12 ..... 700 c.f.s.

December 25 to December 31 ..... 600 c.f.s.

1915 curve to Aug. 20, 1916 curve after Aug. 20.

*Discharge Measurements of Lillooet River 6 Miles above Lillooet Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per Sec.	Feet.	Sec.-ft.
April 27	H. C. Hughes	1,046	178	900	1 69	.....	2,420
May 10	H. C. Hughes	1,505	180	1,090	2 64	.....	2,880
June 9	Swan and Milner	1,931	190	1,620	3 56	.....	5,800
Sept. 21	M. Balls	1,046	190	1,620	3 51	.....	5,680
Dec. 7	Beeston and Hughes	1,046	175	368	1 56	.....	575

Daily Gauge Height and Discharge of Lillooet River 6 Miles above Lillooet Lake, for 1916.

(Drainage area, 800 square miles)

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						900	2 6	1,540	4 0	2,940	6 5	6,040
2						900	2 6	1,540	4 2	3,160	7 0	6,850
3						900	3 0	1,900	5 0	4,100	7 3	7,400
4						900	3 2	2,100	6 5	6,040	7 0	6,850
5						900	3 4	2,300	6 5	6,040	6 9	6,680
6						900	3 4	2,300	6 0	5,350	6 4	5,900
7						900	3 4	2,300	5 6	4,830	6 4	5,900
8					2 0	1,000	3 4	2,300	5 0	4,100	6 2	5,620
9					2 0	1,000	3 4	2,300	4 6	3,620	6 3	5,760
10					3 6	2,500	3 4	2,300	4 0	2,940	6 2	5,620
11					1 0	2,940	3 4	2,300	4 0	2,940	6 1	5,440
12					4 0	2,940	3 4	2,300	4 0	2,940	7 0	6,850
13					3 5	2,400	3 4	2,400	4 0	2,940	7 8	8,390
14					3 2	2,100	3 6	2,400	4 0	2,940	8 4	9,650
15					3 0	1,900	3 6	2,500	4 5	3,500	9 5	12,300
16					2 7	1,630	3 7	2,610	5 0	4,100	10 3	14,400
17					2 6	1,540	3 7	2,610	5 7	4,960	10 7	15,500
18					2 6	1,540	3 6	2,500	5 5	4,700	10 9	16,100
19					2 5	1,450	3 5	2,400	5 4	4,580	10 5	14,900
20					2 5	1,450	3 3	2,200	5 3	4,460	10 2	14,100
21					2 6	1,540	3 2	2,100	5 0	4,100	9 5	12,200
22					2 7	1,630	3 0	1,900	4 9	3,980	8 0	10,800
23					2 6	1,540	2 8	1,720	4 7	3,740	9 0	11,100
24					2 6	1,540	2 8	1,720	5 0	4,100	0 2	11,500
25					2 5	1,450	2 8	1,720	5 3	4,460	9 3	11,700
26					2 5	1,450	3 0	1,900	6 4	5,900	10 1	13,800
27					2 5	1,450	3 3	2,200	0 8	6,510	10 8	15,800
28					2 6	1,540	3 5	2,400	6 4	5,900	10 3	14,400
29					2 6	1,540	3 6	2,500	6 0	5,350	9 8	13,000
30					2 6	1,540	3 8	2,720	5 8	5,090	0 2	11,500
31					2 0	1,540			6 0	5,350		

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	8 5	9,870	9 2	11,500	9 0	11,000	3 9	2,830	2 6	1,540	1 4	520
2	9 3	11,700	8 3	9,430	9 0	11,000	3 3	2,200	2 5	1,450	1 4	530
3	8 0	10,800	8 1	9,010	8 4	9,650	3 1	2,000	2 6	1,540	1 4	530
4	8 7	10,300	8 2	9,220	7 8	8,300	3 0	1,900	2 6	1,540	1 4	520
5	7 9	8,580	8 4	9,650	7 4	7,500	2 8	1,720	2 6	1,540	1 4	520
6	7 8	8,300	8 0	8,800	7 4	7,500	3 0	1,900	2 4	1,360	1 4	520
7	7 7	8,190	8 2	9,220	7 1	7,020	3 0	1,900	2 4	1,360	1 5	600
8	8 0	8,800	8 5	9,870	7 0	6,850	3 0	1,900	2 2	1,180	1 5	600
9	9 1	11,300	8 6	10,100	7 0	6,850	3 3	2,200	2 1	1,060	1 5	600
10	9 2	11,500	8 7	10,300	7 0	6,850	3 5	2,400	2 1	1,060	1 5	600
11	9 3	11,700	8 8	10,600	7 0	6,850	4 0	2,940	2 0	1,000	1 5	600
12	10 0	13,500	9 0	11,000	6 9	6,680	4 2	3,160	1 9	920	1 5	600
13	10 0	13,500	9 1	11,300	6 9	6,680	4 6	3,620	1 9	920	1 5	600
14	9 3	11,700	10 1	13,800	6 8	6,510	1 8	3,660	1 8	810	1 4	520
15	8 1	9,010	9 7	12,700	6 8	6,510	5 0	4,100	1 8	810	1 1	520
16	8 8	10,600	9 4	12,000	6 7	6,350	5 4	4,580	1 8	810	1 4	520
17	9 1	11,300	8 3	9,430	6 5	6,040	6 3	5,760	1 9	920	1 5	600
18	9 3	11,700	7 0	6,850	6 1	5,900	5 3	4,190	1 9	920	1 5	600
19	9 1	11,300	6 9	6,680	6 6	6,100	4 8	3,860	1 9	920	1 5	600
20	16 1	13,800	6 3	5,760	6 6	6,100	4 0	2,910	1 8	810	1 4	520
21	8 9	10,800	6 4	5,900	6 5	6,040	3 7	2,610	1 8	840	1 4	520
22	8 5	9,870	7 5	7,700	6 1	5,900	3 3	2,200	1 8	840	1 4	520
23	8 5	9,870	8 1	9,650	6 2	5,620	3 4	2,900	1 8	810	1 4	520
24	7 7	8,190	8 7	10,300	6 0	5,350	3 0	1,900	1 8	840	.....	520
25	8 0	8,800	9 3	11,700	5 1	4,580	2 8	1,720	1 7	760	.....	520
26	7 4	7,590	9 6	12,500	5 2	4,310	3 0	1,900	1 6	680	.....	520
27	6 9	6,680	9 8	13,000	5 0	4,100	2 7	1,630	1 0	680	.....	520
28	7 0	6,850	10 0	13,500	4 7	3,710	2 6	1,540	1 6	680	.....	520
29	7 4	7,590	10 1	13,800	4 1	3,380	2 8	1,720	1 5	600	.....	520
30	7 4	7,590	10 2	14,100	4 5	3,500	2 6	1,510	1 5	600	.....	520
31	7 6	7,990	9 8	13,000	.....	.....	2 7	1,630	.....	.....	.....	520

SESSIONAL PAPER No. 251

*Monthly Discharge of Lillooet River 6 Miles above Lillooet Lake, for 1916.*

(Drainage area, 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			680	0.75	0.86	30,000
February			683	0.85	0.92	30,300
March	2,910		1,633	1.91	2.20	94,100
April	2,720	1,510	2,200	2.75	3.07	131,000
May	6,510	2,910	4,570	5.16	6.30	260,000
June	16,100	3,180	10,260	12.80	14.30	607,000
July	33,500	6,680	19,980	22.50	24.10	1,014,000
August	14,100	5,760	10,100	11.00	15.10	640,000
September	11,060	3,380	6,410	8.05	8.98	381,000
October	5,790	1,530	2,600	3.25	3.75	150,000
November	1,510	600	1,000	1.25	1.40	50,500
December	600		516	0.68	0.78	31,000
The year	16,100		1,210	5.27	71.06	4,067,400

NOTE.—Jan. 1 to March 9, river affected by ice. Discharge for this period estimated from gauge records and climatic conditions.

January 1 to February 13 600 c.f.s.  
 February 14 to February 21 700 c.f.s.  
 February 22 to February 29 800 c.f.s.  
 March 1 to March 7 900 c.f.s.

December 21 to 31 gauge height-discharge relation affected by ice; daily discharge estimated at 520 c.f.s.

## PAVILION CREEK (1073).

*Location.*—Above the ditches, 22 miles above Lillooet.

*Records Available.*—Daily discharges from June 19 to September 30, 1915; April to October 1916. Irrigation stream.

*Drainage Area.*—Eighty-two square miles, taken from the provincial Government map, 1913.

*Gauge.*—Vertical staff gauge. Daily gauge readings are taken by Mr. C. A. Shaw.

*Channel.*—Wide and shallow. The bottom is of sand and gravel.

*Discharge Measurements.*—Three discharge measurements, taken during 1916, define the rating curve used after June 27, 1916.

*Winter Flow.*—Records kept only during the irrigation season.

*Accuracy.*—"D."

NOTE.—New rating curve applied after June 27, 1917—1915 rating curve slightly revised.

*Discharge Measurements of Pavilion Creek above Irrigation Ditches, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sq. ft.
May 4	H. C. Hughes	1,505	13.0	5.91	1.82	1.29	10.80
June 27	Balls and Milner	1,634	15.5	11.90	2.47	1.70	36.00
Sept. 28	M. Balls	1,016	10.0	5.36	1.48	0.94	7.96 <sup>1</sup>
Dec. 11	Beeston and Hughes	1,016	9.0	2.53	0.92	0.61	2.32 <sup>1</sup>

<sup>1</sup>Control changed.

Daily Gauge Height and Discharge of Pavilion Creek above Ditches, for 1916.

(Drainage area, 82 square miles.)

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							1.50	24.4	1.20	9.1	1.35	15.5
2							1.55	27.6	1.15	7.8	1.35	15.5
3							1.60	30.9	1.15	7.8	1.35	15.5
4							1.60	30.9	1.30	13.0	1.35	15.5
5							1.55	27.6	1.25	11.1	1.35	15.5
6							1.40	18.0	1.30	13.0	1.30	13.0
7							1.40	18.0	1.25	11.1	1.30	13.0
8							1.45	21.2	1.25	11.1	1.25	11.1
9							1.45	21.2	1.25	11.1	1.30	13.0
10							1.40	18.0	1.25	11.1	1.30	13.0
11							1.40	18.0	1.30	13.0	1.25	11.1
12							1.00	4.5	1.40	18.0	1.25	11.1
13							0.95	3.8	1.40	18.0	1.25	11.1
14							1.15	7.8	1.35	15.5	1.25	11.1
15							1.51	7.8	1.30	13.0	1.20	9.1
16							1.10	6.4	1.30	13.0	1.20	9.1
17							1.15	7.8	1.25	11.1	1.20	9.1
18							1.10	6.4	1.20	9.1	1.37	16.5
19							1.10	6.4	1.20	9.1	1.55	27.6
20							1.05	5.4	1.20	9.1	1.50	21.4
21							1.05	5.4	1.20	9.1	1.50	24.4
22							1.10	6.4	1.35	15.5	1.55	27.6
23							1.10	6.4	1.35	15.5	1.60	30.9
24							1.15	7.8	1.35	15.5	1.60	30.9
25							1.20	9.1	1.30	13.0	1.55	27.6
26							1.20	9.1	1.30	13.0	1.65	33.9
27							1.20	9.1	1.35	15.5	1.70	37.0
28							1.20	9.1	1.40	18.0	1.80	43.0
29							1.25	11.1	1.40	18.0	1.75	40.0
30							1.20	9.1	1.35	15.5	1.75	40.0
31							1.20	9.1	1.35	15.5	1.75	40.0

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	1.75	40.0		28.4	1.00	9.1		8.0				
2	1.75	40.0	1.55	28.4		9.6	0.95	8.0				
3	1.75	40.0		29.8	1.05	10.3		8.0				
4	1.80	43.0	1.60	31.1		10.3	0.95	8.0				
5	1.80	43.0		29.8	1.05	10.3		8.0				
6	1.75	40.0	1.55	28.4		9.6	0.95	8.0				
7	1.70	37.0		27.1	1.00	9.1		8.0				
8	1.70	37.0	1.50	25.8		9.6	0.95	8.0				
9	1.70	37.0		25.9	1.05	10.3		8.0				
10	1.65	34.0	1.50	25.8		10.3	0.95	8.0				
11	1.65	34.0		21.6	1.05	10.3		8.0				
12	1.60	31.1	1.45	23.5		10.3	0.95	8.0				
13	1.60	31.1		20.4	1.05	10.3		8.6				
14	1.60	31.1	1.30	17.4		9.6	1.00	9.1				
15	1.60	31.1		15.8	1.00	9.1		9.1				
16	1.55	28.4	1.20	14.1		9.1	1.00	9.1				
17	1.60	31.1		13.5	1.00	9.1		9.1				
18	1.55	28.4	1.15	12.8		9.1	1.00	9.1				
19	1.55	28.4		12.8	1.00	9.1		8.6				
20	1.55	28.4	1.15	12.8		8.6	0.95	8.0				
21	1.55	28.4		12.1	0.95	8.0		8.0				
22	1.55	28.4	1.10	11.4		8.0	0.95	8.0				
23	1.55	28.4		11.4	1.00	9.1		8.0				
24	1.55	28.4	1.10	11.4		9.1	0.95	8.0				
25	1.55	28.4		11.4	1.00	9.1		8.6				
26		29.8	1.10	11.4		8.0	1.00	9.1				
27	1.60	31.1		10.8	0.90	7.0		9.1				
28		31.1	1.05	10.3	0.93	7.6	1.00	9.1				
29	1.60	31.1		9.6		7.8		9.1				
30		29.8	1.00	9.1	0.95	8.0	1.00	9.1				
31	1.55	28.4		9.1		8.0	1.00	9.1				



SESSIONAL PAPER No. 25d

*Monthly Discharge of Pavilion Creek above Ditches, for 1916.*

(Drainage area, 82 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	30.9	3.8	13.2	0.16	0.18	786
May	18.0	7.8	12.9	0.16	0.18	793
June	43.0	9.1	20.5	0.25	0.28	1,220
July	43.0	28.1	31.9	0.39	0.15	1,060
August	31.1	9.1	18.3	0.22	0.25	1,130
September	10.3	7.0	9.2	0.11	0.12	547
October	9.1	8.0	8.5	0.10	0.12	523
The period	43.0	3.8	16.4	0.20	1.58	6,950

NOTE.—June 27—change of channel during freshet and new rating curve used after that date.

## SETON CREEK (1049).

*Location.*—At the footbridge at the provincial hatchery,  $\frac{1}{2}$  mile below Seton lake and 3 miles from Lillooet.

*Records Available.*—Daily discharges from April 6, 1914 to December 31, 1916.

*Drainage Area.*—460 square miles, measured from the provincial map of 1912 (scale 12 miles to the inch).

*Gauge.*—Vertical staff gauge nailed to bridge pier. Daily gauge readings are taken by Mr. J. B. Arthur.

*Channel.*—Wide and shallow, strewn with boulders. The current is very swift at the higher stages of the water.

*Discharge Measurements.*—Thirteen discharge measurements, taken during 1914–16, give a fairly well defined rating curve.

*Winter Flow.*—Open-water conditions all year.

*Accuracy.*—"C" below discharge of 2,490 cubic feet per second; "D" above discharge of 2,490 cubic feet per second.

*Discharge Measurements of Seton Creek below Seton Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of section.	Mean Velocity.	Gauge height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 26	Balls and Milner	1,033	198	580	4.11	4.10	2,380 <sup>1</sup>
June 26	Balls and Milner	1,033	78	286	8.62	4.10	2,460 <sup>1</sup>
Sept. 25	M. Balls	1,046	99	162	4.51	2.38	731 <sup>2</sup>
Sept. 30	M. Balls	1,046	105	252	2.24	2.18	565 <sup>4</sup>
Dec. 9	Beeston and Hughes	1,046	100	209	1.20	1.37	250 <sup>4</sup>

<sup>1</sup>Highway bridge at lake<sup>2</sup>Regular section.<sup>3</sup>Bridge, 100 yds. above Hatchery.<sup>4</sup>Bridge, 200 yds. below Hatchery.

## Daily Gauge Height and Discharge of Seton Creek below Seton Lake, for 1916.

(Drainage area, 460 square miles.)

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	1.4	230	0.8	130	1.1	165	1.4	230	1.7	350	3.4	1,660
2	1.4	230	0.8	130	1.1	165	1.4	230	1.8	400	3.3	1,550
3	1.3	200	0.8	130	1.1	165	1.4	230	1.8	400	3.3	1,550
4	1.3	200	0.8	130	1.1	165	1.4	230	1.9	450	3.4	1,660
5	1.3	200	0.8	130	1.1	165	1.4	230	1.9	450	3.4	1,660
6	1.3	200	0.8	130	1.1	165	1.4	230	1.9	450	3.4	1,660
7	1.3	200	0.8	130	1.1	165	1.4	230	2.0	500	3.4	1,660
8	1.2	180	0.8	130	1.1	165	1.4	230	2.2	620	3.4	1,660
9	1.2	180	0.8	130	1.1	165	1.5	260	2.2	620	3.4	1,660
10	1.1	165	0.8	130	1.1	165	1.5	260	2.2	620	3.4	1,660
11	1.0	150	0.8	130	1.1	165	1.5	260	2.3	690	3.4	1,660
12	0.9	140	0.8	130	1.1	165	1.5	260	2.3	1,080	3.5	1,760
13	0.9	140	0.9	140	1.1	165	1.5	260	2.3	1,080	3.5	1,760
14	0.9	140	0.9	140	1.1	165	1.6	300	3.2	1,440	3.6	1,860
15	0.9	140	0.9	140	1.1	165	1.6	300	3.2	1,440	3.7	1,970
16	0.9	140	0.9	140	1.1	165	1.6	300	3.2	1,440	3.7	1,970
17	0.8	130	0.9	140	1.1	165	1.6	300	3.5	1,760	3.7	1,970
18	0.8	130	0.9	140	1.1	165	1.6	300	3.5	1,760	3.8	2,070
19	0.8	130	0.9	140	1.2	180	1.6	300	3.5	1,760	3.8	2,070
20	0.8	130	0.9	140	1.3	200	1.6	300	3.5	1,760	3.8	2,070
21	0.8	130	0.9	140	1.3	200	1.6	300	3.5	1,760	3.9	2,180
22	0.8	130	1.0	150	1.3	200	1.6	300	3.5	1,760	3.9	2,180
23	0.8	130	1.0	150	1.4	230	1.6	300	3.5	1,760	3.9	2,180
24	0.8	130	1.0	150	1.4	230	1.6	300	3.3	1,550	4.0	2,280
25	0.8	130	1.0	150	1.4	230	1.6	300	3.3	1,550	4.0	2,280
26	0.8	130	1.0	150	1.4	230	1.6	300	3.3	1,550	4.1	2,390
27	0.8	130	1.1	165	1.4	230	1.6	300	3.3	1,550	4.3	2,600
28	0.8	130	1.1	165	1.4	230	1.6	300	3.3	1,550	4.4	2,700
29	0.8	130	1.1	165	1.4	230	1.6	300	3.3	1,550	4.5	2,800
30	0.8	130	.....	.....	1.4	230	1.6	300	3.4	1,660	4.6	2,900
31	0.8	130	.....	.....	1.4	230	.....	.....	3.4	1,660	.....	.....
	July.		August.		September.		October.		November.		December.	
1	4.7	3,000	3.6	1,860	2.6	920	2.2	620	1.6	300	1.5	260
2	4.7	3,000	3.6	1,860	2.6	920	2.1	560	1.6	300	1.5	260
3	4.7	3,000	3.6	1,860	2.6	920	2.1	560	1.6	300	1.5	260
4	4.7	3,000	3.4	1,660	2.6	920	2.0	500	1.6	300	1.5	260
5	4.6	2,900	3.4	1,660	2.6	920	2.0	500	1.6	300	1.5	260
6	4.7	3,000	3.5	1,760	2.6	920	1.9	450	1.6	300	1.4	230
7	5.0	4,300	3.4	1,660	2.6	920	1.9	450	1.6	300	1.4	230
8	5.3	3,600	3.3	1,550	2.5	840	1.9	450	1.5	290	1.4	230
9	5.3	3,600	3.3	1,550	2.5	840	1.8	400	1.5	260	1.4	230
10	5.2	3,500	3.2	1,440	2.5	840	1.8	400	1.5	260	1.3	200
11	5.1	3,400	3.2	1,440	2.5	840	1.8	400	1.5	260	1.4	230
12	4.9	3,200	3.2	1,440	2.5	840	1.8	400	1.4	230	1.3	200
13	4.8	3,100	3.3	1,550	2.5	840	1.8	400	1.4	230	1.3	200
14	4.7	3,000	3.2	1,440	2.4	760	1.7	350	1.4	230	1.3	200
15	4.6	2,900	3.1	1,350	2.4	760	1.7	350	1.4	230	1.3	200
16	4.4	2,700	3.1	1,350	2.4	760	1.7	350	1.4	230	1.3	200
17	4.3	2,600	3.2	1,440	2.4	760	1.7	350	1.4	230	1.3	200
18	4.3	2,600	3.2	1,440	2.4	760	1.7	350	1.4	230	1.3	200
19	4.2	2,490	3.2	1,440	2.4	760	1.7	350	1.4	230	1.3	200
20	4.2	2,490	3.1	1,350	2.4	760	1.7	350	1.4	230	1.3	200
21	4.1	2,390	3.0	1,260	2.3	690	1.7	350	1.4	230	1.3	200
22	4.1	2,390	3.0	1,260	2.3	690	1.6	300	1.4	230	1.3	200
23	4.1	2,390	3.0	1,260	2.3	690	1.6	300	1.4	230	1.3	200
24	4.1	2,390	2.9	1,170	2.3	690	1.6	300	1.4	230	1.3	200
25	4.0	2,280	2.9	1,170	2.3	690	1.6	300	1.5	260	1.3	200
26	4.0	2,280	2.8	1,080	2.3	690	1.6	300	1.5	260	1.3	200
27	3.9	2,180	2.8	1,080	2.3	690	1.5	260	1.5	260	1.3	200
28	3.8	2,070	2.8	1,080	2.2	620	1.5	260	1.5	260	1.3	200
29	3.8	2,070	2.8	1,080	2.2	620	1.5	260	1.5	260	1.2	180
30	3.7	1,970	2.7	1,000	2.2	620	1.5	260	1.5	260	1.2	180
31	3.6	1,860	2.7	1,000	.....	.....	1.6	300	.....	.....	1.2	180

SESSIONAL PAPER No. 25d

*Monthly Discharge of Seton Creek below Seton Lake, for 1916.*

(Drainage area, 460 square miles.)

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	230	130	154	0.34	0.30	9,470
February	165	130	140	0.30	0.32	8,050
March	230	165	188	0.41	0.47	11,600
April	300	230	275	0.60	0.67	10,400
May	1,760	350	1,190	2.58	2.97	73,200
June	2,900	1,550	2,000	4.35	4.85	119,000
July	3,600	1,860	2,730	5.93	6.84	168,000
August	1,860	1,060	1,400	3.04	3.51	86,100
September	920	620	783	1.70	1.90	46,600
October	620	260	379	0.82	0.95	23,300
November	390	230	259	0.56	0.63	15,400
December	260	180	211	0.47	0.54	13,200
The year	3,400	130	810	1.76	24.04	590,320

## VANCOUVER ISLAND DISTRICT.

## BIG QUALICUM RIVER (1032).

*Location.*—One thousand feet upstream from Esquimalt and Nanaimo Railway bridge. Twenty miles from Parksville.

*Records Available.*—Daily discharges, March 23, 1913 to April 30, 1914; May 21, 1914 to December 31, 1916.

*Drainage Area.*—Sixty-two square miles.

*Gauge.*—Eighteen-foot wooden staff, location on left bank about one hundred feet above railroad bridge. Read daily by Mr. Leon Becque.

*Channel.*—Even gravel bed. Channel straight for 300 feet above and below section.

*Discharge Measurements.*—One in 1913 by Provincial Water Rights Branch, four in 1914, three in 1915 and one in 1916, cover all but highest stage.

*Winter Flow.*—Open all year.

*Accuracy.*—"B" up to discharge of 450 cubic feet per second; "C" above 450 cubic feet per second.

*Co-operation.*—Gauge installed in 1913 by Provincial Water Rights Branch and records to April 30, 1914, supplied by that Branch.

*Discharge Measurements of Big Qualicum River 1½ Mile above Mouth, for 1916.*

Date.	Engineer.	Gage No.	Width Feet.	Area of Section. Sq. ft.	Mean Velocity. Ft. per sec.	Gauge Height. Feet.	Discharge. Sec.-ft.
Oct. 27	M. Balls	1,046	21	27	0.86	1.30	23.2 <sup>1</sup>

<sup>1</sup>Wading measurement

Daily Gauge Height and Discharge of Big Qualicum River  $\frac{1}{2}$  Mile from Mouth, for 1916.

(Drainage area, 62 square miles.)

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 6	280	2 1	120	2 9	410	2 9	410	2 8	360	2 5	240
2	2 6	280	2 1	120	2 8	360	2 9	410	2 8	360	2 5	240
3	2 5	240	2 1	120	2 8	360	2 9	410	2 8	360	2 5	240
4	2 5	240	2 1	120	2 9	410	2 9	410	2 8	360	2 5	240
5	2 5	240	2 1	120	2 9	410	2 9	410	2 8	360	2 5	240
6	2 4	200	2 1	120	3 0	460	2 9	410	2 9	410	2 5	240
7	2 4	200	2 1	120	3 2	560	2 9	410	2 9	410	2 4	200
8	2 4	200	2 1	120	3 5	740	2 9	410	2 9	410	2 4	200
9	2 4	200	2 1	120	4 5	1,600	2 8	360	2 9	410	2 4	200
10	2 3	170	2 3	170	4 9	2,020	2 8	360	2 9	410	2 4	200
11	2 3	170	2 7	320	4 7	1,800	2 8	360	2 8	360	2 4	200
12	2 3	170	2 7	320	4 7	1,800	2 8	360	2 8	360	2 4	200
13	2 3	170	3 2	560	4 5	1,600	3 0	460	2 7	320	2 4	200
14	2 2	140	3 6	810	4 1	1,210	3 1	510	2 6	280	2 5	240
15	2 2	140	4 2	1,300	3 8	960	3 1	510	2 6	280	2 5	240
16	2 1	120	4 7	1,800	3 6	810	3 1	510	2 6	280	2 6	280
17	2 1	120	4 5	1,600	5 4	680	3 1	510	2 6	280	2 7	320
18	2 0	100	4 2	1,300	3 3	620	3 1	510	2 7	320	2 7	320
19	2 0	100	3 8	960	3 2	560	3 1	510	2 7	320	2 7	320
20	2 0	100	3 6	810	3 1	510	3 1	510	2 7	320	2 6	280
21	2 0	100	3 5	740	3 1	510	3 1	510	2 7	320	2 6	280
22	2 1	120	3 4	680	3 4	680	3 1	510	2 6	280	2 5	240
23	2 3	170	3 3	620	3 3	620	3 0	460	2 6	280	2 5	240
24	2 2	140	3 3	620	3 1	510	3 0	460	2 5	240	2 5	240
25	2 2	140	3 2	560	3 1	510	2 9	410	2 5	240	2 5	240
26	2 2	140	3 1	510	3 2	560	2 9	410	2 5	240	2 5	240
27	2 2	140	3 0	460	3 2	560	2 9	410	2 5	240	2 5	240
28	2 2	140	3 0	460	3 1	510	2 9	410	2 5	240	2 5	240
29	2 1	120	3 0	460	3 0	460	2 8	360	2 5	240	2 5	240
30	2 1	120	3 0	460	3 0	460	2 8	360	2 5	240	2 4	200
31	2 1	120	2 9	410	2 9	410	2 8	360	2 5	240	2 4	200

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 4	200	2 0	100	1 5	35	1 4	25	2 3	170	2 4	200
2	2 4	200	1 9	85	1 5	35	1 4	25	2 5	240	2 6	280
3	2 4	200	1 9	85	1 5	35	1 4	25	2 7	320	3 0	460
4	2 3	170	1 9	85	1 5	35	1 4	25	2 8	360	3 0	460
5	2 3	170	1 9	85	1 5	35	1 4	25	2 8	360	3 0	460
6	2 3	170	1 9	85	1 5	35	1 4	25	2 7	320	2 9	410
7	2 2	140	1 8	70	1 5	35	1 3	20	2 6	280	2 8	360
8	2 2	140	1 8	70	1 5	35	1 3	20	2 6	280	2 8	360
9	2 2	140	1 8	70	1 5	35	1 3	20	2 6	280	2 7	320
10	2 2	140	1 8	70	1 5	35	1 3	20	2 6	280	2 6	280
11	2 2	140	1 7	55	1 5	35	1 3	20	2 5	240	2 6	280
12	2 2	140	1 7	55	1 5	35	1 3	20	2 5	240	2 6	280
13	2 2	140	1 7	55	1 5	35	1 3	20	2 4	200	2 6	280
14	2 1	120	1 7	55	1 5	35	1 3	20	2 4	200	2 6	280
15	2 1	120	1 7	55	1 5	35	1 3	20	2 3	170	2 5	240
16	2 2	140	1 7	55	1 5	35	1 3	20	2 2	140	2 5	240
17	2 3	170	1 7	55	1 5	35	1 3	20	2 2	140	2 4	200
18	2 3	170	1 6	45	1 5	35	1 3	20	2 2	140	2 4	200
19	2 3	170	1 6	45	1 5	35	1 3	20	2 1	120	2 4	200
20	2 2	140	1 6	45	1 5	35	1 3	20	2 1	120	2 5	240
21	2 2	140	1 6	45	1 5	35	1 3	20	2 1	120	2 4	200
22	2 2	140	1 6	45	1 5	35	1 3	20	2 0	100	2 4	200
23	2 1	120	1 5	35	1 5	35	1 3	20	2 0	100	2 4	200
24	2 1	120	1 5	35	1 5	35	1 3	20	2 0	100	2 4	200
25	2 1	120	1 5	35	1 5	35	1 3	20	2 0	100	2 4	200
26	2 1	120	1 5	35	1 5	35	1 3	20	2 1	120	2 4	200
27	2 1	120	1 5	35	1 5	35	1 3	20	2 1	120	2 3	170
28	2 1	120	1 5	35	1 5	35	1 3	20	2 4	200	2 3	170
29	2 1	120	1 5	35	1 4	25	1 4	25	2 4	200	2 3	170
30	2 0	100	1 5	35	1 4	25	1 4	25	2 4	200	2 3	170
31	2 0	100	1 5	35	1 4	25	1 4	25	2 4	200	2 3	170

SESSIONAL PAPER No. 251

*Monthly Discharge of Big Qualicum River 1½ Mile from Mouth, for 1916.*

(Drainage area, 62 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	280	100	162	2.62	3.02	9,960
February	1,800	120	557	8.98	9.66	32,000
March	2,020	360	765	12.30	13.20	47,000
April	510	360	435	7.02	7.83	25,900
May	410	240	315	5.08	5.86	19,400
June	320	200	241	3.86	4.34	14,300
July	200	100	143	2.31	2.66	8,790
August	100	35	56	0.90	1.04	3,446
September	35	25	34	0.55	0.61	2,020
October	55	20	22	0.36	0.42	1,350
November	360	100	190	3.21	3.58	11,800
December	460	140	260	4.10	4.83	16,000
The year.	2,020	20	266	4.28	58.08	191,060

## CAMPBELL RIVER (1042).

*Location.*—At outlet from Campbell lake.*Records Available.*—Daily discharges, May 10, 1910 to December 31, 1916.*Drainage Area.*—Seven hundred and eighty square miles.*Gauge.*—Twelve-foot enamel staff in sections, located 1,000 feet above measuring section. Read twice daily by Mr. James Forbes.*Channel.*—Gravel and boulder bed. Channel straight for 200 feet above section. Rapids 100 feet below section.*Discharge Measurements.*—Four in 1914, six in 1915 and five in 1916 covering all stages.*Winter Flow.*—Open all year.*Accuracy.*—"B" up to discharge of 4,000 cubic feet per second; "C" above 4000 cubic feet per second.*Co-operation.*—Gauge records previous to June 2, 1914, supplied by Campbell River Power Company. A cable car was also established in conjunction with this Power Company.*Discharge Measurements of Campbell River at Campbell Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April 11	Balls and Webb	1,505	164	957	5.04	4.28	4,820
Aug. 3	H. C. Hughes	1,633	164	840	4.03	3.50	3,390
Aug. 21	R. G. Swan	1,623	119	603	3.14	2.20	1,910
Oct. 24	M. Balls	1,046	90	333	1.36	0.60	454
Oct. 25	M. Balls	1,046	91	336	1.57	0.60	460

NOTE.—Measurement made May 16, 1915.—Soundings revised Aug., 1916, gives the following:

1915 May 16	H. C. Hughes	1,933	165	872	4.25	3.74	3,710
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Daily Gauge Height and Discharge of Campbell River at Campbell Lake, for 1916.

(Drainage area, 780 square miles.)

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 17	1,720	0 85	610	3 40	3,080	2 05	2,550	3 77	3,580	5 05	5,500
2	2 05	1,600	0 85	610	3 32	2,980	3 05	2,600	3 55	3,830	5 12	5,720
3	1 87	1,430	0 85	610	3 17	2,800	3 37	3,040	4 25	4,300	5 32	6,080
4	1 77	1,350	0 85	610	3 00	2,600	3 72	3,510	4 75	5,100	5 60	6,580
5	1 70	1,290	0 85	610	2 82	2,400	4 02	3,030	5 30	6,040	5 85	7,030
6	1 65	1,250	0 85	610	2 73	2,300	4 10	4,060	5 45	6,310	5 90	7,120
7	1 60	1,210	0 85	610	2 72	2,290	4 15	4,140	5 37	6,170	5 67	6,710
8	1 60	1,210	0 80	570	2 85	2,440	4 17	4,170	5 30	6,040	5 10	6,220
9	1 60	1,210	0 80	570	3 78	3,590	4 22	4,250	5 12	5,720	5 15	5,770
10	1 57	1,190	0 82	590	6 30	7,900	4 27	4,330	4 77	5,130	4 95	5,420
11	1 50	1,130	0 85	610	8 37	12,000	4 30	4,380	4 37	4,490	4 77	5,130
12	1 37	1,030	0 90	650	9 55	14,700	4 15	4,140	4 08	4,030	4 72	5,050
13	1 30	970	0 92	670	9 62	14,800	4 17	4,170	3 77	3,380	4 80	5,180
14	1 22	910	0 95	690	9 00	13,500	4 22	4,250	3 37	3,300	5 25	5,650
15	1 15	850	1 32	990	7 83	11,000	4 40	4,540	3 55	3,270	5 80	6,940
16	1 07	790	2 87	2,460	6 90	9,100	4 47	4,650	3 75	3,550	6 45	8,600
17	1 02	750	4 75	5,100	5 97	7,210	4 35	4,460	4 10	4,060	7 20	9,700
18	0 97	710	5 27	5,390	5 40	6,220	4 22	4,250	4 62	4,890	7 62	10,500
19	0 95	690	5 50	6,400	4 85	5,260	4 07	4,010	4 85	5,260	7 72	10,700
20	0 90	650	5 25	5,950	4 40	4,540	3 97	3,860	4 55	5,420	7 25	9,800
21	0 87	630	4 07	5,450	4 07	4,010	3 87	3,720	4 85	5,260	6 67	8,640
22	0 85	610	4 75	5,100	3 92	3,790	3 75	3,550	4 62	4,890	6 22	7,710
23	0 85	610	4 55	4,780	3 77	3,580	3 57	3,300	4 35	4,460	5 92	7,160
24	0 85	610	4 35	4,460	3 65	3,410	3 47	3,160	4 05	3,980	5 78	6,900
25	0 85	610	4 07	4,010	3 52	3,230	3 37	3,040	3 87	3,720	5 68	7,620
26	0 85	610	3 85	3,690	3 37	3,040	3 32	3,080	3 87	3,720	5 68	6,720
27	0 85	610	3 65	3,410	3 27	2,920	3 30	2,960	4 35	4,460	5 82	6,980
28	0 85	610	3 57	3,300	3 17	2,800	3 37	3,040	4 70	5,020	5 90	7,120
29	0 85	610	3 47	3,160	3 07	2,680	3 32	3,230	4 97	5,450	5 88	7,080
30	0 85	610	3 47	3,160	2 97	2,570	3 65	3,410	5 00	5,500	5 72	6,800
31	0 85	610	2 90	2,490	2 90	2,490	.....	.....	5 00	5,500	.....	.....
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 45	6,310	3 62	3,370	2 30	1,850	1 00	730	2 23	1,880	1 87	1,430
2	5 30	6,040	3 60	3,340	2 30	1,850	1 00	730	2 62	2,180	1 92	1,470
3	5 25	5,950	3 52	3,230	2 35	1,900	1 00	730	2 70	2,270	1 97	1,520
4	5 28	6,000	3 40	3,080	2 32	1,870	1 00	730	2 72	2,290	2 07	1,620
5	5 10	5,680	3 25	2,900	2 28	1,830	0 95	690	2 72	2,290	2 20	1,750
6	4 90	5,340	3 12	2,740	2 18	1,730	0 90	650	2 62	2,180	2 12	1,670
7	4 65	4,940	3 07	2,680	2 10	1,650	0 85	610	2 55	2,100	2 02	1,570
8	4 47	4,650	3 00	2,600	2 02	1,570	0 80	570	2 40	1,950	1 97	1,520
9	4 30	4,540	3 00	2,600	1 92	1,470	0 80	570	2 57	2,130	1 87	1,430
10	4 47	4,650	3 00	2,600	1 82	1,390	0 75	540	2 67	2,240	1 77	1,350
11	4 57	4,810	3 06	2,600	1 72	1,310	0 72	522	2 85	2,440	1 70	1,290
12	4 75	5,100	3 00	2,600	1 62	1,230	0 70	510	2 87	2,460	1 67	1,270
13	4 90	5,340	3 05	2,660	1 55	1,170	0 65	480	2 75	2,320	1 60	1,210
14	4 95	5,420	3 10	2,720	1 50	1,130	0 65	480	2 52	2,070	1 52	1,150
15	4 82	5,210	3 07	2,680	1 48	1,110	0 60	450	2 30	1,850	1 50	1,130
16	4 92	5,370	3 02	2,620	1 40	1,050	0 60	450	2 05	1,600	1 45	1,090
17	5 22	5,900	2 97	2,570	1 35	1,010	0 60	450	1 92	1,470	1 37	1,030
18	5 42	6,260	2 87	2,460	1 30	970	0 60	450	1 82	1,390	1 35	1,010
19	5 42	6,260	2 75	2,330	1 28	950	0 60	450	1 72	1,310	1 35	1,010
20	5 32	6,080	2 55	2,100	1 25	930	0 65	480	1 62	1,230	1 35	1,010
21	5 15	5,770	2 37	1,920	1 20	890	0 65	480	1 52	1,150	1 35	1,010
22	4 92	5,370	2 27	1,820	1 20	890	0 62	462	1 42	1,070	1 35	1,010
23	4 90	5,210	2 20	1,750	1 15	850	0 60	450	1 37	1,030	1 35	1,010
24	4 87	5,270	2 23	1,750	1 10	810	0 65	450	1 30	970	1 35	1,010
25	4 77	5,130	2 20	1,750	1 10	810	0 60	450	1 30	970	1 30	970
26	4 65	4,940	2 22	1,770	1 10	810	0 60	450	1 30	970	1 25	930
27	4 45	4,620	2 27	1,820	1 10	810	0 65	480	1 42	1,070	1 20	890
28	4 17	4,170	2 30	1,850	1 08	790	0 68	498	1 52	1,150	1 18	870
29	4 02	3,930	2 30	1,850	1 05	770	0 78	538	1 65	1,240	1 12	830
30	3 87	3,720	2 30	1,850	1 02	750	1 15	850	1 82	1,390	1 05	770
31	3 70	3,480	2 30	1,850	.....	.....	1 82	1,390	.....	.....	1 05	770

SESSIONAL PAPER No. 254

*Monthly Discharge of Campbell River at Campbell Lake, for 1916.*

(Drainage area, 780 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	1,720	610	925	1 19	1 37	56,990
February	6,400	570	2,510	3 22	3 47	144,000
March	14,800	2,490	5,330	6 83	7 87	328,600
April	4,650	2,550	3,720	4 77	5 32	221,000
May	6,310	3,270	4,710	6 04	6 96	290,000
June	10,700	5,050	7,060	9 05	10 10	420,000
July	6,310	3,480	5,220	6 69	7 71	321,000
August	3,370	1,750	2,400	3 08	3 55	148,000
September	1,900	750	1,210	1 55	1 73	72,000
October	1,390	450	874	0 74	0 85	35,300
November	2,460	970	1,690	2 17	2 42	101,000
December	1,750	770	1,180	1 51	1 74	72,600
The year	14,800	450	3,040	3 90	53 09	2,209,800

## CHEMAINUS RIVER (1027).

*Location.*—Upstream side of Esquimalt and Nanaimo Railway bridge, 5 miles from Chemainus—low-water measurements made by wading.

*Records Available.*—Daily discharges May 13, 1914 to December 31, 1916.

*Drainage Area.*—One hundred and twenty square miles.

*Gauge.*—Eighteen-foot wooden staff, located on left bank 100 feet below bridge. Read daily by Mr. R. C. Mainguy.

*Channel.*—Straight for 150 feet above and 300 feet below section. Gravel and sand bed. Control changed in February 1916.

*Discharge Measurements.*—Six in 1914, three in 1915, covering all but highest stage, give curve applicable till February 15, 1916. Four measurements in 1916 and 1917 define curve to be used after February 15, 1916.

*Winter Flow.*—Generally open water all year may be expected. However, in January and February of 1916 stream was frozen over for several weeks.

*Accuracy.*—"A" up to discharge of 600 cubic feet per second; "C" above 600 cubic feet per second for January; for remainder of year accuracy is "C." The 1916 discharge curve is not well defined.

*Discharge Measurements of Chemainus River near E. and N. R. Bridge, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
1916							
Mar. 28	Webb and Balls	1 505	Feet. 117	Sq. ft. 703	Ft. per sec. 1 74	Feet. 4 09	Sec.-ft. 1,220
Nov. 4	M. Balls	1,046	124	741	2 31	5 44	1,710
Dec. 15	C. E. Webb	1,057	109	556	0 76	4 13	421
1917							
Jan.	C. E. Webb	1,057	102	491	0 43	3 79	210 <sup>1</sup>

<sup>1</sup> Ice along shore.

*Daily Gauge Height and Discharge of Chemainus River near E. and N. R.  
Bridge, for 1916.*

(Drainage area, 120 square miles.)

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 81	546		190	4 70	900	4 73	933	5 20	1,450	4 65	845
2	3 75	510	Ice	190	4 00	790	4 80	1,010	5 50	1,780	4 80	1,080
3	3 70	480		190	4 00	790	5 20	1,550	5 02	2,210	5 00	1,230
4	3 50	430		190	4 40	860	5 32	1,580	5 70	2,000	5 11	1,350
5	3 55	405		190	4 30	810	5 20	1,450	5 35	1,920	4 80	1,010
6	3 57	415		190	4 37	806	4 00	1,220	5 50	1,780	4 00	790
7	3 58	420	3 25	200	4 31	818	1 07	1,200	5 15	1,400	4 55	740
8	3 50	380	3 10	220	5 45	1,720	5 05	1,200	5 35	1,620	4 71	911
9	3 48	372	3 20	200	6 55	2,910	5 10	1,340	5 01	1,240	4 75	955
10	3 35	320	3 30	340	6 75	3,160	5 31	1,570	4 73	933	4 60	790
11	3 34	316	5 45	2,190	6 92	3,350	5 20	1,450	4 55	740	4 50	690
12	3 30	300	4 35	940	7 09	3,550	4 00	1,220	4 45	640	5 01	1,240
13	3 20	260	3 20	260	5 85	2,170	5 00	1,230	4 41	600	5 01	1,240
14	3 00	190	5 45	2,190	5 30	1,560	6 00	2,340	5 50	1,780	5 55	1,840
15	3 00	190	9 37	6,080	4 95	1,180	5 00	1,230	4 80	1,010	5 50	1,780
16		190	8 11	4,680	4 85	1,060	5 05	1,290	4 50	690	5 50	1,780
17		190	6 60	3,000	4 80	1,010	5 25	1,500	4 39	592	5 35	1,620
18		190	5 80	2,110	4 77	977	5 10	1,340	4 90	1,120	5 01	1,240
19	Ice	190	5 77	2,090	4 65	845	5 01	1,210	5 20	1,450	4 65	845
20		190	5 63	1,920	4 81	1,040	5 10	1,340	4 70	900	4 42	610
21		190	5 60	1,890	5 65	1,950	5 09	1,330	4 95	1,180	4 45	640
22		190	5 53	1,810	5 55	1,840	4 95	1,180	4 60	790	4 51	700
23		190	5 20	1,150	5 20	1,450	4 71	911	4 48	670	4 52	710
24		190	4 98	1,210	4 98	1,210	4 79	996	4 52	710	4 42	610
25		190	4 88	1,100	4 78	988	4 88	1,100	4 90	1,120	4 50	690
26		190	4 90	1,120	4 98	1,210	4 83	1,100	5 25	1,500	4 43	620
27		190	4 90	1,120	5 01	1,240	5 08	1,320	5 05	1,290	4 30	510
28		190	4 98	1,210	5 30	1,560	5 10	1,340	4 95	1,180	4 48	670
29		190	4 80	1,010	5 75	955	4 92	1,140	4 75	955	4 80	1,010
30		190			4 65	845	4 92	1,140	4 65	845	4 38	574
31		190			4 70	900			4 70	900		
	July.		August.		September.		October.		November.		December.	
1	4 30	510	3 75	200	3 00	25	2 78	17	5 09	1,330	3 95	295
2	4 33	534	3 55	125	3 01	25	2 78	17	5 07	1,310	4 10	380
3	4 27	489	3 45	95	3 02	26	2 78	17	5 10	1,340	4 45	640
4	4 15	410	3 75	70	3 01	25	2 79	18	5 05	1,290	4 40	590
5	4 00	320	3 32	64	3 01	25	2 80	18	5 00	1,230	5 00	1,230
6	4 02	332	3 39	78	3 01	25	2 83	19	4 65	845	4 20	440
7	4 04	344	3 45	95	2 98	24	2 85	20	4 50	690	3 95	295
8	4 03	338	3 42	86	2 95	23	2 80	18	4 45	640	3 99	315
9	4 05	350	3 39	78	2 95	23	2 80	18	4 40	590	4 01	326
10	3 95	295	3 31	62	2 98	24	2 80	18	4 35	550	4 00	320
11	4 09	374	3 30	60	2 95	23	2 80	18	4 25	475	4 10	380
12	3 94	290	3 30	60	2 90	21	2 80	18	4 00	320	4 18	428
13	3 83	235	3 25	50	2 82	19	2 80	18	4 00	320	4 20	440
14	3 73	192	3 25	50	2 85	20	2 80	18	3 90	270	4 25	475
15	3 87	255	3 25	50	2 88	20	2 80	18	3 80	220	4 20	440
16	4 45	640	3 20	40	2 87	20	2 80	18	3 83	235	4 10	380
17	4 24	482	3 20	40	2 90	21	2 79	18	3 75	200	4 25	475
18	4 03	338	3 20	40	2 85	20	2 78	17	3 65	160	4 30	510
19	4 00	320	3 18	38	2 81	18	2 77	17	3 60	140	4 48	670
20	3 95	295	2 98	24	2 75	17	2 76	17	3 58	134	4 35	550
21	3 99	315	3 15	35	2 70	15	2 75	17	3 61	144	4 28	496
22	3 97	305	3 10	30	2 69	15	2 75	17	3 61	144	4 20	440
23	3 98	310	3 01	25	2 67	14	2 79	18	3 59	127	4 10	380
24	3 97	315	2 90	25	2 70	15	2 81	18	3 51	113	4 50	690
25	3 96	300	3 01	25	2 75	17	2 83	19	3 49	107	4 00	320
26	3 96	300	3 00	25	2 75	17	2 84	19	3 85	245	3 99	315
27	3 96	300	2 97	24	2 70	15	2 85	20	3 90	270	3 83	235
28	3 95	295	3 00	25	2 76	17	2 90	21	3 93	285	3 75	200
29	3 95	295	2 98	24	2 78	17	3 09	30	3 94	290	3 90	270
30	3 94	290	2 97	24	2 78	17	3 06	28	3 95	295	3 80	220
31	3 90	270	2 95	23			5 10	1,340			3 80	220



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## Monthly Discharge of Chemainus River 1 Mile above Mouth, for 1916.

(Drainage area, 120 square miles.)

MONTH	DISCHARGE IN SECONDS FEET				RUN-OFF	
	Maximum.	Minimum	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January	546	190	277	2.31	2.66	17,000
February	6,080	190	1,370	11.40	12.30	78,800
March	3,550	510	1,400	11.70	13.50	86,100
April	2,340	911	1,300	10.80	12.10	77,400
May	2,240	582	1,180	9.84	11.30	72,600
June	1,840	510	970	8.08	9.02	57,700
July	610	192	343	2.86	3.30	21,100
August	200	23	54	0.45	0.52	3,320
September	26	14	29	0.17	0.19	1,190
October	1,340	17	61	0.51	0.59	3,750
November	1,340	107	477	3.98	4.44	28,400
December	1,230	200	430	3.59	4.14	26,400
The year	6,080	11	657	5.48	74.06	473,760

NOTE.—Gauge height-discharge relation affected by ice January 15 to February 7. Control changed on February 15, 1916. Possibility of ice affecting gauge height on February 15 and 16. New rating applies from February 15, 1916.

## COWICHAN RIVER (1054).

*Location.*—Near outlet from Cowichan lake, 500 feet below Canadian Northern Pacific Railway bridge.

*Records Available.*—Daily discharges January 31, 1913 to December 31, 1916.

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

*Gauge.*—Twelve-foot wooden staff at highway bridge at outlet from lake, near left bank. Gauge read twice daily by Mr. H. T. Harding.

*Channel.*—Gravel and small boulder bed. Channel straight for 200 feet above and below section.

*Discharge Measurements.*—Eleven measurements, made during 1913–15, give well defined rating curve. This curve is applicable until February 15, 1916. A shift in channel about this time changed the rating. New rating since February 15, 1916. Six measurements covering all but low water.

*Winter Flow.*—Open all year.

*Accuracy.*—We do not consider these records very accurate. There was a shift in channel in February, 1916, also the river bed was cleaned out during low water, 1916, to make a launch channel.

## Discharge Measurements of Cowichan River at Cowichan Lake, for 1916.

Date.	Engineer	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 22	Webb and Balls	1,057	195	1,640	2.04	6.60	3,340
Mar. 23	Webb and Balls	1,057	195	1,620	2.04	6.52	3,310
Nov. 6	M. Balls	1,046	185	952	1.43	3.70	1,360
Nov. 7	M. Balls	1,046	185	955	1.36	3.68	1,300
Dec. 13	C. E. Webb	1,057	185	1,100	1.38	3.85	1,520

Daily Gauge Height and Discharge of Cowichan River at Cowichan Lake, for 1916.

(Drainage area, 235 square miles.)

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	5 55	3,010	3 06	1,140	5 80	2,760	5 63	2,640	5 38	2,470	4 28	1,710
2	5 34	2,820	3 04	1,120	5 65	2,660	5 53	2,570	5 38	2,470	4 20	1,660
3	5 15	2,660	3 01	1,110	5 53	2,570	5 47	2,530	5 46	2,520	4 20	1,660
4	5 03	2,660	2 97	1,090	5 44	2,510	5 48	2,540	5 50	2,540	4 19	1,650
5	4 83	2,390	2 94	1,070	5 33	2,430	5 47	2,530	5 52	2,560	4 14	1,620
6	4 65	2,240	2 91	1,050	5 20	2,340	5 38	2,470	5 69	2,610	4 09	1,590
7	4 55	2,160	2 93	1,060	5 13	2,290	5 31	2,420	5 55	2,590	4 03	1,560
8	4 43	2,060	2 97	1,090	5 49	2,540	5 24	2,370	6 70	2,690	3 95	1,510
9	4 29	1,950	3 01	1,110	5 05	2,960	5 24	2,370	5 64	2,640	3 94	1,500
10	4 12	1,820	3 06	1,150	6 60	3,360	5 22	2,350	5 61	2,630	3 88	1,470
11	3 98	1,720	3 20	1,220	7 00	3,660	5 21	2,350	5 50	2,650	3 81	1,430
12	3 85	1,640	3 35	1,310	7 43	4,000	5 17	2,320	5 38	2,470	3 78	1,410
13	3 73	1,550	3 55	1,430	7 48	4,040	5 11	2,290	5 25	2,380	3 78	1,410
14	3 66	1,500	3 85	1,640	7 34	3,930	5 25	2,380	6 08	2,260	3 82	1,470
15	3 55	1,430	3 60	3,050	7 29	3,890	5 43	2,500	5 09	2,260	3 88	1,470
16	3 43	1,360	6 85	3,550	7 11	3,780	5 41	2,490	5 08	2,260	4 02	1,550
17	3 30	1,280	7 18	3,800	6 91	3,590	5 48	2,540	5 08	2,260	4 08	1,590
18	3 19	1,210	7 28	3,880	6 70	3,430	5 61	2,650	5 09	2,260	4 11	1,610
19	3 13	1,180	7 27	3,870	6 50	3,320	5 60	2,620	5 06	2,240	4 07	1,580
20	3 04	1,120	7 19	3,810	6 39	3,190	5 66	2,660	5 01	2,210	3 99	1,530
21	3 01	1,110	7 13	3,760	6 42	3,220	5 70	2,690	4 93	2,150	3 93	1,500
22	3 10	1,160	7 03	3,680	6 54	3,310	5 69	2,680	4 86	2,100	3 86	1,460
23	3 30	1,280	6 85	3,550	6 45	3,240	5 67	2,670	4 73	2,010	3 80	1,420
24	3 34	1,300	6 55	3,320	6 33	3,150	5 62	2,630	4 63	1,940	3 79	1,410
25	3 32	1,290	6 35	3,170	6 28	3,120	5 56	2,690	4 54	1,880	3 74	1,390
26	3 30	1,280	6 18	3,050	6 20	3,060	5 50	2,550	4 53	1,880	3 75	1,400
27	3 23	1,240	6 08	2,980	6 21	3,070	5 50	2,550	4 51	1,870	3 75	1,400
28	3 16	1,200	5 98	2,900	6 17	3,040	5 50	2,550	4 50	1,860	3 75	1,400
29	3 10	1,160	5 88	2,820	6 05	2,960	5 47	2,530	4 43	1,810	3 74	1,390
30	3 10	1,160	.....	.....	5 83	2,780	5 41	2,490	4 38	1,780	3 68	1,360
31	3 09	1,150	.....	.....	5 72	2,700	.....	.....	4 38	1,780	.....	.....
Day.	July		August.		September.		October.		November.		December.	
	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.	Feet.	Sec.-ft.
1	3 60	1,310	2 49	715	1 45	325	0 83	157	2 05	530	3 40	1,200
2	3 59	1,309	2 44	690	1 42	316	0 82	155	2 33	642	3 50	1,250
3	3 53	1,270	2 41	675	1 40	310	0 80	150	2 80	870	3 75	1,400
4	3 46	1,230	2 40	670	1 39	307	0 80	150	3 20	1,090	3 88	1,470
5	3 39	1,190	2 38	662	1 35	295	0 78	145	3 48	1,240	3 95	1,510
6	3 36	1,180	2 36	654	1 31	283	0 76	140	3 65	1,360	3 97	1,520
7	3 25	1,129	2 29	626	1 30	280	0 75	138	3 70	1,370	3 99	1,530
8	3 19	1,080	2 23	602	1 30	280	0 74	135	3 78	1,410	4 03	1,560
9	3 14	1,050	2 13	562	1 28	274	0 73	132	3 88	1,470	4 05	1,570
10	3 09	1,020	2 07	538	1 25	265	0 72	130	3 95	1,610	4 00	1,540
11	3 04	1,000	2 05	530	1 22	256	0 72	130	3 94	1,500	3 94	1,500
12	3 00	980	2 03	522	1 20	250	0 71	128	3 89	1,470	3 92	1,490
13	2 98	968	2 00	510	1 18	245	0 71	128	3 84	1,440	3 87	1,460
14	2 85	895	1 96	496	1 15	238	0 70	125	3 78	1,410	3 82	1,430
15	2 84	890	1 90	475	1 12	230	0 70	125	3 68	1,360	3 78	1,410
16	2 95	950	1 90	475	1 09	222	0 69	123	3 55	1,280	3 80	1,420
17	3 00	980	1 88	468	1 05	213	0 67	118	3 44	1,220	3 82	1,430
18	2 98	968	1 87	464	1 02	205	0 65	113	3 46	1,230	3 85	1,460
19	2 90	920	1 84	454	1 00	200	0 63	108	3 39	1,190	3 88	1,470
20	2 90	920	1 79	436	1 00	200	0 62	105	3 28	1,130	3 87	1,460
21	2 89	915	1 75	423	0 97	193	0 61	103	3 21	1,100	3 84	1,440
22	2 86	900	1 71	409	0 95	188	0 60	100	3 20	1,090	3 81	1,430
23	2 88	910	1 65	388	0 91	178	0 58	95	3 15	1,060	3 80	1,420
24	2 80	870	1 59	367	0 90	175	0 57	93	3 11	1,040	3 73	1,390
25	2 78	860	1 56	358	0 88	170	0 55	88	3 06	1,010	3 64	1,330
26	2 70	820	1 55	355	0 87	168	0 55	88	3 09	1,020	3 59	1,300
27	2 70	820	1 54	352	0 86	165	0 60	100	3 18	1,080	3 53	1,270
28	2 67	805	1 52	346	0 85	163	0 68	120	3 28	1,130	3 43	1,220
29	2 60	770	1 50	340	0 85	163	0 85	163	3 38	1,190	3 35	1,170
30	2 58	760	1 50	340	0 84	160	1 15	238	3 40	1,200	3 31	1,150
31	2 56	740	1 48	334	.....	.....	1 78	433	.....	.....	3 30	1,140

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*Monthly Discharge of Cowichan River at Cowichan Lake, for 1916.*

(Drainage area, 235 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	3,010	1,110	1,650	7.03	8.11	101,000
February	3,880	1,050	2,340	9.90	10.70	135,000
March	4,040	2,290	3,120	13.30	15.30	192,000
April	2,690	2,280	2,520	10.70	11.90	150,000
May	2,490	1,780	2,260	9.62	11.10	139,000
June	1,710	1,360	1,500	6.38	7.12	89,300
July	1,410	740	980	4.17	4.81	60,300
August	715	394	492	2.10	2.42	30,300
September	325	160	230	0.98	1.09	13,000
October	433	88	137	0.58	0.67	8,420
November	1,310	530	1,190	5.07	5.66	70,800
December	1,570	1,110	1,400	5.96	6.87	86,100
The year	4,040	88	1,485	6.32	85.75	1,075,920

NOTE.—Rating for 1915 used up to Feb. 15, after that date 1916 rating used. Change in control about Feb. 16, 1916

## ENGLISHMAN'S RIVER (1030)

*Location.*—One half mile above mouth, 2 miles from \_\_\_\_\_ ville.*Records Available.*—Daily discharges February 15, 1913 to December 31, 1913; May 19, 1914 to September 21, 1914; December 9, 1914 to December 31, 1916.*Drainage Area.*—One hundred and eleven square miles.*Gauge.*—Twelve-foot enamelled staff in 2 sections, located on right bank, 100 feet upstream from metering section. Read daily by Mr. L. Mandley.*Channel.*—Straight for 300 feet above and below section; even gravel bed.*Discharge Measurements.*—Four in 1913 by Provincial Water Rights Branch, four in 1914, three in 1915 and two in 1916.*Winter Flow.*—Open all year.*Accuracy.*—"B" between discharge of 100 and 600 cubic feet per second; "C" below discharge of 100 and above 600 cubic feet per second. This accuracy is kept low on account of the shifting of channel each year.*Co-operation.*—Provincial Water Rights Branch established station in 1913.*Discharge Measurements of Englishman's River ½ Mile above Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 1x	H. C. Hughes	1,046	28	446.0	1.47	5.18	657.0
Oct. 28	M. Balls	1,046	23	17.2	0.95	1.58	16.3 <sup>1</sup>

<sup>1</sup> Wading measurement, new cable carrier installed (28th).

*Daily Gauge Height and Discharge of Englishman's River  $\frac{1}{2}$  Mile above Mouth, for 1916.*

(Drainage area, 111 square miles)

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 70	300	2 20	180	2 90	500	3 00	560	3 25	760	3 00	560
2	2 65	365	2 20	180	2 85	470	3 20	720	3 50	980	3 15	680
3	2 40	250	2 20	180	2 80	440	3 30	800	3 50	980	3 30	800
4	2 40	250	2 25	180	2 75	415	3 40	890	3 50	980	3 25	760
5	2 40	250	2 20	180	2 65	365	3 30	800	3 55	1,030	3 00	560
6	2 30	210	2 20	180	2 60	340	3 20	720	3 90	1,400	2 80	440
7	2 30	210	2 30	210	4 00	1,520	3 15	680	3 70	1,180	2 75	415
8	2 20	180	2 40	250	5 30	3,080	3 10	890	3 60	1,080	2 90	500
9	2 20	180	2 60	340	5 60	3,440	3 40	890	3 40	890	2 80	440
10	2 20	180	3 10	640	5 30	3,080	3 40	890	3 10	610	2 75	415
11	2 20	180	3 10	640	5 40	3,200	3 30	800	2 90	500	2 80	440
12	2 10	150	4 00	1,520	5 00	2,720	3 10	640	2 80	440	2 90	500
13	2 10	150	3 60	1,080	4 20	1,760	3 00	1,080	2 75	415	3 30	800
14	2 10	150	4 10	1,640	3 95	1,340	3 80	1,290	2 80	440	3 60	1,180
15	2 10	150	5 80	3,680	3 40	890	3 55	1,030	3 05	600	3 60	1,180
16	2 10	150	5 20	2,960	3 40	890	3 15	680	3 35	845	3 70	1,180
17	2 10	150	4 90	2,240	3 30	800	3 15	680	3 45	945	3 70	1,180
18	2 10	150	4 80	2,480	3 20	720	3 30	800	3 35	845	3 60	1,180
19	2 10	150	4 60	2,240	3 10	640	3 30	800	3 30	800	2 80	440
20	2 10	150	4 00	1,520	3 05	600	3 25	760	3 30	800	2 75	415
21	2 10	150	3 90	1,400	3 40	890	3 25	760	2 95	530	2 80	440
22	2 10	150	3 70	1,180	3 70	1,180	3 15	680	2 80	440	2 75	415
23	2 10	150	3 50	980	3 40	890	3 00	560	2 80	440	2 80	440
24	2 20	180	3 30	800	3 20	720	3 05	600	2 70	390	2 90	500
25	2 20	180	3 15	680	3 00	560	3 05	600	3 60	560	3 00	560
26	2 20	180	3 10	640	3 00	560	3 05	600	3 40	890	3 10	640
27	2 20	180	3 10	640	3 50	980	3 25	760	3 10	640	3 10	640
28	2 20	180	3 10	640	3 40	890	3 25	760	3 20	720	3 20	720
29	2 20	180	3 00	560	3 20	720	3 10	640	3 00	560	3 00	560
30	2 20	180	3 00	560	3 00	560	3 10	640	3 00	560	3 00	560
31	2 20	180	3 00	560	3 00	560	3 10	640	3 00	560	3 00	560
	July		August		September		October		November		December	
1	2 00	560	2 20	180	1 80	65	1 60	30	2 85	470	2 58	330
2	2 30	500	2 15	165	1 80	65	1 60	30	3 05	600	2 50	290
3	2 30	500	2 10	150	1 80	65	1 60	30	3 70	1,180	4 30	1,880
4	2 80	440	2 10	150	1 80	65	1 55	23	3 80	1,290	3 50	980
5	2 80	440	2 10	150	1 80	65	1 55	23	3 30	800	3 10	640
6	2 75	415	2 10	150	1 80	65	1 55	23	3 00	560	2 80	440
7	2 70	390	2 10	150	1 75	55	1 55	23	2 75	415	2 60	340
8	2 60	340	2 05	135	1 70	45	1 55	23	2 60	340	2 60	340
9	2 60	340	2 05	135	1 70	45	1 55	23	3 00	560	2 45	270
10	2 60	340	2 05	135	1 70	45	1 55	23	2 75	415	2 35	230
11	2 65	365	2 00	120	1 70	45	1 55	23	2 58	340	2 40	250
12	2 60	340	2 00	120	1 65	38	1 55	23	2 40	250	2 50	290
13	2 60	340	2 00	120	1 65	38	1 55	23	2 25	195	2 65	365
14	2 60	340	2 00	120	1 65	38	1 55	23	2 18	174	2 58	330
15	2 55	315	1 95	105	1 60	30	1 55	23	2 14	162	2 49	286
16	2 60	340	1 95	105	1 60	30	1 55	23	2 08	144	2 45	270
17	2 60	340	1 95	105	1 60	30	1 50	15	2 08	144	2 40	250
18	2 60	340	1 95	105	1 60	30	1 50	15	2 08	144	2 46	274
19	2 60	340	1 90	90	1 60	30	1 50	15	2 08	144	2 72	400
20	2 56	290	1 90	90	1 60	30	1 50	15	2 07	141	2 60	340
21	2 50	290	1 85	78	1 60	30	1 50	15	2 02	126	2 50	290
22	2 50	290	1 85	78	1 60	30	1 50	15	2 02	126	2 45	270
23	2 40	250	1 85	78	1 60	30	1 50	15	2 00	120	2 40	250
24	2 35	230	1 80	65	1 60	30	1 50	15	1 98	114	2 35	230
25	2 30	210	1 80	65	1 60	30	1 50	15	2 15	165	2 50	290
26	2 25	195	1 75	55	1 60	30	1 50	15	2 40	250	2 20	180
27	2 25	195	1 80	65	1 60	30	1 56	23	2 57	325	2 20	180
28	2 20	180	1 80	65	1 60	30	1 55	23	2 95	530	2 10	150
29	2 10	150	1 80	65	1 60	30	2 68	380	2 80	440	2 00	120
30	2 15	165	1 80	65	1 60	30	2 50	290	2 70	390	1 98	114
31	2 15	165	1 80	65	1 60	30	3 65	1,130			2 10	150

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*Monthly Discharge of Englishman's River  $\frac{1}{2}$  Mile above Mouth, for 1916.*

(Drainage area, 111 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	390	150	190	1.73	1.99	11,700
February	1,680	180	1,040	9.45	10.29	59,800
March	3,440	340	1,160	10.39	12.10	71,000
April	1,290	560	767	6.87	7.78	45,600
May	1,400	390	737	6.70	7.72	45,300
June	1,180	415	611	5.55	6.19	36,100
July	560	165	322	2.93	3.18	19,800
August	180	65	107	0.97	1.12	6,580
September	65	30	41	0.37	0.41	2,440
October	1,130	15	77	0.70	0.81	4,730
November	1,290	111	668	3.35	3.74	21,900
December	1,880	114	655	3.23	3.72	21,800
The year	1,680	15	481	4.37	59.16	347,050

## KOKSILAH RIVER (1026).

*Location.*—Two miles from mouth, upstream side of Esquimalt and Nanaimo Railway bridge.

*Records Available.*—Daily discharges May 12, 1914 to December 31, 1916.

*Drainage Area.*—One hundred and twenty-four square miles.

*Gauge.*—Fourteen-foot staff on left bank 600 feet above bridge, read daily by Koksilah Charlie.

*Channel.*—Gravel bed, channel straight for 100 feet above and 300 feet below section, 2 channels at low water.

*Discharge Measurements.*—Six in 1914, three in 1915 and four in 1916 cover all stages.

*Winter Flow.*—Open all year.

*Accuracy.*—"A" up to discharge of 400 cubic feet per second; "B" between discharge of 400 and 2,000 cubic feet per second; "C" above discharge of 2,000 cubic feet per second.

*Discharge Measurements of Koksilah River 2 Miles above Mouth, for 1916.*

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 27	Webb and Balls	1505	121	470	3.81	5.20	1,790
Mar. 28	Webb and Balls	1505	119	584	3.66	4.28	1,330
Nov. 5	M. Balls	1016	105	223	3.10	3.30	691
Dec. 12	C. E. Webb	1037	105	177	2.81	2.84	507

Daily Gauge Height and Discharge of Koksilah River 2 Miles above Mouth, for 1916.

(Drainage area, 124 square miles.)

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 0	500	2 8	420	3 2	590	3 4	690	3 4	690	2 4	270
2	3 0	500	2 8	420	3 2	590	3 4	690	3 6	790	2 2	210
3	2 9	460	2 8	420	3 2	590	3 6	790	3 6	790	2 2	210
4	2 9	460	2 8	420	3 2	590	3 6	790	3 4	690	2 1	180
5	2 9	460	2 8	420	3 4	690	3 4	690	3 4	690	2 1	180
6	2 8	420	2 8	420	4 6	1,420	3 4	690	3 4	690	2 0	160
7	2 8	420	2 8	420	4 6	1,420	3 4	690	3 2	590	1 9	140
8	2 8	420	3 0	500	5 4	1,980	3 2	590	3 2	590	1 9	140
9	2 8	420	3 0	500	4 8	1,560	3 2	590	3 4	690	1 8	120
10	2 6	340	3 2	590	4 6	1,420	3 6	790	3 4	690	1 8	120
11	2 6	340	3 4	690	4 8	1,560	3 6	790	3 2	590	1 8	120
12	2 6	340	3 4	690	4 8	1,560	3 8	910	3 2	590	1 8	120
13	2 6	340	3 4	690	4 2	1,150	3 4	690	3 2	590	1 9	140
14	2 6	340	4 2	1,150	3 8	910	3 4	690	3 2	590	1 9	140
15	2 6	340	4 6	1,420	3 4	690	3 4	690	3 8	420	2 6	160
16	2 6	340	4 6	1,420	3 4	690	3 2	590	2 8	420	2 0	160
17	2 6	340	4 6	1,420	3 4	690	3 2	590	2 8	420	2 4	270
18	2 8	420	4 2	1,150	3 4	690	3 4	690	2 8	420	2 2	210
19	3 0	500	4 2	1,150	3 6	790	3 8	910	2 6	340	2 2	210
20	3 0	500	4 2	1,150	4 2	1,150	4 2	1,150	2 6	340	1 9	140
21	3 0	500	3 8	910	4 2	1,150	4 2	1,150	2 5	300	1 8	120
22	3 2	590	3 6	790	4 4	1,280	4 2	1,150	2 4	270	1 8	120
23	3 2	590	3 4	690	4 0	1,030	4 2	1,150	2 4	270	1 8	120
24	2 8	420	3 4	690	4 0	1,030	3 6	790	2 4	270	1 8	120
25	2 8	420	3 4	690	3 8	910	3 6	790	2 3	240	2 4	270
26	2 8	420	3 4	690	3 8	910	3 4	690	2 3	240	2 8	420
27	2 8	420	3 4	690	3 6	790	3 4	690	2 2	210	2 6	340
28	2 8	420	3 4	690	3 5	740	3 4	690	2 2	210	2 4	270
29	2 8	420	3 2	590	3 4	690	3 2	590	2 6	340	1 9	140
30	2 8	420			3 4	690	3 2	590	2 6	340	1 8	120
31	2 8	420			3 4	690			2 4	270		

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	120	1 3	35	1 20	25	0 50	3 0	5 00	1 700	2 80	420
2	1 7	100	1 3	35	1 30	35	0 50	3 0	4 10	1 090	2 70	380
3	1 6	80	1 3	35	1 10	17	0 50	3 0	4 10	1 090	2 60	340
4	1 6	80	1 3	35	1 05	14	0 50	3 0	3 40	690	3 00	690
5	1 4	45	1 3	35	1 00	12	0 45	2 5	3 20	590	3 20	590
6	1 4	45	1 6	80	1 00	12	0 45	2 5	3 10	540	3 00	500
7	1 4	45	1 4	45	1 60	12	0 45	2 5	2 90	460	2 80	420
8	1 3	35	1 3	35	1 00	12	0 45	2 5	2 90	450	2 60	340
9	1 2	25	1 3	35	1 00	12	0 45	2 7	2 80	420	2 60	340
10	1 2	25	1 2	25	0 90	9	0 40	2 6	2 80	420	2 60	340
11	1 2	25	1 1	17	0 89	9	0 40	2 0	2 60	340	2 60	340
12	1 2	25	1 0	12	0 90	9	0 40	2 1	2 60	340	2 90	460
13	1 2	25	1 0	12	0 85	8	0 40	2 0	2 40	270	3 40	690
14	1 2	25	1 6	12	0 85	8	0 40	2 0	2 40	270	3 20	590
15	1 4	45	1 0	12	0 80	7	0 50	3 0	2 40	270	3 20	590
16	2 6	340	0 9	9	0 80	7	0 60	4 0	2 40	270	3 00	590
17	2 8	420	0 9	9	0 80	7	0 60	4 0	2 60	340	3 20	590
18	2 6	340	0 9	9	0 80	7	0 60	4 0	3 00	500	2 80	420
19	2 6	340	0 9	9	0 80	7	0 60	4 0	3 00	500	2 80	420
20	2 2	210	0 9	9	0 75	6	0 70	5 6	3 00	500	2 60	340
21	2 0	160	0 9	9	0 75	6	0 70	5 0	2 80	420	2 60	340
22	2 2	210	0 9	9	0 75	6	0 80	7 0	2 80	420	2 80	420
23	1 8	120	0 8	7	0 75	6	0 90	9 0	2 80	420	2 80	420
24	2 4	270	0 8	7	0 70	5	0 90	9 0	2 80	420	2 60	340
25	3 2	590	0 8	7	0 70	5	0 90	9 0	2 80	420	2 40	270
26	2 6	340	0 8	7	0 60	4	0 90	9 0	3 20	590	2 40	270
27	2 0	160	0 8	7	0 60	4	0 90	9 0	3 20	590	2 40	270
28	1 8	120	0 8	7	0 50	3	0 90	9 0	2 80	420	2 40	270
29	1 4	45	0 8	7	0 50	3	2 40	270 0	2 80	420	90	460
30	1 4	45	0 8	7	0 50	3	3 50	740 0	2 80	420	2 90	460
31	1 4	45	0 8	7			5 20	1,840 0			3 40	690

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*Monthly Discharge of Koksilah River 2 Miles above Mouth, for 1916.*

(Drainage area, 124 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximim.	Minimum.	Mean.	Per square Mde.	Depth in inches on Drainage Area.	Total in Acre-feet.
January.....	500	340	427	3.44	3.97	26,300
February.....	1,420	420	755	6.09	6.57	43,400
March.....	1,980	590	989	7.98	9.20	60,800
April.....	1,150	590	766	6.18	6.90	43,600
May.....	790	210	470	3.79	4.37	28,900
June.....	120	120	181	1.46	1.63	10,800
July.....	59	25	145	1.17	1.35	8,920
August.....	80	7	19	0.15	0.17	1,170
September.....	35	3	9	0.07	0.08	536
October.....	1,840	2	96	0.77	0.89	5,900
November.....	1,700	270	520	4.19	4.68	36,900
December.....	690	270	156	3.52	4.05	26,800
The year.....	1,980	2	402	3.24	13.87	290,626

## LITTLE QUALICUM RIVER (1031).

*Location.*—At outlet from Cameron lake, downstream side of highway bridge.*Records Available.*—Daily discharges February 27, 1913 to December 21, 1916.*Drainage Area.*—Fifty-four square miles.*Gauge.*—Twelve-foot wooden staff nailed to crib near shore of lake 500 feet from head of river. Read twice daily by Mr. T. B. McBey.*Channel.*—Straight on both sides of section for 100 feet. Even gravel bed. Confined by bridge abutments in high water.*Discharge Measurements.*—Eight in 1913 and 1914 by Provincial Water Rights Branch, nine in 1914, 1915 and 1916, cover all stages.*Winter Flow.*—Open all year.*Accuracy.*—"A" between discharge of 30 and 600 cubic feet per second; "B" between discharge of 600 and 1,000 cubic feet per second; "C" above discharge of 1,000 cubic feet per second.*Co-operation.*—Provincial Water Rights Branch established station in 1913.*Discharge Measurements of Little Qualicum River at Cameron Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 20	H. C. Hughes	1046	58	157	2.53	2.83	397
Oct. 30	M. Balls	1016	50	57	1.84	1.05	105

*Daily Gauge Height and Discharge of Little Qualicum River at Cameron Lake, for 1916.*

(Drainage area 54 square miles)

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 35	325	1 15	118	2 49	353	2 31	317	2 70	490	2 80	420
2	2 15	285	1 15	118	2 39	333	2 30	315	2 80	420	2 77	414
3	1 98	251	1 14	116	2 33	321	2 30	315	2 95	458	2 80	420
4	1 87	229	1 14	116	2 30	315	2 36	321	3 25	523	3 30	535
5	1 78	212	1 14	116	2 18	291	2 41	337	3 40	560	3 17	504
6	1 72	203	1 14	116	2 45	345	2 39	337	3 42	565	3 15	500
7	1 69	197	1 14	116	2 23	301	2 39	337	3 46	575	2 90	445
8	1 63	190	1 14	116	2 52	359	2 44	355	3 31	557	2 88	440
9	1 59	183	1 13	115	3 59	585	2 49	355	3 15	500	2 88	440
10	1 54	176	1 21	127	1 42	856	2 41	337	3 00	470	2 79	417
11	1 54	176	1 29	125	5 10	1,060	2 42	339	2 89	442	2 70	400
12	1 62	187	1 20	125	5 00	1,030	2 49	353	2 67	392	2 80	420
13	1 57	180	1 22	128	5 00	1,030	2 49	353	2 53	361	2 92	450
14	1 53	178	1 25	137	3 45	715	2 58	371	2 47	349	3 10	490
15	1 50	170	1 80	215	3 75	655	2 80	420	2 39	333	3 40	582
16	1 37	150	4 22	766	3 60	610	2 90	445	2 47	349	3 85	685
17	1 29	138	5 31	1,120	3 49	582	2 88	410	2 59	373	4 10	760
18	1 25	133	4 35	835	2 24	518	2 45	432	2 83	498	4 10	760
19	1 19	123	4 25	835	2 98	466	2 81	423	3 00	470	3 87	691
20	1 21	127	4 35	835	2 80	415	2 79	418	3 00	470	3 18	580
21	1 29	125	3 55	715	2 90	445	2 77	414	3 00	470	3 29	532
22	1 18	122	3 77	661	2 87	437	2 68	395	2 88	416	3 16	502
23	1 10	119	3 53	598	2 83	427	2 50	373	2 69	397	3 00	470
24	1 16	119	3 25	523	2 80	420	2 49	353	2 51	357	3 00	470
25	1 16	119	2 97	462	2 69	397	2 48	351	2 49	353	3 00	470
26	1 15	118	2 88	440	2 68	395	2 48	351	2 54	363	3 00	470
27	1 15	118	2 76	412	2 65	388	2 56	367	2 83	428	3 19	508
28	1 14	116	2 69	397	2 59	373	2 59	397	2 90	443	3 18	506
29	1 14	116	2 58	370	2 53	361	2 70	400	3 00	470	3 14	498
30	1 15	118			2 41	343	2 70	400	2 89	442	2 99	467
31	1 15	118			2 39	333			2 79	417		
	July.		August.		September.		October.		November.		December.	
1	2 97	462	1 76	209	0 84	76	0 50	40	1 55	177	1 51	171
2	2 91	447	1 69	198	0 80	70	0 50	40	1 75	207	1 54	171
3	2 86	435	1 66	194	0 80	70	0 50	40	1 91	237	1 62	188
4	2 79	418	1 59	183	0 80	70	0 50	40	2 12	279	1 78	212
5	2 60	375	1 58	182	0 79	69	0 50	40	2 25	307	1 94	243
6	2 60	375	1 56	179	0 78	68	0 50	40	2 42	339	1 86	227
7	2 49	353	1 50	159	0 76	66	0 50	40	2 43	341	1 76	213
8	2 40	335	1 50	159	0 75	65	0 50	40	2 57	369	1 75	207
9	2 40	335	1 47	165	0 75	65	0 50	40	2 99	313	1 69	198
10	2 43	335	1 43	159	0 75	65	0 49	39	2 30	315	1 59	183
11	2 19	335	1 39	153	0 74	64	0 49	39	2 25	395	1 54	176
12	2 49	435	1 36	149	0 72	62	0 49	39	2 08	271	1 51	171
13	2 49	435	1 31	141	0 71	61	0 49	39	1 87	229	1 50	170
14	2 49	435	1 28	137	0 70	60	0 49	39	1 67	195	1 50	170
15	2 47	449	1 24	131	0 69	59	0 49	39	1 48	167	1 51	171
16	2 49	453	1 20	125	0 68	58	0 48	38	1 39	153	1 51	171
17	2 50	455	1 17	120	0 68	58	0 48	38	1 38	152	1 48	167
18	2 50	455	1 14	116	0 68	58	0 47	37	1 33	144	1 48	167
19	2 49	453	1 09	109	0 67	57	0 47	37	1 29	138	1 49	169
20	2 47	449	1 07	107	0 66	56	0 47	37	1 28	137	1 50	170
21	2 46	447	1 03	103	0 64	54	0 47	37	1 23	129	1 51	171
22	2 35	425	1 00	100	0 62	52	0 47	37	1 20	125	1 52	173
23	2 19	393	0 99	99	0 61	51	0 46	36	1 16	118	1 52	173
24	2 18	391	0 99	99	0 60	50	0 45	35	1 05	105	1 50	170
25	2 15	385	0 98	97	0 59	49	0 45	35	1 10	110	1 47	165
26	2 06	367	0 98	97	0 57	47	0 45	35	1 22	128	1 43	159
27	2 06	367	0 98	97	0 56	46	0 45	35	1 31	141	1 39	153
28	2 06	367	0 95	93	0 55	45	0 45	35	1 39	148	1 38	152
29	1 97	349	0 93	89	0 55	45	0 45	35	1 47	165	1 31	141
30	1 89	333	0 91	86	0 53	43	1 15	117	1 51	171	1 27	135
31	1 87	329	0 88	82			1 54	176			1 28	137



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*Monthly Discharge of Little Qualicum River at Cameron Lake, for 1916.*

Drainage area, 54 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	225	116	165	3.06	3.51	10,100
February	1,120	115	374	6.92	7.46	21,566
March	1,060	291	500	9.26	10.76	30,700
April	445	315	370	6.85	7.64	22,000
May	575	333	438	8.11	9.35	26,900
June	760	400	508	9.40	10.51	30,200
July	462	229	375	6.20	7.15	20,500
August	209	82	173	2.46	2.84	8,180
September	76	43	59	1.09	1.22	3,510
October	176	35	47	0.87	1.00	2,890
November	341	105	291	3.72	4.15	12,000
December	243	135	175	3.24	3.74	10,800
<b>Total year</b>	<b>1,120</b>	<b>35</b>	<b>276</b>	<b>5.10</b>	<b>69.28</b>	<b>199,380</b>

## NANAIMO RIVER (1028).

*Location.*—Six miles from mouth, 800 feet upstream from Canadian Collieries Railway bridge, 8 miles from Ladysmith.

*Records Available.*—Daily discharges February 11, 1913 to December 31, 1916.

*Drainage Area.*—Two hundred and forty-nine square miles.

*Gauge.*—Twelve-foot wooden staff nailed to tree, left bank, 25 feet above section. Gauge read daily by Miss Jeane Whisker.

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

*Discharge Measurements.*—One in 1911, four in 1913 and two in 1914 by Provincial Water Rights Branch, two in 1914, three in 1915 and two in 1916 cover all but highest stage.

*Winter Flow.*—Open all year.

*Accuracy.*—"B" up to discharge of 3,000 cubic feet per second; "C" above discharge of 3,000 cubic feet per second.

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

*Discharge Measurements of Nanaimo River at Can. Co. Ry. Bridge, for 1916.*

Date	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 29	Webb and Balls	1,505	134	472	3.88	3.45	1,830
Nov. 3	M. Balls	1,046	139	586	5.96	4.44	3,490

Daily Gauge Height and Discharge of Nanaimo River 6 Miles above Mouth, for 1916.

(Drainage area, 249 square miles.)

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 45	790	1 95	495	2 96	1,170	2 97	1,180	3 61	1,860	3 14	1,340
2	2 49	814	1 88	460	3 10	1,300	3 18	1,380	3 98	2,370	3 22	1,420
3	2 22	652	1 86	450	2 83	1,060	3 57	1,810	4 41	3,260	3 20	1,400
4	2 09	574	1 82	430	2 87	1,100	3 91	2,270	4 45	3,340	3 27	1,470
5	2 02	532	1 81	425	2 76	1,010	3 89	2,250	4 32	3,070	3 50	1,720
6	1 99	515		450	2 78	1,020	3 64	1,900	4 43	3,300	3 08	1,280
7	1 96	500		480	3 86	2,200	3 39	1,590	4 42	3,280	3 05	1,250
8	1 92	480	2 00	520	4 17	2,700	3 63	1,800	4 08	2,570	3 16	1,360
9	1 88	460	2 58	878	5 61	5,950	3 72	2,010	3 78	2,090	3 11	1,310
10	1 83	435	2 62	904	6 24	7,400	3 86	2,200	2 99	1,190	2 93	1,140
11	1 68	372	2 79	1,030	09	6,990	3 82	2,150	3 18	1,380	2 83	1,060
12	1 55	320	3 42	1,620	81	6,410	3 57	1,810	2 85	1,080	2 98	1,180
13	1 66	364	3 10	1,300	7 17	4,960	3 40	1,600	2 78	1,010	3 50	1,720
14	1 79	416	4 65	3,780	5 05	4,690	4 31	3,050	2 79	1,030	3 86	2,200
15	2 35	730	8 72	13,100	4 27	2,970	3 99	2,390	3 16	1,360	3 98	2,370
16	2 43	778	7 41	10,100	3 45	1,660	3 95	2,330	3 62	1,880	4 13	2,670
17	1 87	455	6 74	8,550	3 44	1,650	3 71	1,990	3 89	2,250	4 28	2,900
18	1 79	416	4 95	4,470	3 34	1,540	3 99	2,390	4 39	3,220	4 08	2,570
19	1 57	328	4 56	3,580	3 27	1,470	4 24	2,900	4 09	2,590	3 48	1,700
20	1 49	297	4 45	3,340	3 35	1,550	3 51	1,770	3 47	1,680	2 97	1,180
21	1 62	348	4 39	3,220	4 14	2,690	3 56	1,800	3 21	1,410	2 93	1,140
22	1 81	425	4 40	3,240	4 85	4,230	3 41	1,610	3 18	1,380	2 88	1,100
23	2 99	1,190	3 85	2,190	4 99	4,560	3 34	1,540	2 94	1,150	2 83	1,060
24	3 05	1,250	3 72	2,010	5 15	4,920	3 24	1,440	2 99	1,190	2 85	1,080
25	2 79	1,035	3 38	1,580	5 19	5,010	3 27	1,470	3 11	1,310	3 06	1,260
26	2 52	854	3 40	1,600	5 46	5,610	3 35	1,550	3 57	1,810	3 14	1,340
27	2 58	876	3 39	1,590	4 21	2,840	3 32	1,520	3 34	1,540	3 00	1,290
28	2 52	834	3 27	1,470	3 46	1,670	3 65	1,920	3 65	1,920	3 22	1,420
29	2 10	580	3 13	1,330	3 37	1,570	3 58	1,820	3 33	1,530	3 16	1,360
30	2 07	562			3 19	1,390	3 37	1,570	3 41	1,610	2 91	1,130
31	2 00	520			3 07	1,270			3 13	1,330		

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 84	1,070	1 86	450	0 90	130	0 40	60	3 73	2,020	2 37	742
2		1,060	1 78	412	0 88	126	0 42	62	3 54	2,310	2 33	718
3	2 82	1,060	1 69	376	0 85	120	0 42	62	4 66	3,800	2 83	2,160
4	2 69	953	1 67	368	0 82	114	0 40	60	4 77	3,910	3 51	1,730
5	2 57	869		366	0 77	104	0 40	60	4 12	2,650	3 06	1,260
6	2 48	808	1 66	364	0 81	112	0 39	59	3 36	1,590	2 71	968
7	2 37	742	1 68	372	0 80	110	0 36	56	2 87	1,100	2 46	796
8	2 41	766	1 61	344	0 76	102	0 36	56	3 67	1,940	2 32	712
9	2 47	802	1 55	320	0 83	116	0 36	56	3 31	1,510	2 36	815
10	2 42	772	1 49	297	0 69	89	0 35	55	3 11	1,310	2 03	538
11	2 43	778	1 45	283	0 69	89	0 35	55	2 71	968	1 95	495
12	2 49	814	1 41	273	0 67	87	0 35	55	2 40	760	2 15	610
13	2 39	754	1 39	267	0 66	86	0 35	55	2 16	616	2 28	688
14	2 29	694	1 37	261	0 62	82	0 34	54	1 97	505	2 23	658
15	2 34	724	1 35	255	0 58	78	0 34	54	1 83	435	2 18	628
16	3 04	1,240	1 29	237	0 58	78	0 34	54	1 71	384	2 13	598
17	2 99	1,190	1 26	228	0 57	77	0 33	53	1 61	344	2 06	556
18	2 70	960	1 19	207	0 56	76	0 33	53	1 61	344	2 27	682
19	2 59	883	1 15	195	0 55	75	0 31	51	1 59	336	2 59	883
20	2 53	841	1 08	174	0 52	72	0 31	51	1 61	344	2 61	897
21	2 43	778	1 06	168	0 51	71	0 31	51	1 52	308	2 47	802
22	2 40	760	1 02	156	0 49	69	0 27	47	1 46	288	2 25	670
23	2 35	730	1 05	167	0 48	68	0 30	50	1 43	273	2 26	676
24	2 28	688	1 02	158	0 46	66	0 30	50	1 39	267	2 12	592
25	2 20	610	1 00	150	0 46	66	0 31	51	1 47	291	2 01	526
26	2 11	586	1 09	150	0 45	65	0 31	51	1 77	408	1 88	460
27	2 07	562	0 98	116	0 45	65	0 31	51	2 43	778	1 85	445
28	2 00	520	1 02	156	0 44	64	0 32	52	2 67	939	1 77	408
29	1 94	490	1 05	165	0 44	64	1 60	340	2 70	960	1 69	376
30	1 95	495	1 00	150	0 42	62	2 09	574	2 56	862	1 68	372
31	1 91	475	0 93	136			3 93	2,390			1 63	352

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*Monthly Discharge of Nanaimo River 6 Miles above Mouth, for 1916.*

(Drainage area, 219 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	1,250	297	602	2.42	2.79	37,000
February	13,100	425	2,570	10.30	11.10	148,000
March	7,100	1,910	3,050	12.30	11.20	188,000
April	3,650	1,180	1,300	7.63	8.51	113,000
May	3,310	1,040	1,910	7.79	8.28	113,000
June	2,990	1,060	1,520	6.11	6.82	90,400
July	1,210	175	790	3.18	3.67	48,600
August	450	136	250	1.00	1.15	15,400
September	130	62	85	0.35	0.39	5,120
October	2,300	47	153	0.61	0.70	9,410
November	3,910	267	1,080	4.34	4.81	64,300
December	2,160	352	730	2.93	3.28	44,900
The year	13,100	47	1,220	4.91	66.53	883,130

NOTE.—The gauge height-discharge relations may be affected by floating ice from lakes from February 13 to 17.

## OYSTER RIVER (1040).

*Location.*—One mile above mouth at Island Highway bridge, 18 miles from Courtenay.

*Records Available.*—Daily discharges June, 1914 to December 31, 1916.

*Drainage Area.*—Seventy square miles.

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

*Channel.*—Straight for 100 feet above and 400 feet below section; stream flows at a small angle to bridge.

*Discharge Measurements.*—Control changed in fall of 1915. Three measurements define 1916 curve.

*Winter Flow.*—Stream frozen over during January and February. This is an exceptional condition.

*Accuracy.*—"C."

*Discharge Measurements of Oyster River 1 Mile from Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	ft. per sec.	Feet.	Sec. ft.
April 13	Balls & Webb.	1,505	127	262.0	3.42	2.95	896 <sup>1</sup>
Oct. 26	M. Balls	1,045	27	20.4	1.71	1.30	25 <sup>2</sup>

<sup>1</sup> No gauge reader.

<sup>2</sup> Gauge height affected by channel change.

## Daily Gauge Height and Discharge of Oyster River 1 Mile above Mouth, for 1916.

(Drainage area, 70 square miles.)

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	300						630			3 40	1,230
2	2 00	300						820			3 40	1,230
3	1 90	255						3 05	940		3 40	1,230
4	1 80	215						3 30	1,140		3 20	1,060
5	1 85	235						3 30	1,110		3 20	1,060
6	1 90	255			2 20	396		2 15	1,020		3 20	1,060
7	1 90	255			2 25	426		3 05	940		3 10	980
8	1 90	255			3 15	1,020		3 20	1,100		3 10	980
9	1 90	255			5 00	3,500					3 00	900
10					5 00	3,500					3 10	980
11					5 00	3,500					3 20	1,060
12					4 45	2,490					3 40	1,230
13					3 85	1,700		2 95	860		3 50	1,320
14					3 30	1,140					3 80	1,640
15					3 05	910					4 10	2,060
16					2 90	820					4 20	2,130
17					2 75	715					4 30	2,270
18					2 60	620					4 20	2,130
19					2 50	560					3 70	1,530
20					2 50	560					3 30	1,140
21					2 65	650					3 30	1,140
22					2 70	680					3 50	1,320
23					2 70	680					3 40	1,230
24					2 60	620					3 30	1,140
25					2 65	650					3 70	1,530
26					2 60	620					3 60	1,420
27					2 60	620					3 50	1,320
28					2 55	590					3 30	1,140
29					2 40	500					3 10	980
30					2 35	475					3 10	980
31					2 30	445						
	July.		August.		September.		October.		November.		December.	
1	3 20	1,060	2 40	500	1 80	215	1 40	70	2 40	345	1 00	255
2	3 10	980	2 30	415	1 80	215	1 40	70	2 25	305	2 00	300
3	3 30	1,140	2 30	415	1 80	215	1 40	70	2 20	305	2 50	560
4	3 00	900	2 30	395	1 80	215	1 40	70	2 25	305	2 30	445
5	2 90	820	2 20	305	1 80	215	1 40	70	2 10	315	2 10	545
6	2 80	750	2 20	395	1 70	175	1 40	70	2 15	315	1 00	255
7	3 90	1,750	2 20	395	1 70	175	1 40	70	2 10	315	1 80	215
8	3 90	1,750	2 20	395	1 70	175	1 40	70	2 00	300	1 80	215
9	3 10	980	2 20	395	1 70	175	1 30	40	2 10	315	1 80	215
10	3 00	900	2 20	395	1 70	175	1 30	40	2 10	315	1 80	215
11	3 10	980	2 20	395	1 60	135	1 30	40	2 10	315	1 80	215
12	3 15	980	2 20	395	1 60	135	1 30	40	2 00	300	1 80	215
13	3 00	900	2 10	315	1 60	135	1 30	40	1 90	255	1 80	215
14	3 10	980	2 10	315	1 60	135	1 30	40	1 90	255	1 80	215
15	3 10	980	2 10	315	1 60	135	1 30	40	1 80	215	1 70	175
16	3 70	1,530	2 00	300	1 60	135	1 30	40	1 70	175	1 70	175
17	3 10	1,230	2 00	300	1 50	100	1 30	40	1 70	175	1 70	175
18	3 10	980	1 90	255	1 50	100	1 30	40	1 70	175	1 70	175
19	3 00	900	1 80	215	1 50	100	1 30	40	1 70	175	1 70	175
20	2 90	820	1 70	175	1 50	100	1 30	40	1 80	135	1 70	175
21	2 80	750	1 70	175	1 50	100	1 30	40	1 60	135	1 70	175
22	2 70	680	1 70	175	1 50	100	1 30	40	1 60	135	1 70	175
23	2 70	680	1 70	175	1 50	100	1 30	40	1 60	135	1 70	175
24	2 60	620	1 70	175	1 50	100	1 30	40	1 60	135	1 60	135
25	2 60	620	1 70	175	1 50	100	1 30	40	1 60	135	1 60	135
26	2 50	560	1 70	175	1 50	100	1 30	40	1 60	135	1 50	100
27	2 50	560	1 80	215	1 50	100	1 30	40	2 10	345	1 50	100
28	2 50	560	1 80	215	1 40	70	1 50	100	1 90	255	1 50	100
29	2 40	500	1 80	215	1 40	70	1 95	278	1 80	215	1 40	70
30	2 40	500	1 70	175	1 40	70	1 80	215	1 80	215	1 10	70
31	2 40	500	1 70	175			2 20	395			1 50	100

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*Monthly Discharge of Oyster River 1 Mile above Mouth, for 1916.*

(Drainage area, 70 square miles.)

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN-OFF	
	Maximum.	Minimum	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January			223	3.23	3.72	13,950
February			175	2.50	2.70	10,100
March	3,500		918	13.10	15.60	58,300
April			887	12.70	14.20	52,800
May			1,000	14.30	16.50	61,500
June	2,270	900	1,310	18.70	20.90	78,000
July	1,750	500	897	12.80	11.80	55,200
August	500	175	290	4.27	4.92	18,400
September	215	70	139	1.94	2.16	8,090
October	395	40	75	1.07	1.23	4,610
November	395	135	253	3.61	4.03	15,100
December	560	70	202	2.89	3.33	12,400
The year . . . . .	3,500	40	531	9.30	10.40	388,400

NOTE.—Gauge height-discharge relation affected by ice Jan. 9 to Mar. 5. Daily discharges estimated at:

Jan. 9 to Jan. 31 . . . . . 215 c.f.s.

Feb. 1 to Feb. 29 . . . . . 175 c.f.s.

Mar. 1 to Mar. 5 . . . . . 200 c.f.s.

No gauge reader available April 8 to May 31—daily discharges estimated from climatic conditions and one meter measurement:

April 9 to April 30 . . . . . 850 c.f.s.

May 1 to May 31 . . . . . 1,000 c.f.s.

New rating for 1916—Change in control fall of 1915.

## PUNTLEDGE RIVER AT COURTENAY (1036).

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

*Records Available.*—Daily discharges May 30, 1914 to December 31, 1916 (1915 data revised for 1916 report).

*Drainage Area.*—Two hundred square miles.

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

*Channel.*—Straight for 800 feet upstream and 200 feet downstream from section. Two channels at extreme high water.

*Discharge Measurements.*—Four in 1914, three in 1915 and three in 1916 cover all but highest stage.

*Winter Flow.*—Open all year.

*Accuracy.*—B. A change in control in October 1915 made revision of 1915 data necessary.

## Daily Gauge Height and Discharge of Puntledge River near Mouth, for 1915.

(Drainage area, 200 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							1 80	490	4 60	3,680	3 07	1,630
2							1 70	440	4 45	3,430	3 25	1,820
3							1 55	365	4 25	3,130	3 45	2,050
4							1 55	365	4 15	2,980	3 65	2,300
5							1 50	340	3 95	2,700	3 85	2,560
6							1 50	340	3 60	2,240	4 05	2,840
7							1 50	340	3 35	1,930	4 15	2,080
8							1 50	340	3 20	1,770	4 35	3,280
9							1 50	340	3 10	1,660	4 40	3,360
10							1 45	320	3 00	1,550	4 47	3,460
11							1 45	320	2 90	1,450	4 37	3,310
12							1 45	320	2 80	1,360	3 90	2,630
13							1 50	310	2 80	1,360	3 55	2,170
14							1 50	340	2 80	1,360	3 35	1,930
15							1 50	340	2 85	1,400	3 15	1,710
16							1 50	310	2 90	1,450	2 95	1,500
17							1 50	340	2 85	1,400	2 80	1,360
18							1 50	350	2 85	1,400	2 80	1,360
19							1 55	365	2 80	1,360	2 90	1,450
20							1 82	500	2 80	1,360	3 28	1,860
21							2 65	1,070	2 75	1,310	3 15	1,710
22							3 45	1,840	2 75	1,310	3 10	1,660
23							4 12	2,740	2 80	1,360	3 00	1,550
24							4 05	2,630	2 80	1,360	3 00	1,550
25							4 45	3,270	2 82	1,380	3 00	1,550
26							5 05	4,350	2 87	1,420	2 90	1,450
27							4 80	4,020	2 90	1,450	2 85	1,400
28							5 05	4,440	2 90	1,450	2 75	1,310
29							4 85	4,100	2 97	1,520	2 68	1,250
30							4 75	3,930	3 00	1,550	2 65	1,220
31							4 60	3,680			2 58	1,150

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*Monthly Discharge of Puntledge River near Mouth, for 1915 (revised April, 1916).*

(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 Acres-feet
January	1,570	570	901	4.50	5.19	55,400
February	2,030	720	1,120	5.60	5.83	62,200
March	4,070	880	2,030	10.15	11.79	125,000
April	3,890	1,120	2,470	12.35	13.78	147,000
May	1,340	1,150	1,260	6.30	7.26	77,500
June	1,280	810	1,030	5.15	5.75	61,300
July	810	440	605	3.02	3.48	37,200
August	440	340	351	1.76	2.03	21,600
September	465	320	344	1.72	1.92	20,500
October	1,440	320	1,400	7.00	8.07	86,100
November	3,680	1,310	1,770	8.85	9.87	105,000
December	3,460	1,150	1,980	9.90	11.40	122,000
The year	4,400	320	1,270	6.36	86.28	920,800

NOTE.— Change in control October 26, 1915. New rating after that date.

*Discharge Measurements of Puntledge River 1 Mile above Mouth, for 1916.*

Date	Engineer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Feet per sec.	Feet.	Sec.-ft.
Mar. 16	H. C. Hughes	1,046	198	576	5.98	4.43	3,440
April 14	Balls and Webb	1,595	187	162	5.55	3.88	2,590
Oct. 26	M. Balls	1,045	111	122	2.56	1.40	513

## Daily Gauge Height and Discharge of Puntledge River near Mouth, for 1916.

(Drainage area, 200 square miles.)

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 55	1,120	1 65	492	3 10	1,660	2 50	1,080	3 20	1,770	4 00	2,770
2	2 52	1,100	1 65	492	2 80	1,750	2 50	1,080	3 55	2,470	4 00	2,770
3	2 48	1,060	1 65	492	2 50	1,080	2 50	1,040	3 75	2,430	4 00	2,770
4	2 42	1,020	1 65	492	2 20	850	2 50	1,080	3 5	2,700	4 00	2,770
5	2 40	1,000	1 65	492	2 20	850	2 50	1,080	4 25	3,130	3 90	2,630
6	2 38	985	1 65	492	1 90	1,550	2 50	1,080	4 55	3,590	3 90	2,630
7	2 27	902	1 65	492	3 90	2,630	2 50	1,080	1 50	3 510	3 90	2,630
8	2 17	829	1 65	492	4 50	3,510	3 20	1,770	4 37	3 110	3 95	2,700
9	2 12	794	1 65	492	4 60	3,680	4 10	2,910	4 27	3,160	4 00	2,770
10	2 10	780	1 70	520	4 00	3,080	3 82	2,530	4 25	3,170	1 95	2,840
11	2 10	780	1 72	532	4 00	3,080	3 70	2,370	4 22	3,090	4 10	2,910
12	2 00	710	1 82	592	4 70	3,850	3 65	2,300	4 20	3,060	4 15	2,980
13	2 00	710	2 15	815	1 70	3,870	3 57	2,200	4 12	2,940	4 20	3,060
14	1 90	640	2 50	1,080	4 85	3,760	3 47	2,070	3 95	2,700	4 25	3,130
15	1 90	640	2 90	1,450	4 17	3,400	3 37	1,960	3 80	2,500	4 35	3,280
16	1 80	580	3 05	1,600	4 35	3,280	3 25	1,820	3 80	2,500	4 55	3,590
17	1 80	580	3 20	1,770	4 30	3,210	3 17	1,740	3 80	2,500	4 80	4,020
18	1 80	580	3 55	2,170	4 45	2,980	3 15	1,710	3 85	2,560	4 90	4,190
19	1 80	580	3 75	2,130	4 95	2,840	3 15	1,710	3 90	2,630	4 88	4,160
20	1 80	580	3 80	2,500	3 87	2,590	3 15	1,710	3 90	2,630	4 78	3,990
21	1 80	580	3 75	2,430	3 80	2,500	3 15	1,710	3 90	2,630	4 75	3,930
22	1 75	550	3 50	2,110	3 78	2,470	3 90	1,710	3 90	2,630	4 70	3,850
23	1 75	550	3 50	2,110	3 65	2,300	3 15	1,710	3 95	2,700	4 60	3,680
24	1 75	550	3 50	2,110	3 55	2,170	3 42	1,680	3 97	2,730	4 60	3,680
25	1 75	550	3 48	2,090	3 40	1,990	3 07	1,630	4 00	2,770	4 55	3,590
26	1 70	520	3 40	1,990	3 60	1,550	2 97	1,520	4 05	2,840	4 48	3,480
27	1 70	520	3 30	1,880	2 65	1,220	2 80	1,150	4 07	2,870	4 42	3,390
28	1 70	520	3 20	1,770	2 50	1,080	2 80	1,450	4 00	2,770	4 38	3,330
29	1 65	492	3 20	1,770	2 50	1,080	2 90	1,450	4 00	2,770	4 28	3,180
30	1 65	492			2 50	1,080	2 90	1,450	4 00	2,770	4 20	3,060
31	1 65	492			2 50	1,080			4 00	2,770		
	July		August		September		October		November		December	
1	3 95	2,700	2 87	1,420	1 90	640	1 65	493	1 80	580	1 90	640
2	3 78	2,470	2 80	1,360	1 95	675	1 60	465	1 80	580	1 95	675
3	3 70	2,370	2 75	1,320	1 95	675	1 60	465	1 80	580	2 70	1,270
4	3 70	2,370	2 57	1,140	1 95	675	1 60	465	1 80	580	2 35	963
5	3 65	2,300	2 50	1,080	1 90	640	1 60	465	1 77	562	2 15	815
6	3 55	2,180	2 45	1,040	1 85	600	1 60	465	1 75	550	1 95	675
7	3 35	1,940	2 40	1,000	1 80	580	1 60	465	1 75	550	1 90	640
8	3 48	1,750	2 40	1,000	1 80	580	1 60	465	1 70	520	1 95	675
9	3 25	1,820	2 40	1,000	1 80	580	1 60	465	1 70	520	2 00	700
10	3 74	2,070	2 35	962	1 80	580	1 60	465	1 70	520	1 98	616
11	3 70	2,370	2 35	962	1 75	550	1 55	438	1 70	520	1 90	640
12	3 85	2,570	2 30	925	1 75	550	1 55	438	1 70	520	1 90	640
13	4 05	2,840	2 25	888	1 75	550	1 55	438	1 65	493	1 85	610
14	4 17	3,010	2 20	850	1 75	550	1 55	438	1 65	493	1 85	610
15	4 20	3,060	2 15	815	1 75	550	1 90	170	1 65	493	1 80	580
16	4 10	2,910	2 17	820	1 70	520	1 55	438	1 65	493	1 80	580
17	4 07	2,870	2 20	850	1 70	520	1 55	438	1 65	493	1 80	580
18	3 95	2,700	2 17	820	1 65	463	1 55	438	1 65	493	1 75	550
19	3 95	2,700	2 15	815	1 60	465	1 55	438	1 62	476	1 75	550
20	3 95	2,700	2 10	780	1 55	438	1 55	438	1 60	465	1 70	520
21	3 98	2,740	2 05	745	1 60	465	1 55	438	1 60	465	1 70	520
22	3 95	2,700	1 99	710	1 65	493	1 50	410	1 60	465	1 70	520
23	3 85	2,570	1 95	675	1 65	493	1 48	399	1 60	465	1 70	520
24	3 65	2,300	1 88	628	1 65	493	1 45	383	1 60	465	1 70	520
25	3 57	2,200	1 80	580	1 60	465	1 40	370	1 67	503	1 70	520
26	3 52	2,140	1 80	580	1 60	465	1 40	365	2 15	815	1 70	520
27	3 65	2,600	1 80	580	1 60	465	1 40	365	2 45	1,040	1 70	520
28	2 42	1,020	1 80	580	1 60	465	1 70	520	2 40	1,000	1 70	520
29	2 50	1,080	1 80	580	1 65	493	1 70	520	2 25	888	1 70	520
30	2 77	1,330	1 80	580	1 70	520	2 00	710	2 05	745	1 82	592
31	2 95	1,500	1 85	610			2 10	780			1 85	610



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## Monthly Discharge of Puntledge River near Mouth, for 1916.

(Drainage area, 200 square miles)

Month	DISCHARGE IN SECONDS FEET				R.S.O.	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre Feet
January	1,120	492	700	3.50	4.04	43,000
February	2,500	492	1,410	6.55	7.16	73,400
March	3,850	850	2,450	10.80	14.60	145,000
April	2,910	1,080	1,670	8.35	9.32	99,400
May	3,500	1,770	2,780	11.90	16.00	171,000
June	4,190	2,630	3,200	16.30	18.20	194,000
July	3,060	1,420	2,200	11.40	13.10	141,000
August	1,490	570	861	4.30	4.66	52,000
September	675	165	341	2.70	4.01	32,200
October	780	170	452	2.26	2.61	27,800
November	1,040	465	578	2.89	3.22	34,400
December	1,270	570	620	3.14	3.62	38,700
The year	4,190	370	1,450	7.28	9.74	1,054,800

## PUNTELEDGE RIVER AT DIVERSION DAM (1063).

*Location.* At Diversion dam of Puntledge River Hydro-Electric Installation, Canadian Collieries (Dunsmuir) Ltd.

*Records Available.* Daily discharges June 7, 1913 to December 31, 1916, supplied by Canadian Collieries Ltd.

*Drainage Area.* One hundred and seventy-five square miles.

*Gauge.* Wooden staff located on right bank 50 feet above diversion dam.

*Channel.* Even flow over crest of dam. Water flowing through flume to intake is added, giving total flow of stream.

*Discharge Measurements.* Daily discharges obtained by weir measurements over dam plus water to flume.

*Winter Flow.* Open all year.

*Co-operation.* All data on this station supplied by Canadian Collieries (Dunsmuir) Ltd.

## Daily Gauge Height and Discharge of Puntledge River at Diversion Dam, for 1916.

(Drainage area, 175 square miles)

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		1,200		480		1,400		850		1,140		1,990
2		1,240		480		1,600		850		1,220		1,990
3		1,240		480		840		850		1,160		1,990
4		1,150		480		770		950		2,850		2,080
5		980		480		720		1,000		2,860		2,080
6		740		480		720		1,150		2,870		2,080
7		650		480		720		1,150		2,740		2,080
8		650		480		720		2,650		2,740		2,080
9		600		480		1,080		2,570		2,740		2,080
10		600		560		1,880		2,170		2,580		2,080
11		580		560		2,280		1,960		2,560		2,080
12		580		560		3,000		1,900		2,570		2,080
13		570		560		3,750		1,760		1,720		2,080
14		570		620		3,700		1,760		1,580		2,080
15		560		1,120		3,340		1,770		1,450		2,180
16		560		1,460		3,300		1,640		1,670		2,290
17		560		1,950		3,080		1,420		1,660		2,290
18		560		2,000		2,870		1,420		1,970		2,290
19		560		1,950		2,370		1,300		2,080		2,380
20		550		1,750		2,200		1,390		2,180		2,480
21		560		1,850		1,970		1,390		2,280		2,480
22		560		2,140		1,770		1,380		2,200		2,400
23		560		2,350		1,800		1,380		2,000		2,400
24				2,080		1,640		1,300		1,880		2,400
25				1,850		1,640		1,320		1,870		2,400
26		520		1,880		1,500		1,200		1,860		2,400
27		520		1,750		1,550		980		1,860		2,400
28		520		1,710		850		980		1,990		2,400
29		520		1,700		850		980		1,990		2,400
30		480				850		980		1,990		1,880
31		480				850				1,990		
	July.		August.		September.		October.		November.		December.	
1		980		860		480		400		360		500
2		980		870		480		400		360		500
3		980		920		480		400		360		540
4		980		860		180		400		400		540
5		980		860		480		400		490		540
6		1,060		860		480		400		400		540
7		930		860		480		400		400		540
8		500		860		480		400		400		540
9		500		860		480		400		400		540
10		500		860		480		400		450		540
11		540		860		480		400		450		540
12		550		780		480		400		450		540
13		840		780		480		400		450		500
14		810		780		480		400		450		500
15		1,800		780		480		400		450		500
16		1,900		860		180		400		450		500
17		2,520		860		440		340		450		500
18		2,450		780		440		340		450		500
19		2,450		780		440		340		450		500
20		2,450		780		440		340		450		500
21		2,450		780		440		340		400		500
22		2,450		780		440		340		400		500
23		2,450		480		440		320		400		500
24		2,150		480		440		320		400		440
25		1,900		480		440		320		400		440
26		1,900		480		440		320		400		440
27		620		480		400		320		450		440
28		660		480		400		320		450		440
29		660		180		400		320		450		440
30		860		480		400		350		480		440
31		860		480				350				440

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## Monthly Discharge of Punledge River at Diversion Dam, for 1916.

Drainage area, 175 square miles.

MONTH	DISCHARGE IN SECONDS-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
January	1,260	480	964	5.79	4.37	40,800
February	2,350	480	1,200	6.86	7.40	69,000
March	3,760	20	1,840	10.50	12.10	113,400
April	2,950	850	1,420	8.12	9.06	84,500
May	2,870	1,140	2,080	11.90	13.70	128,000
June	2,480	1,880	2,210	12.60	14.10	132,000
July	2,520	500	1,350	7.72	8.90	83,000
August	920	480	728	4.16	4.80	44,800
September	480	400	455	2.60	2.90	27,100
October	400	320	368	2.10	2.42	22,600
November	480	360	422	2.41	2.69	25,100
December	540	410	492	2.81	3.24	30,300
The year	1,760	320	1,102	6.30	8.68	800,200

NOTE.—Data supplied by Canadian Collieries Co. (Dunsmuir) Ltd.

## SHAWNIGAN CREEK (1025).

*Location.*—Five hundred feet from outlet of Shawnigan Lake. Upstream side of Esquimalt and Nanaimo Railway bridge.

*Records Available.*—Daily discharges May 11, 1914 to December 31, 1916.

*Drainage Area.*—Twenty-two square miles.

*Gauge.*—Nine-foot enamel staff, nailed to piling on left downstream side of highway bridge at outlet from lake. Gauge read daily by Mr. G. B. Aitkens.

*Channel.*—Straight for 50 feet on either side of section; gravel and sand bed.

*Discharge Measurements.*—Four in 1914, three in 1915 and three in 1916 cover all stages.

*Winter Flow.*—Open all year.

*Accuracy.*—"A" up to discharge of 280 cubic feet per second; "B" above 280 cubic feet per second.

NOTE.—Measurement of December 11, 1916, G. H. 303, made revision of discharge curve necessary.

## Discharge Measurements of Shawnigan Creek near Shawnigan Lake, for 1916.

Date	Engineer	Altimeter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. Ft.	Ft. per sec.	Feet	Sec.-ft.
March 21	Webb and Balls	1 037	12.0	95.2	2.45	4.29	233 000
Nov. 9	M. Balls	1 046	15.7	15.4	0.28	1.21	5 810
Dec. 11	C. E. Webb	1 037	16.0	68.7	1.17	3.03	84 900

1 At R.R. bridge.

2 At highway bridge.

Daily Gauge Height and Discharge of Shawnigan Creek at Shawnigan Lake, for 1916.

(Drainage area, 22 square miles.)

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 20	222	3 20	103	4 00	194	4 10	208	2 50	64	1 80	19
2	4 10	208	3 20	103	4 00	194	4 10	194	2 50	57	1 70	16
3	3 30	156	3 20	103	3 20	180	3 30	180	2 60	57	1 70	16
4	3 20	154	3 10	94	3 30	180	3 30	166	2 55	54	1 70	16
5	3 60	142	3 10	94	3 30	166	3 70	154	2 50	50	1 65	15
6	3 50	132	3 10	94	3 30	166	3 60	112	2 45	48	1 60	15
7	3 40	122	3 10	94	3 30	180	3 50	132	2 40	45	1 60	13
8	3 30	112	3 10	94	3 35	393	3 45	127	2 50	50	1 60	13
9	3 25	108	3 10	94	6 00	400	3 40	122	2 50	50	1 60	13
10	3 20	103	3 15	96	6 20	520	3 40	122	2 40	45	1 55	12
11	3 10	94	3 30	112	6 20	520	3 30	112	2 10	45	1 50	11
12	3 05	90	3 40	122	6 20	520	3 25	108	2 35	43	1 50	11
13	3 00	85	3 50	132	6 40	490	3 20	103	2 30	40	1 50	11
14	2 55	82	3 70	154	5 70	445	3 15	99	2 30	40	1 45	10
15	2 50	78	1 20	222	5 40	400	3 10	94	2 20	35	1 40	9
16	2 80	71	5 30	385	5 10	355	3 05	90	2 20	35	1 40	9
17	2 70	64	5 60	430	4 30	325	3 00	85	2 20	35	1 40	9
18	2 70	64	5 60	430	4 70	295	3 00	85	2 20	35	1 40	9
19	2 60	57	5 40	400	4 10	250	2 55	82	2 10	30	1 35	8
20	2 60	57	5 30	385	4 30	236	2 50	78	2 10	30	1 30	7
21	2 60	57	5 10	355	4 30	236	2 50	78	2 05	28	1 30	7
22	2 70	64	4 30	325	4 60	280	2 50	78	2 00	26	1 30	7
23	3 00	85	4 80	310	4 70	295	2 50	78	1 95	24	1 30	7
24	3 10	94	4 70	295	1 60	280	2 45	75	1 90	22	1 25	6
25	3 20	103	4 50	265	4 50	265	2 45	75	1 90	22	1 25	6
26	3 40	122	4 30	236	4 50	265	2 80	71	1 90	22	1 30	7
27	3 45	127	4 20	222	4 60	280	2 80	71	1 85	21	1 30	7
28	3 35	117	4 10	208	4 50	265	2 75	68	1 80	19	1 30	7
29	3 30	112	4 05	201	4 40	250	2 75	68	1 80	19	1 30	7
30	3 25	108			4 30	236	2 70	64	1 80	19	1 30	7
31	3 25	108			4 20	222			1 75	18		

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 30	7 0	1 00	3 0	0 70	1 5	0 10	0 0	0 70	1 5	2 00	26
2	1 30	7 0	1 00	3 0	0 70	1 5	0 10	0 0	0 80	2 0	2 10	30
3	1 25	6 0	1 00	3 0	0 70	1 5	0 10	0 0	0 90	2 5	2 35	42
4	1 20	5 0	1 00	3 0	0 70	1 5	0 05	0 0	1 00	3 0	2 70	61
5	1 20	5 0	1 00	3 0	0 70	1 5	0 00	0 0	1 05	3 5	2 90	78
6	1 20	5 0	1 00	3 0	0 70	1 5	0 00	0 0	1 10	4 0	3 00	85
7	1 20	5 0	1 00	3 0	0 70	1 5	0 00	0 0	1 15	4 5	3 10	94
8	1 20	5 0	1 00	3 0	0 70	1 5	0 00	0 0	1 20	5 0	3 10	94
9	1 20	5 0	1 00	3 0	0 70	1 5	0 00	0 0	1 20	5 0	3 10	94
10	1 15	4 5	0 95	2 7	0 60	1 0	0 00	0 0	1 20	5 0	3 10	94
11	1 10	4 0	0 90	2 5	0 60	1 0	0 00	0 0	1 20	5 0	3 00	85
12	1 10	4 0	0 90	2 5	0 60	1 0	0 00	0 0	1 20	5 0	3 15	99
13	1 10	4 0	0 90	2 5	0 60	1 0	0 00	0 0	1 20	5 0	3 30	112
14	1 10	4 0	0 90	2 5	0 60	1 0	0 00	0 0	1 20	5 0	3 30	112
15	1 10	4 0	0 90	2 5	0 55	0 8	0 00	0 0	1 20	5 0	3 30	112
16	1 10	4 0	0 85	2 2	0 50	0 6	0 00	0 0	1 20	5 0	3 35	117
17	1 10	4 0	0 80	2 0	0 45	0 4	0 00	0 0	1 20	5 0	3 40	122
18	1 10	4 0	0 80	2 0	0 40	0 3	0 00	0 0	1 20	5 0	3 40	122
19	1 10	4 0	0 80	2 0	0 40	0 3	0 00	0 0	1 25	5 0	3 40	122
20	1 10	4 0	0 80	2 0	0 35	0 3	0 00	0 0	1 30	5 0	3 40	122
21	1 10	4 0	0 80	2 0	0 30	0 2	0 00	0 0	1 30	5 0	3 40	122
22	1 10	4 0	0 80	2 0	0 30	0 2	0 00	0 0	1 30	5 0	3 40	122
23	1 10	4 0	0 80	2 0	0 25	0 1	0 00	0 0	1 30	5 0	3 40	122
24	1 10	4 0	0 80	2 0	0 20	0 1	0 00	0 0	1 30	5 0	3 40	122
25	1 10	4 0	0 80	2 0	0 15	0 1	0 00	0 0	1 30	5 0	3 40	122
26	1 10	4 0	0 70	1 5	0 10	0 0	0 00	0 0	1 35	5 0	3 30	112
27	1 10	4 0	0 70	1 5	0 10	0 0	0 00	0 0	1 50	11 0	3 20	103
28	1 05	3 5	0 70	1 5	0 10	0 0	0 00	0 0	1 70	16 0	3 20	103
29	1 00	3 0	0 70	1 5	0 10	0 0	0 00	0 0	1 80	19 0	3 10	94
30	1 00	3 0	0 70	1 5	0 10	0 0	0 35	0 2	1 90	22 0	3 10	94
31	1 00	3 0	0 70	1 5	0 10	0 0	0 55	0 8			3 10	94

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*Monthly Discharge of Shawnigan Creek at Shawnigan Lake for 1916.*

(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.
January	222.0	57.0	107.00	4.870	5.620	6,580.0
February	430.0	94.0	212.00	9.650	10.400	12,200.0
March	520.0	166.0	302.00	13.700	15.800	18,600.0
April	208.0	64.0	107.00	1.870	5.430	6,370.0
May	64.0	18.0	37.00	1.680	1.940	2,280.0
June	19.0	6.0	10.00	0.455	0.508	595.0
July	7.0	3.0	4.40	0.200	0.230	271.0
August	5.0	1.5	2.30	0.100	0.120	141.0
September	1.5	0.0	0.70	0.030	0.030	41.7
October	0.8	0.0	0.04	0.000	0.000	2.5
November	22.0	1.5	67.00	3.050	3.400	3,990.0
December	122.0	26.0	98.00	4.460	5.140	6,030.0
The year	520.0	0.0	79.00	3.580	48.620	57,101.0

NOTE.—Measurements obtained at Gauge height 3.03, December 1916, showed revision of rating curve necessary.

## SPROAT RIVER (1051).

*Location.*—Eight hundred feet below outlet from Sproat lake, 8 miles from Alberni.

*Records Available.*—Daily discharges March 1, 1913 to December 31, 1916.

*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. Gauge read daily by Mr. H. Weiner.

*Channel.*—Slight curve at section, straight for 500 feet above and below section, gravel and boulder bed, solid rock on left side, good control.

*Discharge Measurements.*—Six in 1913 by Provincial Water Rights Branch, four in 1914, two in 1915 and two in 1916 cover all but highest stage.

*Winter Flow.*—Open all year.

*Accuracy.*—"A" up to discharge of 2,500 cubic feet per second; "B" between discharge of 2,500 and 6,000 cubic feet per second; "C" above 6,000 cubic feet per second.

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

*Discharge Measurements of Sproat River at Sproat Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 21	H. C. Hughes	1,046	123	724	3.45	6.65	2,500
Nov. 3	M. Balls	1,046	96	400	1.69	3.29	676

## Daily Gauge Height and Discharge of Sproat River at Sproat Lake, for 1916.

Drainage area, 128 square miles.)

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	5 34	1,580	3 03	609	6 05	2,140	6 42	2,420	5 99	2,090	5 44	1,740
2	5 18	1,500	3 02	606	6 00	2,100	6 38	2,380	5 99	2,090	5 44	1,740
3	5 00	1,480	3 01	603	5 05	2,070	5 10	2,170	6 05	2,140	5 45	1,750
4	4 80	1,360	3 17	651	5 90	2,030	5 90	2,030	6 15	2,210	5 45	1,750
5	4 70	1,300	3 35	705	5 90	2,030	5 75	1,930	6 18	2,230	5 13	1,740
6	4 60	1,250	3 50	760	5 80	1,960	5 60	1,840	6 25	2,280	5 40	1,720
7	4 50	1,200	3 55	780	6 00	2,100	5 55	1,810	6 30	2,320	5 37	1,700
8	4 40	1,150	3 45	740	6 50	2,480	5 50	1,780	6 40	2,400	5 36	1,700
9	4 30	1,100	3 75	860	7 52	3,300	5 50	1,780	6 45	2,440	5 33	1,680
10	4 20	1,050	3 90	920	8 10	1,010	5 49	1,770	6 32	2,340	5 30	1,660
11	4 10	1,000	4 00	960	8 32	4,580	5 49	1,770	6 25	2,280	5 25	1,630
12	4 00	960	4 05	980	8 83	4,810	5 48	1,770	5 10	2,170	5 20	1,600
13	3 90	920	4 80	1,360	8 75	4,730	5 75	1,930	5 90	2,030	5 35	1,690
14	3 80	880	6 20	2,240	8 40	4,340	5 95	2,070	5 80	1,960	5 44	1,740
15	3 70	840	6 90	2,820	8 30	4,230	6 00	2,100	5 82	1,970	6 00	1,840
16	3 62	808	6 98	2,890	8 08	3,990	6 05	2,140	5 83	1,980	5 80	1,960
17	3 50	760	7 05	2,960	7 85	3,740	6 12	2,180	5 85	2,000	5 87	2,010
18	3 40	720	7 10	3,000	7 62	3,490	6 13	2,190	5 90	2,030	5 86	2,000
19	3 30	690	7 08	2,980	7 40	3,270	6 15	2,210	5 90	2,030	5 85	2,000
20	3 28	684	7 00	2,910	7 35	3,230	6 18	2,230	5 85	2,000	5 85	2,000
21	3 23	669	6 90	2,820	7 40	3,270	6 15	2,210	5 80	1,960	5 75	1,930
22	3 20	660	6 86	2,780	7 55	3,420	6 09	2,160	5 70	1,900	5 65	1,870
23	3 17	651	6 78	2,710	7 45	3,320	6 05	2,140	5 52	1,790	5 58	1,840
24	3 14	642	6 62	2,580	7 30	3,180	6 02	2,110	5 45	1,750	5 55	1,810
25	3 10	630	6 50	2,480	7 20	3,090	6 00	2,100	5 40	1,720	5 53	1,800
26	3 07	621	6 40	2,400	7 15	3,050	6 01	2,110	5 35	1,690	5 50	1,780
27	3 05	615	6 30	2,320	7 02	2,930	6 05	2,140	5 40	1,720	5 48	1,770
28	3 04	612	6 22	2,260	6 90	2,820	6 03	2,120	5 40	1,720	5 46	1,760
29	3 04	612	6 15	2,210	6 79	2,720	6 02	2,110	5 41	1,730	5 44	1,740
30	3 03	609	6 05	2,160	6 65	2,600	6 00	2,100	5 43	1,740	5 43	1,740
31	3 03	612	6 00	2,100	6 55	2,520	6 00	2,100	5 43	1,740	5 43	1,740
	July.		August.		September.		October.		November.		December.	
1	5 43	1,740	4 38	1,140	2 70	510	1 69	228	3 40	720	4 20	1,050
2	5 39	1,710	4 30	1,100	2 66	498	1 67	224	3 60	800	4 22	1,060
3	5 32	1,670	4 21	1,050	2 62	486	1 65	220	4 05	980	4 82	1,370
4	5 26	1,640	4 13	1,020	2 58	474	1 62	214	4 30	1,100	4 86	1,400
5	5 20	1,600	4 05	980	2 54	462	1 60	210	4 40	1,150	4 88	1,410
6	5 08	1,530	3 98	952	2 50	450	1 58	206	4 45	1,180	4 80	1,410
7	5 00	1,480	3 94	936	2 46	438	1 56	202	4 44	1,170	4 80	1,410
8	4 96	1,460	3 90	920	2 42	426	1 55	200	4 45	1,180	4 90	1,420
9	4 91	1,430	3 85	900	2 39	417	1 54	198	4 45	1,180	4 78	1,350
10	4 87	1,400	3 80	880	2 36	408	1 53	196	4 48	1,190	4 66	1,280
11	4 85	1,390	3 75	860	2 33	399	1 52	194	4 39	1,140	4 54	1,220
12	4 84	1,380	3 70	840	2 29	387	1 50	190	4 39	1,100	4 41	1,180
13	4 80	1,360	3 66	824	2 25	375	1 49	188	4 20	1,050	4 34	1,120
14	4 79	1,350	3 60	800	2 20	360	1 48	186	4 10	1,000	4 26	1,080
15	5 09	1,530	3 55	780	2 16	348	1 47	184	4 00	960	4 18	1,040
16	5 12	1,550	3 49	756	2 12	336	1 45	180	3 93	932	4 11	1,010
17	5 16	1,580	3 43	732	2 09	327	1 44	178	3 85	900	4 05	980
18	5 20	1,600	3 37	711	2 06	318	1 43	176	3 78	872	4 01	964
19	5 15	1,570	3 31	693	2 04	312	1 42	174	3 70	840	3 98	952
20	5 10	1,540	3 25	675	2 01	303	1 40	170	3 62	808	3 94	936
21	5 05	1,510	3 19	657	1 99	297	1 38	166	3 54	776	3 91	924
22	5 14	1,560	3 13	639	1 96	288	1 35	160	3 47	748	3 88	912
23	5 10	1,540	3 08	624	1 94	282	1 33	156	3 41	724	3 85	900
24	5 06	1,520	3 04	612	1 91	273	1 30	150	3 35	705	3 82	888
25	4 94	1,440	3 00	600	1 89	268	1 28	146	3 38	714	3 76	864
26	4 85	1,390	2 96	588	1 87	264	1 26	142	3 33	705	3 69	836
27	4 75	1,330	2 92	576	1 85	260	1 24	138	3 70	840	3 62	808
28	4 67	1,290	2 88	564	1 80	250	1 10	176	3 90	920	3 54	776
29	4 60	1,260	2 83	549	1 74	238	2 05	315	4 10	1,000	3 47	748
30	4 52	1,210	2 78	534	1 70	230	2 35	405	4 19	1,040	3 40	720
31	4 45	1,180	2 74	522	1 68	226	2 90	570	4 20	1,040	3 38	714

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*Monthly Discharge of Sproat River at Sproat Lake, for 1916.*

Drainage area, 128 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	1,680	689	915	7.15	8.24	56,300
February	3,000	603	1,820	14.20	15.36	105,000
March	4,810	1,960	3,150	24.60	28.40	191,000
April	2,420	1,770	2,060	16.10	17.00	123,000
May	2,440	1,600	2,010	15.70	18.10	124,000
June	2,610	1,600	1,790	14.00	15.60	107,000
July	1,740	1,180	1,470	11.50	13.30	90,400
August	1,140	522	774	6.05	6.98	47,600
September	510	230	356	2.78	3.10	21,200
October	570	138	208	1.63	1.88	12,800
November	1,190	705	947	7.40	8.26	56,400
December	1,420	714	1,060	8.28	9.55	65,200
The year	4,810	138	1,380	10.80	146.71	1,002,900

## STAMP RIVER AT GREAT CENTRAL LAKE (1052).

*Location.*—Three hundred feet below outlet from Great Central lake, 16 miles from Alberta.

*Records Available.*—Daily discharges February 20, 1913 to December 31, 1916.

*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. Gauge read twice daily by Mr. J. Drinkwater.

*Channel.*—Straight for 300 feet above and 100 feet below section, rocky bed, some boulders. At extreme high water stage there is a discharge from slough 1,000 feet to right of stream.

*Discharge Measurements.*—Seven in 1913 by Provincial Water Rights Branch, four in 1914, two in 1915 and one in 1916 cover all but highest stage.

*Winter Flow.*—Open all year.

*Accuracy.*—"A" between discharge of 250 and 3,500 cubic feet per second; "B" between 3,500 and 5,000 cubic feet per second; "C" above 5,000 cubic feet per second.

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

*Discharge Measurements of Stamp River at Great Central Lake, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 31	M. Balls	1,046	123	464	1.51	210	841

## Daily Gauge Height and Discharge of Stamp River at Great Central Lake, for 1916.

(Drainage area, 177 square miles.)

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 29	1,490	1 68	570	3 28	1,490	3 83	1,870	4 59	2,440	4 96	2,740
2	3 14	1,390	1 70	580	3 01	1,310	3 82	1,860	4 70	2,530	5 00	2,770
3	3 01	1,310	1 70	580	3 10	1,360	3 73	1,800	4 94	2,720	5 04	2,800
4	2 81	1,250	1 72	590	3 09	1,350	3 86	1,890	5 10	2,850	5 13	2,880
5	2 77	1,160	1 74	600	3 06	1,340	3 96	1,950	5 09	2,840	5 24	2,980
6	2 71	1,130	1 78	620	3 16	1,400	3 99	1,980	5 35	3,080	5 20	2,940
7	2 67	1,110	1 80	630	3 44	1,600	4 01	2,000	5 40	3,120	5 18	2,920
8	2 68	1,110	1 82	640	3 84	1,880	4 00	1,990	5 50	3,210	5 08	2,830
9	2 61	1,070	1 86	660	4 48	2,350	4 03	2,010	5 50	3,210	5 09	2,770
10	2 50	1,000	1 89	675	5 15	2,900	4 08	2,050	5 33	3,060	4 95	2,730
11	2 42	952	1 90	680	3 85	3,530	4 03	2,010	5 10	2,850	4 89	2,680
12	2 35	910	1 93	695	6 13	3,780	3 96	1,960	4 93	2,710	4 93	2,710
13	2 29	875	1 96	710	6 16	3,810	4 01	2,000	4 85	2,650	4 98	2,750
14	2 26	860	2 21	835	6 00	3,660	4 29	2,200	4 89	2,680	5 11	2,860
15	2 22	840	3 05	1,330	5 83	3,510	4 40	2,290	4 74	2,560	5 44	3,160
16	2 14	800	3 61	1,720	5 55	3,260	4 40	2,290	4 85	2,650	5 75	3,440
17	2 02	740	3 98	1,980	5 47	3,180	4 48	2,350	5 00	2,770	5 94	3,810
18	1 91	685	4 34	2,240	5 09	2,840	4 50	2,370	5 02	2,790	6 02	3,660
19	1 86	660	4 19	2,120	4 94	2,720	4 51	2,380	5 06	2,820	5 95	3,620
20	1 85	655	4 10	2,060	4 53	2,390	4 56	2,420	5 02	2,790	5 74	3,430
21	1 79	625	4 14	2,090	4 86	2,660	4 51	2,380	4 91	2,700	5 64	3,340
22	1 82	640	4 06	2,030	4 93	2,710	4 47	2,350	4 84	2,640	5 58	3,280
23	1 88	670	4 05	2,030	4 79	2,600	4 40	2,290	4 81	2,620	5 44	3,160
24	1 87	665	3 98	1,980	4 69	2,520	4 38	2,270	4 65	2,490	5 37	3,090
25	1 81	635	3 84	1,880	4 53	2,390	4 32	2,230	4 58	2,430	5 34	3,070
26	1 80	630	3 79	1,840	4 50	2,370	4 41	2,320	4 75	2,570	5 34	3,070
27	1 75	605	3 74	1,810	4 39	2,280	4 49	2,360	4 86	2,660	5 38	3,100
28	1 72	590	3 69	1,770	4 40	2,290	4 50	2,370	4 91	2,700	5 33	3,060
29	1 67	565	3 69	1,770	4 19	2,120	4 54	2,400	4 98	2,750	5 24	2,980
30	1 64	550			4 05	2,030	4 54	2,400	4 91	2,700	5 15	2,900
31	1 65	555			3 88	1,910			4 94	2,720		

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 11	2,860	3 88	1,910	2 24	850	1 10	330	1 86	660	1 94	700
2	5 01	2,780	3 79	1,840	2 15	805	1 08	324	2 44	964	2 00	730
3	5 01	2,780	3 69	1,770	2 10	780	1 00	300	3 00	1,300	2 47	982
4	5 00	2,770	3 55	1,670	2 10	780	0 98	294	3 40	1,570	2 52	1,010
5	4 86	2,660	3 49	1,630	2 10	780	0 93	279	3 58	1,700	3 00	1,300
6	4 75	2,570	3 45	1,600	2 01	735	0 90	270	3 39	1,560	2 81	1,190
7	4 51	2,380	3 33	1,520	1 99	725	0 88	264	3 00	1,300	2 85	1,210
8	4 50	2,370	3 30	1,500	1 91	685	0 86	258	3 91	1,930	2 83	1,200
9	4 51	2,380	3 28	1,480	1 90	680	0 86	258	3 60	1,710	2 71	1,130
10	4 45	2,330	3 20	1,430	1 87	665	0 83	249	3 44	1,600	2 78	1,170
11	4 45	2,330	3 18	1,420	1 76	610	0 84	252	3 20	1,430	2 71	1,130
12	4 45	2,330	3 15	1,390	1 81	635	0 84	252	3 06	1,300	2 61	1,070
13	4 47	2,350	3 10	1,360	1 70	580	0 82	246	2 78	1,170	2 50	1,000
14	4 40	2,290	3 03	1,320	1 69	575	0 82	246	2 53	1,020	2 48	988
15	4 50	2,370	2 99	1,290	1 68	570	0 80	240	2 41	946	2 40	940
16	5 02	2,790	2 94	1,260	1 64	550	0 80	240	1 82	640	2 39	934
17	5 04	2,800	2 89	1,230	1 54	506	0 80	240	1 72	590	2 40	940
18	5 01	2,780	2 78	1,170	1 50	490	0 78	234	1 72	590	2 40	940
19	4 99	2,760	2 65	1,090	1 49	486	0 78	234	1 60	530	2 35	916
20	4 89	2,680	2 64	1,080	1 47	478	0 78	234	1 60	530	2 36	916
21	4 88	2,670	2 60	1,060	1 43	462	0 60	180	1 51	494	2 20	830
22	4 84	2,640	2 51	1,010	1 40	450	0 60	180	1 42	458	2 37	922
23	4 80	2,610	2 49	994	1 40	450	0 60	180	1 38	442	2 26	868
24	4 71	2,540	2 48	988	1 39	446	0 52	160	1 35	430	2 10	780
25	4 63	2,470	2 40	940	1 38	442	0 63	189	1 29	406	1 92	690
26	4 46	2,340	2 38	928	1 37	438	0 78	234	1 25	390	1 90	680
27	4 34	2,240	2 36	916	1 35	430	0 79	237	1 21	374	1 81	635
28	4 23	2,150	2 33	898	1 32	418	0 88	264	1 16	354	1 77	615
29	4 02	2,000	2 28	870	1 29	406	0 97	291	1 00	300	1 80	630
30	4 00	1,990	2 20	830	1 14	346	0 98	294	0 88	264	1 86	660
31	3 93	1,940	2 20	830			1 00	300			1 88	670



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*Monthly Discharge of Stamp River at Great Central Lake, for 1916.*

Drainage area, 177 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	1,490	550	862	4.87	5.62	53,000
February	2,240	570	1,300	7.34	7.92	74,800
March	3,810	1,310	2,440	13.80	15.90	150,000
April	2,400	1,800	2,170	12.30	13.70	129,000
May	3,240	2,430	2,760	15.60	18.00	170,000
June	3,680	2,680	3,050	17.20	19.20	181,000
July	2,860	1,940	2,480	14.00	16.10	152,000
August	1,940	830	1,270	7.18	8.28	78,100
September	850	346	575	3.25	3.63	34,200
October	330	160	250	1.41	1.63	15,400
November	1,740	264	898	5.08	5.67	53,400
December	1,300	615	915	5.17	5.96	13,000
The year	3,810	160	1,580	8.93	121.61	1,147,200

## STAMP RIVER AT STAMP FALLS (1053).

*Location.*—One-quarter mile above falls, 8 miles from Alberni on Beaver Creek road.

*Records Available.*—Daily discharges March 1913 to May 31, 1914. Messrs. Ritchie Agnew, Engineers, Victoria, B.C. Daily discharges June 1, 1914 to December 31, 1916.

*Drainage Area.*—Three hundred and thirty-six square miles.

*Gauge.*—Fourteen-foot wooden staff on left bank 80 feet below measuring section. Gauge read daily by Mr. Robt. Darby.

*Channel.*—Straight for 600 feet above and 300 feet below section. Rock bed with gravel, good condition.

*Discharge Measurements.*—Numerous measurements made by Messrs. Ritchie Agnew Co. during 1913 and 1914, three in 1914 and one in 1915 covering all stages

*Winter Flow.*—Open all year.

*Co-operation.*—Station established in 1913 by Messrs. Ritchie Agnew.

## Daily Gauge Height and Discharge of Stamp River at Stamp Falls, for 1916.

(Drainage area, 336 square miles.)

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 0	1,670	0 9	660	2 5	2,340	2 6	2,510	3 4	4,020	3 4	4,020
2	2 0	1,670	0 9	660	2 4	2,200	2 7	2,680	3 3	3,800	3 5	4,240
3	1 8	1,450	0 8	610	2 3	2,060	2 9	3,020	3 2	3,590	3 7	4,570
4	1 8	1,450	0 8	610	2 2	1,930	3 1	3,390	3 1	3,390	3 9	5,270
5	1 7	1,340	0 8	610	2 2	1,930	3 2	3,590	3 1	3,390	3 9	5,270
6	1 7	1,340	0 7	560	2 2	1,930	3 2	3,590	3 8	5,010	3 8	5,010
7	1 7	1,340	0 7	560	2 4	2,200	3 1	3,530	4 0	5,530	3 7	4,750
8	1 6	1,230	1 0	720	2 6	2,510	3 1	3,390	4 3	6,430	3 7	4,750
9	1 6	1,230	1 5	1,130	3 2	3,590	3 0	3,190	3 9	5,270	3 6	4,490
10	1 6	1,230	1 8	1,450	4 1	5,800	3 0	3,190	3 6	4,490	3 4	4,020
11	1 5	1,130	1 8	1,450	5 3	10,400	2 9	3,020	3 3	3,800	3 3	3,800
12	1 5	1,130	1 9	1,560	4 2	6,100	2 8	2,850	3 2	3,590	3 5	4,240
13	1 4	1,040	2 3	2,060	4 0	5,530	2 8	2,850	3 1	3,390	3 8	5,010
14	1 4	1,040	2 5	2,340	3 9	5,270	3 0	3,190	3 0	3,190	4 0	5,530
15	1 3	960	2 6	2,510	3 9	5,270	3 2	3,590	3 0	3,190	4 2	6,100
16	1 3	960	2 7	2,680	3 8	5,010	3 4	4,020	3 2	3,590	4 5	7,160
17	1 2	880	4 5	7,160	3 6	4,490	3 6	4,490	3 2	3,590	4 8	8,320
18	1 2	880	3 9	5,270	3 3	3,800	3 4	4,020	3 3	3,800	4 5	7,160
19	1 1	800	3 5	4,240	3 2	3,590	3 4	4,020	3 4	4,020	4 3	6,430
20	1 1	800	3 3	3,800	3 1	3,390	3 3	3,800	3 3	3,800	4 2	6,100
21	1 1	800	3 2	3,590	3 0	3,190	3 2	3,590	3 4	4,020	4 0	5,530
22	1 3	960	3 1	3,390	3 7	4,750	3 2	3,590	3 4	4,020	3 9	5,270
23	1 2	880	3 0	3,190	3 4	4,020	3 1	3,390	3 3	3,800	3 8	5,010
24	1 2	880	2 8	2,850	3 2	3,590	3 0	3,190	2 9	3,020	3 8	5,010
25	1 2	880	2 8	2,850	3 1	3,390	3 2	3,590	2 8	2,850	3 7	4,750
26	1 1	800	2 7	2,680	3 2	3,590	3 2	3,590	2 8	2,850	3 7	4,750
27	1 1	800	2 7	2,680	3 2	3,590	3 3	3,800	2 7	2,680	3 6	4,490
28	1 1	800	2 6	2,510	3 0	3,190	3 3	3,800	2 7	2,680	3 6	4,490
29	1 0	720	2 5	2,340	2 9	3,020	3 3	3,800	2 9	3,020	3 5	4,240
30	1 0	720	2 5	2,340	2 8	2,850	3 4	4,020	3 0	3,190	3 5	4,240
31	0 9	660	2 6	2,510	2 6	2,510	3 2	3,590	3 2	3,590	3 5	4,240
	July.		August.		September.		October.		November.		December.	
1	3 6	4,490	2 4	2,200	1 3	960	0 40	410	2 40	2,200	2 20	1,930
2	3 6	4,490	2 4	2,200	1 3	960	0 40	410	2 60	2,510	2 50	2,340
3	3 5	4,240	2 3	2,060	1 4	1,040	0 30	370	2 60	2,510	2 70	2,650
4	3 4	4,020	2 3	2,060	1 3	960	0 30	370	2 70	2,680	2 90	3,020
5	3 4	4,020	2 2	1,930	1 3	960	0 30	370	2 70	2,680	2 80	2,850
6	3 2	3,590	2 2	1,930	1 2	880	0 30	370	2 60	2,510	2 70	2,680
7	3 1	3,390	2 1	1,800	1 1	800	0 20	340	2 60	2,510	2 50	2,340
8	3 0	3,190	2 1	1,800	1 0	720	0 20	340	2 50	2,340	2 10	1,800
9	2 9	3,020	2 1	1,800	1 0	720	0 20	340	2 50	2,340	1 90	1,590
10	2 8	2,850	2 0	1,670	1 0	720	0 10	320	2 40	2,200	1 70	1,340
11	3 0	3,190	2 0	1,670	0 9	660	0 10	320	2 20	1,930	1 70	1,340
12	3 1	3,390	2 0	1,670	0 9	660	0 10	320	2 00	1,670	1 70	1,340
13	3 1	3,590	1 9	1,560	0 9	660	0 00	300	1 96	1,560	1 60	1,230
14	3 3	3,800	1 8	1,450	0 8	610	0 00	300	1 80	1,450	1 60	1,230
15	3 3	3,800	1 8	1,450	0 8	610	0 00	300	1 70	1,340	1 70	1,340
16	3 2	3,590	1 8	1,450	0 8	610	0 00	300	1 60	1,230	1 60	1,230
17	3 1	3,390	1 7	1,340	0 7	560	0 10	280	1 60	1,230	1 50	1,130
18	3 1	3,390	1 7	1,340	0 7	560	0 10	280	1 50	1,130	1 50	1,130
19	3 0	3,190	1 6	1,230	0 7	560	0 10	280	1 50	1,130	1 50	1,130
20	3 1	3,390	1 6	1,230	0 7	560	0 20	260	1 40	1,040	1 40	1,040
21	3 2	3,590	1 6	1,230	0 6	510	0 20	260	1 40	1,040	1 40	1,040
22	3 2	3,590	1 6	1,230	0 6	510	0 30	250	1 30	960	1 50	1,130
23	3 1	3,390	1 5	1,130	0 6	510	0 30	250	1 30	960	1 40	1,040
24	3 0	3,190	1 5	1,130	0 6	510	0 10	320	1 40	1,040	1 40	1,040
25	3 0	3,190	1 5	1,130	0 6	510	0 10	320	1 40	1,040	1 30	960
26	2 8	2,850	1 4	1,040	0 5	460	0 30	370	1 50	1,130	1 50	960
27	2 8	2,850	1 4	1,040	0 5	460	0 30	370	1 50	1,130	1 30	960
28	2 7	2,680	1 4	1,040	0 5	460	0 50	460	1 40	1,040	1 20	880
29	2 6	2,510	1 4	1,040	0 4	410	0 60	510	1 40	1,040	1 20	880
30	2 6	2,510	1 3	960	0 4	410	1 20	880	1 80	1,450	1 10	800
31	2 5	2,340	1 3	960	0 4	410	2 40	2,200	1 10	800	1 10	800

SESSIONAL PAPER No. 25d

*Monthly Discharge of Stamp River at Stamp Falls, for 1916.*

(Drainage area, 336 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	1,670	660	1,050	3.13	3.61	64,600
February	7,160	590	2,300	6.85	7.39	132,000
March	10,400	1,930	3,780	11.30	13.00	232,000
April	4,490	2,510	3,470	10.30	11.50	206,000
May	6,430	2,680	3,760	11.20	12.90	231,000
June	8,320	3,800	5,140	15.30	17.10	306,000
July	4,490	2,340	3,380	10.00	11.50	208,000
August	2,200	960	1,470	4.37	5.04	90,400
September	1,040	410	650	1.94	2.16	30,700
October	2,200	250	412	1.23	1.42	25,300
November	2,680	960	1,630	4.85	5.41	97,000
December	3,020	800	1,460	4.34	5.00	89,800
The year	10,100	250	2,380	7.07	96.03	1,720,800

NOTE.—Rating curve prepared from measurements made by Messrs. Ritchie, Agnew Co., of Victoria, during 1913 and 1914.

## TSOLUM RIVER (1039).

*Location.*—Foot bridge, 2 miles above Sandwick.

*Records Available.*—Daily discharges May 31, 1914 to December 31, 1916.

*Drainage Area.*—One hundred and fifty square miles.

*Gauge.*—Twelve-foot enamel staff, 20 feet downstream from bridge on cribbing right bank. Gauge read twice daily by Mr. W. Calhoun.

*Channel.*—Straight for 500 feet above and 300 feet below section. Gravel bed. Stream confined by cribbing, both banks, in high water.

*Discharge Measurements.*—Seven during 1914 and 1915 gave well defined rating curve. Change in control about March 9, 1916 necessitated new rating for balance of 1916. This rating is defined by four measurements.

*Winter Flow.*—Open all year.

*Accuracy.*—Owing to the change in control during the spring freshet, accuracy is placed at "C."

*Discharge Measurements of Tsolum River 3 Miles above Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar 16	H. C. Hughes	1,046	93.0	198.00	2.90	6.74	576.04
April 13	Ball and Webb	1,505	97.0	224.00	3.73	7.03	836.04
Oct 26	M. Balls	1,046	8.5	6.54	0.38	4.46	2.5

<sup>1</sup> Temporary, gauge out 3.39.

<sup>2</sup> Good measurement.

*Daily Gauge Height and Discharge of Tsoolum River 3 Miles above Mouth, for 1916.*

(Drainage area, 150 square miles)

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	5.9	215	4.5	3	6.8	640	6.7	600	6.8	600	6.8	660
2	5.9	215	4.5	3	6.7	590	6.7	600	7.0	780	6.7	600
3	5.8	175	4.5	3	6.9	690	7.1	840	7.1	840	6.7	600
4	5.8	175	4.5	3	6.7	590	7.1	1,040	7.3	970	6.6	540
5	1	175	4.4	2	6.5	500	7.2	900	7.2	900	6.5	490
6	C	145	4.4	2	6.3	400	7.0	780	7.1	840	6.5	600
7	E	115	4.4	2	6.7	590	6.9	720	6.9	720	6.4	150
8		115	4.4	2	8.1	1,260	7.0	780	7.1	1,040	6.3	440
9	5.5	95	4.4	2	8.7	1,550	7.0	780	7.0	780	6.2	370
10	5.3	60	4.0	5	8.1	1,780	6.9	720	6.8	660	6.1	330
11	5.0	28	4.6	5	8.1	1,550	6.8	660	6.5	490	6.4	150
12	4.6	5	4.6	5	7.9	1,400	6.6	540	6.5	490	6.6	540
13	4.6	5	4.9	18	7.6	1,180	7.0	780	6.4	150	6.7	600
14	4.6	5	5.3	60	7.4	1,040	7.3	970	6.1	150	6.8	660
15	4.6	5	5.5	95	7.1	840	7.2	900	6.6	540	6.9	720
16	4.6	5	5.7	145	6.7	600	7.1	840	7.0	780	6.9	720
17	4.6	5	5.7	145	6.6	540	7.0	780	7.1	840	6.7	600
18	4.6	5	5.6	115	6.6	540	6.9	720	7.1	1,040	6.5	490
19	4.6	5	5.6	115	6.6	540	6.9	720	7.0	780	6.1	150
20	4.6	5	5.6	115	7.0	780	6.8	660	6.8	660	6.3	410
21	4.6	5	7.0	740	7.5	1,110	6.8	660	6.6	540	6.2	370
22	4.8	12	6.9	690	7.6	1,180	6.7	600	6.1	450	6.0	290
23	4.8	12	6.8	640	7.2	900	6.7	600	6.3	410	6.0	290
24	4.7	8	6.7	590	7.1	840	6.9	720	6.8	660	6.1	330
25	4.7	8	6.6	540	7.0	780	7.1	840	6.9	720	6.2	370
26	4.6	5	6.6	540	6.8	660	7.0	780	7.2	900	6.3	410
27	4.6	5	6.6	540	6.8	660	6.9	720	6.8	660	6.1	330
28	4.6	5	6.7	590	6.7	600	6.9	720	6.7	660	6.0	290
29	4.5	4	6.8	640	6.6	540	6.9	720	6.7	660	5.9	260
30	4.6	5			6.5	490	6.8	660	6.4	450	5.9	260
31	4.6	5			6.5	490			6.8	660		

	July.		August.		September.		October.		November.		December.	
1	6.0	290	5.4	120	4.5	4	4.6	8	6.8	660	6.2	370
2	5.9	260	5.4	120	4.6	8	4.6	8	6.8	660	6.1	330
3	5.9	260	5.3	100	4.6	8	4.6	8	6.8	660	7.6	1,180
4	6.2	370	5.3	100	4.5	4	4.6	8	6.9	720	7.0	780
5	6.0	290	5.2	82	4.5	4	4.5	4	6.6	540	6.1	150
6	5.9	260	5.2	82	4.5	1	4.5	1	6.5	490	6.4	150
7	5.8	225	5.2	82	4.5	1	4.5	1	6.5	490	7.2	900
8	5.8	225	5.1	64	4.5	4	4.5	4	6.4	450	6.5	490
9	5.7	200	5.1	64	4.5	4	4.5	4	6.3	410	6.0	260
10	5.7	200	5.1	64	4.5	4	4.4	2	6.0	290	5.8	225
11	5.6	170	5.0	50	4.5	4	4.4	2	5.9	260	5.7	200
12	5.6	170	5.0	50	4.5	4	4.4	2	5.8	225	5.7	200
13	5.9	260	4.9	37	4.5	4	4.4	2	5.6	170	5.7	200
14	6.1	450	4.9	37	4.4	2	4.4	2	5.5	145	5.6	170
15	6.6	540	4.8	25	4.4	2	4.4	2	5.4	120	5.6	170
16	6.8	660	4.8	25	4.4	2	4.4	2	5.3	100	5.6	170
17	6.6	540	4.8	25	4.4	2	4.5	4	5.3	165	5.5	145
18	6.2	370	4.8	25	4.4	2	4.5	4	5.3	165	5.5	145
19	6.1	330	4.7	16	4.4	2	4.5	4	5.2	82	5.4	120
20	6.0	290	4.7	16	4.4	2	4.4	2	5.2	82	5.8	225
21	5.9	260	4.7	16	4.4	2	4.4	2	5.1	64	5.4	120
22	5.9	260	4.7	16	4.4	2	4.4	2	5.1	64	5.4	120
23	5.8	225	4.6	8	4.4	2	4.4	2	5.0	50	5.4	120
24	6.3	410	4.6	8	4.4	2	4.5	4	5.0	50	5.4	120
25	6.0	290	4.6	8	4.4	2	4.6	8	5.3	100	5.8	225
26	6.0	290	4.6	8	4.5	4	4.8	25	5.3	100	6.2	370
27	5.9	260	4.6	8	4.5	4	4.8	25	6.0	290	6.3	410
28	5.7	200	4.5	4	4.5	4	5.0	50	6.5	490	6.4	450
29	5.6	170	4.5	4	4.4	2	6.4	450	6.3	410	6.4	450
30	5.5	145	4.5	4	4.4	2	6.6	540	6.2	370	6.2	370
31	5.4	120	4.5	4			6.6	540			6.2	370

SESSIONAL PAPER No. 25d

*Monthly Discharge of Tsolum River 3 Miles above Mouth, for 1916.*

(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.
January	215	3	53	0.35	0.40	3,260
February	740	2	219	1.46	1.58	12,600
March	1,780	100	834	5.56	6.41	51,300
April	1,040	540	715	4.97	5.55	44,300
May	1,040	410	689	4.59	5.29	42,400
June	720	290	459	3.06	3.41	27,300
July	660	120	290	1.93	2.23	17,800
August	120	1	41	0.27	0.31	2,520
September	8	2	3	0.02	0.02	179
October	540	2	56	0.37	0.43	3,440
November	720	50	291	2.16	2.16	17,300
December	1,180	120	344	2.23	2.57	20,500
The year	1,780	2	344	2.32	30.36	242,800

NOTE.—Used 1915 curve to March 9, 1916; after March 9, used 1916 curve.  
Change in control about March 9, 1916.

## COAST DIVISION.

## MISCELLANEOUS METER MEASUREMENTS.

## SOUTHERN DISTRICT.

Date 1916	Stream.	Tributary to	Locality	Engineer	Gauge Heights	Discharge Sec.-ft.
Aug. 3	loco No. 2	Burrard Inlet	loco	Webb and Balls	0 62	1 468
Aug. 31	loco No. 2	Burrard Inlet	loco	M. Balls	0 49	0 320
Aug. 7	loco No. 3	Burrard Inlet	loco	Webb and Balls		0 240
Aug. 31	loco No. 3	Burrard Inlet	loco	M. Balls		0 054
Aug. 3	loco No. 4	Burrard Inlet	loco	Webb and Balls		0 736
Aug. 31	loco No. 4	Burrard Inlet	loco	M. Balls		0 276
Aug. 4	loco No. 5	Burrard Inlet	loco	Webb and Balls	0 53	1 520
Aug. 31	loco No. 5	Burrard Inlet	loco	M. Balls	0 45	0 950
Jan. 10	Skagit	International Stream	30 miles south from Hope	H. C. Hughes	9 03	280 000
Mar. 31	Skagit	International Stream	30 miles south from Hope	H. C. Hughes	10 25	375 000
Aug. 14	Skagit	International Stream	30 miles south from Hope	Balls and Webb	10 22	869 000
Aug. 15	Skagit	International Stream	30 miles south from Hope	Balls and Webb	10 20	859 000

## LILLOOET DISTRICT.

May 14	Cheakamus		Checkye	H. C. Hughes		1760 08
May 15	Cheakamus		Checkye	H. C. Hughes		2260 08
June 7	Cheakamus		Checkye	Swan and Milner		3530 00
June 23	Cheakamus		Checkye	Balls and Milner		6820 00
June 25	Cheakamus		Checkye	Balls and Milner		7140 00
Sept. 20	Cheakamus		Checkye	Balls and Milner		2060 00
Dec. 4	Cheakamus		Checkye	Hughes and Beeston		1286 00
Dec. 2	Cheakamus		Watson	Hughes and Beeston	1 77	553 00
May 4	Fountain		Lillooet	H. C. Hughes		17 80
June 24	Fountain		Lillooet	Balls and Milner		49 20
Sept. 28	Fountain		Lillooet	M. Balls		7 26
Dec. 11	Fountain		Lillooet	Hughes and Beeston		6 63
May 1	Fraser		Lillooet	H. C. Hughes	20 20	53,900 00
June 11	Fraser		Lillooet	Swan and Milner	23 05	84,150 00
June 28	Fraser		Lillooet	Balls and Milner	33 05	215,200 00
Sept. 29	Fraser		Lillooet	M. Balls	19 00	40,460 00
May 2	Island Par	Fraser River	10 miles below Lillooet	H. C. Hughes		12 70
June 12	Island Bar	Fraser River	10 miles below Lillooet	Swan and Milner		33 70
Sept. 24	Island Bar	Fraser River	10 miles below Lillooet	M. Balls		10 50
May 2	Riley	Fraser River	9 miles below Lillooet	H. C. Hughes		11 50
June 12	Riley	Fraser River	9 miles below Lillooet	Swan and Milner		36 38
Sept. 24	Riley	Fraser River	9 miles below Lillooet	M. Balls		9 65
May 3	Swartz	Fraser River	19 miles below Lillooet	H. C. Hughes		8 10
June 28	Swartz	Fraser River	15 miles below Lillooet	Balls and Milner		53 50
Oct. 1	Swartz	Fraser River	19 miles below Lillooet	M. Balls		8 00
May 7	Texas	Fraser River	14 miles below Lillooet	H. C. Hughes		127 00
June 12	Texas	Fraser River	14 miles below Lillooet	Swan and Milner		273 00
Sept. 24	Texas	Fraser River	14 miles below Lillooet	M. Balls		54 80
Dec. 8	Texas	Fraser River	14 miles below Lillooet	Hughes and Beeston		23 80

## VANCOUVER ISLAND DISTRICT.

Nov. 5	Holt	Cowichan River	Near Duncans	M. Balls	2 09	98 10
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REPORT  
OF THE  
BRITISH COLUMBIA HYDROMETRIC  
SURVEY FOR 1916.

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CHAPTER III.  
KAMLOOPS DIVISION.

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### CHAPTER III. KAMLOOPS DIVISION.

Classified list of streams, giving object of maintenance of gauging stations and number of previous Water Resources Papers where description of stream and flow data may be found.

#### KAMLOOPS DISTRICT.

Stream.	Object of Maintenance	Water Resources Papers.
Barron	Power and Logging	18
Behan	Irrigation	1, 8, 14, 18
Campbell	Irrigation	1, 8, 14, 18
Cherry	Irrigation	1, 8, 14, 18
Clearwater	Power	8, 14, 18
Edwards	Irrigation	1, 14, 18
Essell	Irrigation	1, 8, 14
Ladour	Irrigation	
Fishtrap	Irrigation	
Greenstone	Irrigation	1, 14, 18
Gouillon	Irrigation	1, 8, 14, 18
Holley	Irrigation	1, 8, 14, 18
Ingram	Irrigation	1, 8, 14, 18
Jamieson	Irrigation	1, 8, 14, 18
Little Clearwater	Power	14, 18
Louis	Irrigation and Power	1, 8, 14, 18
Moore	Irrigation	1, 8, 14, 18
Murle	Power	14, 18
North Thompson	Power	18
Paul	Irrigation	1, 8, 14, 18
Rah	Power	14, 18
Salmon	Irrigation	1, 18
Siwash	Irrigation	11, 18
Sullivan	Irrigation	1
Three Mile (Darand)	Irrigation	1, 14, 18
Tranquille	Irrigation	1, 8, 14, 18
Whitewood	Irrigation	14, 18

#### OKANAGAN DISTRICT.

Alans	Power and Logging	1, 8, 14, 18
Ashuola	Irrigation and Power	14
Boundary	Power	11, 18
Brush	Water supply and Power	18
Celesta	Power	14
Chase	Irrigation and Power	1, 18
Crazy	Power	14, 18
Eagle	Power	8, 14, 18
Kettle	Power	11, 18
Okanagan	Power	11, 18
Seamour	Power	18
Shuswap	Power	1, 8, 14, 18
Smilkameen	Power	14, 18
South Smilkameen	Power	14, 18
South Thompson	Navigation	1, 8, 14, 18
Tahmeen	Power	14, 18

#### ASHCROFT DISTRICT.

Barnes	Irrigation	1, 8, 14, 18
Beaver	Irrigation	18
Bonaparte	Power and Irrigation	1, 8, 14, 18
Cable	Irrigation	1, 18
Coldwater	Power and Water Supply	8, 14, 18
Cross	Irrigation	1, 8, 14, 18
Deadman	Irrigation	1, 8, 14, 18
Hot	Irrigation	1, 8, 14, 18
Nahatlatch	Power	1, 8, 14, 18
Nicola	Power and Irrigation	1, 8, 14, 18
Oregon Jack	Irrigation	1
Scottie	Irrigation	1, 8
Spins	Power and Irrigation	1, 8, 14
Thompson	Power	1, 8, 14, 18

## METEOROLOGICAL DATA.

*Mean Monthly Temperature (Degrees Fahr.)—Kamloops District—1916.*

LOCALITY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Tranquille	-1	23	41	50	57	64		67	57	43	33	21	
Kamloops	-3	22	40	50	56	64	65	63	58	45	31	16	43
Edith Lane	-4	19	32	39	46	53	54	57	49			10	
Chinook Cove	-8	20	36	45	51	58	60	63	53	42	29	16	39
Vavenby	-6	20	36	46	51	58	58	62	52	41	27	12	38
Monte Creek	-6	21	33	45	52	60	61	64	54	43	30	18	39
Tappen	-6	25	38	48	55	63	64	66	56	45	32	18	43
Glenemna	1	23	38	48	53	59	59	63	54	49	34	25	42

*Mean Monthly Temperature (Degrees Fahr.)—Okanagan District—1916.*

LOCALITY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Enderby	0	22	38	48	53	62	63	65	55	44	30	20	42
Armstrong	1	21	36	47	52	60	61	62	54	42	30	20	40
Vernon	0	19	36	47	52	60	62	65	56	44	30	20	41
Richlands	7	22											
Okanagan Mission	8	24	37	46	52	60	63	63	54	44	33	25	42
Summerland	7	23	37	48	52	61	63	67	57	46	30	21	43
Penticton	3	26	40	49	54	61	64	66	58	46	33	24	44
Princeton	-3	23	35	44	49	56	60	62	54	41	26	14	38
Hedley	2	26	38	45	49	60	63	66	57	46	28	19	42
Hedley (NickelPlate)	-1	21	21	32	35	46	46	53	48	25	18	8	29
Greenwood	7	28	35	44	49	56	61	62	53	41	25	13	40
Grand Forks	7	27	38	48	53	60	65	67	57	44	26	14	42

*Mean Monthly Temperature (Degrees Fahr.)—Ashcroft District—1916.*

LOCALITY	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Nicola Lake	-5	18	37	44	50	57	58	62	52	43	29	18	39

*Difference from Average Temperature (Degrees Fahr.)—Kamloops District—1916.**Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records	Jan.	Feb.	Mar.	April	May	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops	25	-25	-4	2	0	-2	-1	5	0	0	-2	3	4	-4

NOTE.—All quantities are plus unless otherwise designated.

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*Difference from Average Temperature (Degrees Fahr.)—Okanagan District—1916.  
Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Enderby.....	14	-22	-3	4	2	-2	1	-3	1	1	-0.3	-2.1	-7.1	-3.3
Vernon.....	22	-7	1	1	-2	-1	.....	.....	0	1	-1.3	-4.6	-7.4	.....
Okanagan Mission.....	16	-16	-2	0	-1	-3	-1	-4	.....	.....	.....	.....	.....	.....
Princeton.....	20	-19	0	3	0	-3	-1	-3	0	1	-2.7	-5.3	-7.7	-3.1
Hedley.....	12	-18	-2	1	-2	-5	0	-4	1	0	-0.2	-7.1	-9.9	-3.8
Hedley (Nickel Plate).....	12	-18	0	-5	-3	-6	-1	-10	0	1	.....	.....	.....	.....

NOTE.—All quantities are plus unless otherwise designated.

*Difference from Average Temperature (Degrees Fahr.)—Ashcroft District—1916.  
Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Nicola Lake.....	21	-24	-6	5	0	2	0	-3	1	0	-1.2	-3.5	-8.9	-3.6

NOTE.—All quantities are plus unless otherwise designated.

*Total Monthly Precipitation (Inches)—Kamloops District—1916.*

LOCALITY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Tranquille.....	0.85	0.74	0.72	0.69	0.86	2.17	.....	0.25	0.33	0.03	0.16	0.60	.....
Kamloops.....	0.75	1.49	0.46	0.57	0.58	2.82	0.77	0.39	0.36	0.06	0.63	1.06	9.84
Edith Lake.....	.....	.....	.....	0.72	1.45	2.51	1.20	0.74	0.44	0.28	0.83	1.19	.....
Chinook Cove.....	0.75	0.66	1.22	1.04	1.90	1.90	3.47	0.93	0.94	0.13	1.01	0.72	14.69
Vavenby.....	0.90	0.40	1.54	0.58	1.71	1.43	2.70	0.58	0.71	0.62	1.35	0.70	13.02
Monte Creek.....	0.95	1.15	0.46	0.46	1.08	1.87	1.33	0.28	0.40	0.13	1.34	0.53	9.98
Tappen.....	2.06	1.86	1.92	1.55	1.92	1.90	3.83	0.76	0.59	0.34	1.51	2.40	20.64
Glenemma.....	0.30	2.64	1.52	1.54	1.37	1.56	3.23	0.77	0.70	0.87	2.84	4.55	24.80
Canoe Point.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.23	1.72	2.32	.....

*Total Monthly Precipitation (Inches)—Okanagan District—1916.*

LOCALITY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Enderby.....	0.85	2.10	1.30	0.87	0.94	1.86	3.13	1.22	0.74	0.20	1.18	1.97	16.36
Armstrong.....	1.00	1.94	0.93	0.95	0.86	1.90	3.82	0.91	0.72	0.12	1.32	0.85	15.34
Vernon.....	1.05	1.93	0.93	0.56	0.65	2.23	2.32	0.59	0.52	0.52	0.81	0.59	12.70
Richlands.....	0.50	2.09	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Okanagan Mission.....	1.01	2.00	0.44	0.64	0.54	1.34	1.76	0.86	0.33	0.13	0.53	0.95	10.82
Summerland.....	1.62	1.81	1.42	0.49	0.46	1.60	1.05	0.24	0.61	0.07	0.29	1.35	11.01
Princeton.....	0.57	1.28	0.38	0.85	1.15	2.05	2.50	0.27	0.73	0.04	0.41	0.69	10.92
Hedley.....	1.21	2.44	0.93	0.72	1.03	1.54	1.42	0.46	0.71	0.33	1.31	1.24	13.34
Hedley (Nickel Plate).....	0.65	2.03	0.31	0.95	1.00	1.70	1.31	0.51	1.55	0.35	0.31	1.61	12.28
Greenwood.....	2.15	2.25	1.01	1.45	2.25	3.48	3.50	1.50	1.50	0.40	2.25	3.60	25.56
Grand Forks.....	2.53	1.25	3.16	1.25	2.25	2.71	2.72	0.72	1.02	0.02	1.56	2.90	23.09
.....	1.22	1.16	1.24	0.90	1.56	2.84	2.10	0.60	1.14	0.16	1.87	1.88	16.69

*Total Monthly Precipitation (Inches)—Ashcroft District—1916.*

LOCALITY.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Nicola Lake .....	1.10	1.13	0.96	1.05	1.32	2.39	0.98	0.70	0.53	0.14	0.41	0.86	11.57

*Difference from Average Precipitation (Inches)—Kamloops District—1916.**Difference of Total for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Kamloops .....	25	-0.25	0.69	0.14	0.21	-0.25	1.59	-0.50	-0.66	-0.58	-0.57	-0.36	0.31	-0.23

NOTE.—All quantities are plus unless otherwise designated.

*Difference from Average Precipitation (Inches)—Okanagan District—1916.**Difference of Total for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Enderby .....	14	-1.74	0.48	0.19	0.10	-0.37	-0.27	1.65	-0.01	-0.96	-1.28	-1.37	-0.23	-3.81
Vernon .....	22	-0.09	0.81	0.21	0.04	-0.58	0.43	0.96	-0.44	-0.86	-0.30	-1.08	-0.66	-1.56
Okanagan Mission .....	16	-0.32	0.90	-0.40	0.18	-0.49	0.02	0.59	-0.17	-0.84	.....	.....	.....	.....
Princeton .....	20	-0.15	1.51	0.33	0.18	-0.31	0.45	0.17	-0.44	-0.34	-0.45	-0.52	-0.09	0.35
Hedley .....	12	-0.38	0.82	-0.13	0.50	-0.56	0.31	0.10	-0.47	-0.87	-0.35	-0.66	0.90	-0.79
Hedley (Nickel Plate) .....	12	0.00	0.37	-0.37	-2.35	-1.61	0.74	2.02	-0.14	0.47	.....	.....	.....	.....

NOTE.—All quantities are plus unless otherwise designated.

*Difference from Average Precipitation (Inches)—Ashcroft District—1916.**Difference of Total for Month from Monthly Average for Previous 10 Years or More.*

LOCALITY.	No. of Years Records.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Nicola Lake .....	21	0.25	0.29	0.35	0.59	0.28	1.07	-0.04	-0.47	-0.86	-0.54	-0.68	-0.17	0.13

NOTE.—All quantities are plus unless otherwise designated.

SESSIONAL PAPER No. 25d

**HYDROMETRIC DATA.****KAMLOOPS DISTRICT.****BARRIERE RIVER (2084).**

*Location.*—At Highway bridge near mouth of river, forty miles from Kamloops, Water District No. 2.

*Records Available.*—March 22 to December 31, 1915; April 1 to December 31, 1916.

*Drainage Area.*—Three hundred square miles.

*Gauge.*—Up to April 8, 1916 a chain gauge was in use. On April 8 this was replaced by a standard staff gauge at the same section.

*Channel.*—Straight for 100 yards above and below the measuring section. Bed of stream of stones and gravel. Water swift.

*Discharge Measurements.*—Four measurements taken during 1915 and six during 1916 agree very well, and cover whole range of stage. During November and December 1916, when the stream was under ice cover, the flow is determined by interpolation between the open-water flow on the second of November and a meter measurement in January 1917.

*Accuracy.*—Results are reliable at all stages.

Daily Gauge Height and Discharge of Barriere River near Barriere, for 1915.

(Drainage area, 300 square miles.)

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					Meter	83	7.0	140		850	9.3	1,360	
3								150	8.6	850	9.2	1,270	
4								175		910	9.1	1,180	
5								200	8.8	980	9.1	1,180	
6								230		1,260	9.1	1,180	
7								7.4	260	9.5	1,540	9.2	1,270
8									295	9.6	1,630	9.2	1,270
9								7.6	330	9.9	1,920	9.2	1,270
10									350	10.0	2,020	9.2	1,270
11								7.7	370	10.1	2,120	9.0	1,110
12									415	10.1	2,120	8.9	1,040
13								7.9	460	10.0	2,020	8.9	1,040
14									460	9.7	1,720	8.9	1,040
15					Meter	104	7.9	460	9.8	1,820	8.8	980	
16								485	10.0	2,020	8.8	980	
17								8.0	510	10.0	2,020	8.8	980
18									680	9.7	1,720	8.8	980
19								8.6	850	9.6	1,630	8.8	980
20									950	9.9	1,920	8.8	980
21								8.9	1,040	10.2	2,230	8.8	980
22									970	10.3	2,340	8.8	980
23					6.70	95	8.7	910	10.3	2,340	8.7	910	
24						95		880	10.2	2,230	8.7	910	
25					6.70	95		850	10.1	2,120	8.8	980	
26						100		810	10.0	2,020	8.8	980	
27					6.80	110		780	9.8	1,820	8.9	1,040	
28						110		780	9.7	1,720	9.1	1,180	
29					6.80	110	5	780	9.5	1,540	9.1	1,180	
30						110		820	9.5	1,540	9.1	1,180	
31					6.80	110	8.6	850	9.6	1,630	9.0	1,110	
						125			9.5	1,540			

	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	9.0	1,110	8.1	560	7.0	150	6.9	130		200		110
2	8.9	1,040	8.1	560		150		130	7.2	200	6.8	110
3	8.8	980	8.0	510	7.0	150	6.9	130		190	6.8	110
4	8.7	910	8.0	510		150		130	7.1	175		110
5	8.5	780	8.0	510	7.0	150	6.9	130		175	6.8	110
6	8.3	660	7.9	490		150		130	7.1	175		110
7	8.3	660	7.8	410	7.0	150	6.9	130		165	6.8	110
8	8.2	610	7.9	410		110		130	7.0	150		110
9	8.2	610	7.7	370	6.9	130	6.9	130		150	6.8	110
10	8.1	560	7.7	370		130		130	7.0	150		110
11	8.1	560	7.6	330	6.9	130	6.9	130		150	6.8	110
12	8.3	660	7.6	330		130		130	7.0	150		105
13	8.5	780	7.5	290	6.9	130	6.9	130		150	6.7	95
14	8.8	980	7.5	290		130		120	7.0	150	6.7	95
15	9.0	1,110	7.4	255	6.9	130	6.8	110		150		95
16	9.3	1,360	7.4	255		130		110	7.0	150	6.7	95
17	9.4	1,440	7.4	255	6.9	130	6.8	110		140		95
18	9.4	1,440	7.4	255		130		110	6.9	130	6.7	95
19	9.3	1,360	7.4	255	6.9	130	6.8	110		130		95
20	9.1	1,180	7.4	255		130		120	6.9	130	6.7	95
21	8.8	980	7.4	255	6.9	130	6.9	130		130		95
22	8.8	980	7.4	255		130		140	6.9	130	6.7	95
23	8.8	980	7.4	255	6.9	130	7.0	150		130		95
24	8.6	830	7.4	255		130		165	6.9	130	6.7	95
25	8.4	720	7.3	255	6.9	130	7.1	175		130		95
26	8.4	720	7.3	225		130		175	6.9	130	6.7	95
27	8.3	660	7.3	225	6.9	130	7.1	175		120		95
28	8.3	660	7.2	200		130		185	6.8	110	6.7	95
29	8.2	610	7.2	200	6.9	130	7.2	200		110		95
30	8.2	610	7.2	200		130		200	6.8	110	6.7	95
31	8.2	610	7.2	200			7.2	200		110		95

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*Monthly Discharge of Barriere River near Mouth, for 1915.*

(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.
April	1,040	140	570	1 90	2 12	34,000
May	2,340	850	1,750	5 83	6 72	107,600
June	1,360	910	1,090	3 63	4 05	64,800
July	1,440	560	875	2 92	3 36	53,800
August	560	200	320	1 07	1 23	19,700
September	150	130	135	0 45	0 50	8,000
October	200	110	140	0 47	0 54	8,600
November	200	110	145	0 48	0 54	8,600
December	110	95	100	0 33	0 38	6,100
The period	2,340	95	569	1 90	19 44	311,200

*Discharge Measurements of Barriere River near Barriere, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Fect.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
Mar. 27	A. L. McNaughton	1,923	32 0	75 1	1 72	6 90	130
Apr. 7	C. G. Cline and A. L. McNaughton	1,923	37 0	96 7	2 45	7 36	238
May 19	C. G. Cline	1,055	84 0	222 1	5 18	9 05	1,150
June 19	C. G. Cline and A. L. McNaughton	1,925	86 0	365 6	7 55	10 70	2,760
July 22	F. R. Archibald	1,913	81 0	204 6	3 75	8 45	770
Sept. 1	F. R. Archibald	1,913	62 0	108 5	1 80	7 15	195
1917							
Jan. 12	F. R. Archibald	1,055	35 0	34 8	1 33	...	46

Daily Gauge Height and Discharge of Barriere River near Barriere for 1916.

(Drainage area, 300 square miles)

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	6.7	95						180	8.35	690	9.40	1.44
2								190	8.65	880	9.60	1,630
3	6.7	95						200	9.00	1,410	9.65	1,680
4								210	9.30	1,540	9.85	1,870
5	6.7	95						220	9.50	1,540	9.70	1,720
6								230	9.60	1,630	9.65	1,680
7	6.6	82					7.36	245	9.65	1,680	9.40	1,440
8							7.40	255	9.40	1,440	9.35	1,400
9	6.6	82					7.40	255	9.50	1,540	9.40	1,440
10							7.40	255	9.30	1,300	9.45	1,490
11	6.6	82					7.45	275	9.10	1,180	9.30	1,360
12							7.45	275	8.90	1,040	9.20	1,270
13	6.6	82					7.45	275	8.60	850	9.70	1,720
14							7.45	275	8.40	720	9.80	1,820
15							7.60	330	8.45	750	10.70	2,770
16							7.45	275	8.40	720	10.85	2,940
17							7.45	275	8.50	780	10.95	3,050
18							7.45	275	8.75	910	10.90	2,990
19							7.40	255	9.00	1,110	10.65	2,710
20							7.50	290	9.45	1,490	10.45	2,500
21							7.40	255	9.40	1,440	10.20	2,230
22							7.40	255	9.40	1,440	10.20	2,230
23							7.40	255	9.30	1,360	9.90	1,920
24							7.45	275	9.35	1,400	9.65	1,970
25							7.45	275	9.50	1,540	9.85	1,870
26							7.60	330	9.60	1,630	9.90	1,920
27					6.90	130	7.85	435	9.45	1,490	10.25	2,280
28						140	7.90	460	9.55	1,580	10.25	2,280
29						150	8.10	560	9.65	1,680	10.15	2,180
30						160	8.20	640	9.60	1,630	10.20	2,230
31						170			9.50	1,540		

	July.		August.		September.		October.		November.		December.	
1	9.40	1,440	8.45	750	7.00	150	7.15	185	6.85	120		80
2	9.45	1,490	8.00	510	7.05	165	7.00	150	6.80	110		80
3	10.40	2,440	7.70	370	7.20	200	7.00	150		110		80
4	10.00	2,020	7.90	460	7.10	175	6.95	140		110		80
5	9.75	1,770	7.70	370	7.00	150	6.95	140		110		80
6	9.65	1,680	7.75	390	7.00	150	6.90	130		110		80
7	9.30	1,440	7.70	379	7.10	175	6.95	140		110		80
8	9.35	1,400	7.60	330	7.25	215	6.85	120		110		80
9	9.20	1,270	7.50	290	7.15	185	6.85	120		110		80
10	8.75	940	7.45	275	7.10	175	6.80	110		110		70
11	8.90	1,040	7.40	255	7.00	150	6.80	110		100		70
12	8.95	1,080	7.40	255	7.00	150	6.80	110		100		70
13	9.10	1,180	7.20	200	7.00	150	6.85	129		100		70
14	8.90	1,040	7.35	240	7.15	185	6.80	110		100		70
15	9.00	1,110	7.30	225	7.00	150	6.90	130		100		70
16	9.40	1,440	7.40	255	7.00	150	6.95	140		100		70
17	9.45	1,490	7.35	240	7.10	175	6.90	139		100		60
18	9.25	1,310	7.40	255	7.20	200	6.95	140		100		60
19	8.90	1,040	7.40	255	7.25	215	7.60	339		100		60
20	8.70	910	7.40	255	7.15	185	7.65	350		100		60
21	8.50	780	7.45	275	7.10	175	7.60	330		90		60
22	8.45	750	7.35	245	7.00	159	7.55	240		90		60
23	8.45	750	7.30	225	6.90	130	7.10	175		90		60
24	8.30	660	7.25	215	6.90	130	7.00	150		90		60
25	8.60	510	7.20	200	6.90	130	6.95	140		90		60
26	7.70	370	7.20	200	7.10	175	6.95	140		90		60
27	7.90	460	7.10	175	7.15	185	6.90	130		90		60
28	7.85	440	7.10	175	7.00	150	6.80	110		90		60
29	7.90	460	7.30	225	6.95	140	6.80	110		90		60
30	8.10	560	7.15	185	6.95	140	6.80	110		90		60
31	8.50	780	7.10	175			6.80	110		90		60



SESSIONAL PAPER No. 25d

*Monthly Discharge of Barriere River near Mouth, for 1916.*

(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.
April	610	180	290	0.97	1.08	17,300
May	1,880	690	1,280	4.27	4.92	78,700
June	3,050	1,270	2,000	6.66	7.43	119,000
July	2,410	970	1,600	3.66	4.22	67,600
August	750	175	285	0.95	1.09	17,500
September	215	130	175	0.58	0.61	9,800
October	350	110	155	0.52	0.60	9,500
November	120	90	100	0.33	0.37	5,950
December	80	50	66	0.22	0.25	4,060
The period	3,050	50	605	2.01	20.57	329,410

## BOLEAN CREEK (2002).

*Location.*—Section 10, township 18, range 12, west of 6th meridian; one mile from mouth of creek.

*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; April 1 to September 30, 1915; April 1 to September 30, 1916.

*Drainage Area.*—Eighty square miles.

*Gauge.*—Vertical staff; daily readings.

*Channel.*—Gravel and sand, about 20 feet wide.

*Discharge Measurements.*—Five measurements during 1915 and 1916 agree very well and cover practically all stages for 1916.

*Accuracy.*—The results for this year are considered to be quite accurate.

## Discharge Measurements of Bolean Creek 1 Mile from Mouth, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 31	C. G. Cline	1,055	28	45 0	3.02	2.35	136.0
July 30	F. R. Archibald	1,913	27	21 1	1.67	1.02	35.3
Sept. 10	F. R. Archibald	1,913	22	12 8	0.80	1.20	10.2

## Daily Gauge Height and Discharge of Bolean Creek 1 Mile from Mouth, for 1916.

(Drainage area, 80 square miles)

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	1 30	14	2 05	85	2 30	125	2 00	80	1 60	34	1 20	10
2	1 25	12	2 15	100	2 30	125	1 85	59	1 55	30	1 20	10
3	1 30	14	2 30	125	2 30	125	2 40	145	1 65	39	1 20	10
4	1 30	14	2 45	155	2 50	165	2 20	110	1 60	34	1 20	10
5	1 30	14	2 45	155	2 40	145	2 15	100	1 55	30	1 20	10
6	1 30	14	2 55	175	2 40	145	2 05	85	1 50	26	1 20	10
7	1 30	14	2 40	145	2 40	145	1 95	72	1 50	26	1 20	10
8	1 30	14	2 30	125	2 30	125	2 00	80	1 50	26	1 20	10
9	1 30	14	2 20	110	2 30	125	2 00	80	1 50	26	1 20	10
10	1 40	19	2 10	90	2 20	110	1 85	60	1 40	19	1 20	10
11	1 40	19	2 00	80	2 10	90	1 90	65	1 40	19	1 20	10
12	1 40	19	2 00	80	2 10	90	1 80	54	1 40	19	1 20	10
13	1 30	14	1 90	65	2 10	90	1 80	54	1 40	19	1 20	10
14	1 30	14	1 90	65	2 10	90	1 70	43	1 30	14	1 20	10
15	1 40	19	1 90	65	2 10	90	1 70	43	1 30	14	1 20	10
16	1 40	19	2 00	80	2 10	90	1 90	65	1 30	14	1 20	10
17	1 40	19	2 10	90	2 10	90	2 25	115	1 40	19	1 20	10
18	1 40	19	2 30	125	2 00	80	2 15	100	1 40	19	1 20	10
19	1 40	19	2 35	135	2 00	80	2 05	85	1 40	19	1 10	7
20	1 40	19	2 30	125	1 95	70	1 95	71	1 40	19	1 10	7
21	1 40	19	2 20	110	1 90	65	1 90	65	1 30	14	1 10	7
22	1 30	14	2 10	90	2 00	80	1 85	59	1 30	14	1 10	7
23	1 30	14	2 10	90	1 90	65	1 85	60	1 30	14	1 10	7
24	1 30	14	2 10	90	1 90	65	1 80	54	1 25	12	1 10	7
25	1 40	19	2 20	110	1 80	54	1 95	72	1 20	10	1 10	7
26	1 50	26	2 30	125	1 85	60	1 80	54	1 20	10	1 10	7
27	1 75	48	2 35	135	2 30	125	1 80	54	1 20	10	1 10	7
28	2 00	80	2 40	145	2 30	125	1 70	43	1 20	10	1 10	7
29	2 00	80	2 40	145	2 25	115	1 70	43	1 20	10	1 10	7
30	1 90	65	2 35	135	2 10	90	1 65	38	1 20	10	1 10	7
31			2 35	135			1 60	34	1 20	10		

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*Monthly Discharge of Bolean Creek 1 Mile from Mouth, for 1916.*

(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.....	86	12	23	0 29	0 32	1,370
May.....	173	65	110	1 38	1 59	6,760
June.....	165	54	100	1 25	1 39	5,980
July.....	145	34	69	0 86	0 99	4,240
August.....	39	10	19	0 24	0 28	1,160
September.....	10	7	9	0 11	0 12	530
The period.....	175	7	55	0 69	4 60	20,010

## CHERRY CREEK AT BOWERS RANCH (2005).

*Location.*—Section 14, township 19, range 19, west of 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; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Sixty-two square miles. The discharge is regulated by a storage reservoir.

*Gauge.*—Standard chain gauge; daily readings.

*Channels.*—Velocity swift at all stages; permanent control.

*Discharge Measurements.*—Nine meter measurements made during 1914, 1915 and 1916 agree very well and cover all ranges of stage, except between discharges of 20 and 50 cubic feet per second.

*Accuracy.*—Results should be quite accurate except for the lack of measurements at discharges between 20 and 50 cubic feet per second.

*Discharge Measurements of Cherry Creek near Bowers Ranch, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 23	A. L. McNaughton	1,923	13 0	6 50	2 24	0 93	14 6
Aug 24	F. R. Archibald	1,913	14 2	3 90	2 18	0 80	8 5
Sept. 18	F. R. Archibald	1,913	2 0	0 32	0 30	0 35	0 1

Daily Gauge Height and Discharge of Cherry Creek near Bowers Ranch, for 1916.

(Drainage area 92 square miles.)

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							0.30	0.1	0.90	12.8	1.15	28.0
2							0.40	0.4	0.90	12.8	1.10	25.0
3							0.40	0.4	1.00	18.4	1.10	25.0
4							0.55	2.4	1.00	18.4	1.15	28.0
5							0.55	2.4	1.15	28.0	1.15	28.0
6							0.55	2.4	1.35	43.0	1.10	25.0
7							0.55	2.4	1.40	47.0	1.10	25.0
8							0.55	2.4	1.20	31.0	1.00	18.4
9							0.60	3.2	1.10	25.0	1.00	18.4
10							0.60	3.2	1.10	25.0	0.95	15.6
11							0.65	4.3	1.05	21.0	0.90	12.8
12							0.60	3.2	0.90	12.8	0.90	12.8
13							0.60	3.2	0.85	10.7	0.80	8.6
14							0.65	4.3	0.80	8.6	0.80	8.6
15							0.65	4.3	0.80	8.6	0.80	8.6
16							0.65	4.3	0.75	7.0	0.75	7.0
17							0.60	3.2	0.85	10.7	0.75	7.0
18							0.65	4.3	0.85	10.7	0.75	7.0
19							0.65	4.3	0.95	15.6	0.75	7.0
20							0.65	4.3	1.00	18.4	0.70	5.4
21							0.65	4.3	1.00	18.4	0.70	5.4
22							0.65	4.3	1.05	21.0	0.70	5.4
23							0.65	4.3	1.05	21.0	0.70	5.4
24							0.70	5.4	1.10	25.0	0.90	12.8
25							0.70	5.4	1.05	21.0	0.90	12.8
26							0.75	7.0	1.10	25.0	0.95	15.6
27							0.85	10.7	1.10	25.0	0.90	12.8
28							0.85	10.7	1.15	28.0	1.00	18.4
29							0.80	8.6	1.05	21.0	1.05	21.0
30							0.80	8.6	1.05	21.0	1.10	25.0
31							0.80	8.6	1.15	28.0	1.10	25.0
	July.		August.		September.		October.		November.		December.	
1	1.10	25.0	0.60	3.2	0.70	5.4	0.40	0.4				
2	1.15	28.0	0.55	2.4	0.70	5.4	0.40	0.4				
3	1.10	25.0	0.55	2.4	0.65	4.3	0.40	0.4				
4	1.10	25.0	0.60	3.2	0.60	3.2	0.40	0.4				
5	1.10	25.0	0.60	3.2	0.55	2.4	0.40	0.4				
6	1.05	21.0	0.60	3.2	0.55	2.4	0.35	0.3				
7	0.95	15.6	0.55	2.4	0.50	1.6	0.35	0.3				
8	0.90	12.8	0.55	2.4	0.45	1.0	0.35	0.3				
9	0.80	8.6	0.50	1.6	0.45	1.0	0.40	0.4				
10	0.80	8.6	0.50	1.6	0.40	0.4	0.40	0.4				
11	0.75	7.0	0.50	1.6	0.40	0.4	0.40	0.4				
12	0.75	7.0	0.50	1.6	0.40	0.4	0.40	0.4				
13	0.70	5.4	0.45	1.0	0.40	0.4	0.40	0.4				
14	0.70	5.4	0.45	1.0	0.40	0.4	0.35	0.2				
15	0.70	5.4	0.40	0.4	0.40	0.4	0.35	0.3				
16	0.75	7.0	0.45	1.0	0.35	0.2	0.35	0.2				
17	0.80	8.6	0.45	1.0	0.30	0.1	0.35	0.3				
18	0.80	8.6	0.45	1.0	0.35	0.3	0.40	0.4				
19	0.75	7.0	0.80	8.6	0.35	0.2	0.40	0.4				
20	0.70	5.4	0.85	10.7	0.35	0.3	0.40	0.4				
21	0.70	5.4	0.95	15.6	0.35	0.2	0.40	0.4				
22	0.70	5.4	1.05	21.0	0.35	0.3	0.40	0.4				
23	0.70	5.4	0.95	15.6	0.35	0.2	0.45	1.0				
24	0.65	4.3	0.80	8.6	0.35	0.3	0.45	1.0				
25	0.60	3.2	0.75	7.0	0.35	0.2	0.40	0.4				
26	0.60	3.2	0.90	12.8	0.35	0.3	0.40	0.4				
27	0.60	3.2	0.90	12.8	0.35	0.2	0.45	1.0				
28	0.60	3.2	0.80	8.6	0.35	0.3	0.45	1.0				
29	0.60	3.2	0.80	8.6	0.35	0.2	0.50	1.6				
30	0.60	3.2	0.75	7.0	0.40	0.4	0.50	1.6				
31	0.60	3.2	0.70	5.4			0.50	1.6				

SESSIONAL PAPER No. 25d

*Monthly Discharge of Cherry Creek near Bowers Ranch, for 1916.*

(Drainage area, 62 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	10.7	0.1	4.3	0.07	0.08	255
May	47.0	7.0	20.7	0.33	0.38	1,270
June	28.0	5.4	15.1	0.24	0.27	900
July	28.0	3.2	9.8	0.16	0.18	600
August	21.0	0.4	3.4	0.05	0.06	210
September	5.4	0.1	1.1	0.02	0.02	65
October	1.6	0.2	0.6	0.01	0.01	37
The period	47.0	0.1	7.9	0.13	1.00	3,337

## CLEARWATER RIVER (2047).

*Location.*—Near Raft river; Water District No. 2.*Records Available.*—April 1 to December 31, 1914; January 1 to December 31, 1915; January 1 to December 31, 1916.*Drainage Area.*—Two thousand four hundred square miles.*Gauge.*—Standard tape wound, steel cable gauge installed October 17, 1916, to replace old chain gauge. Readings taken daily.*Channel.*—Straight for some distance above and below measuring section. Bed of stream of large boulders and gravel. Current swift.*Discharge Measurements.*—Measurements are made from cable car on a section about 75 feet above gauge. Six measurements taken during 1914, two in 1915 and three in 1916 agree very well and cover the whole range of stage.*Winter Flow.*—Ice conditions for about three months. Recorded gauge readings have been corrected by gauge reader for use with open-water curve and are considered fairly reliable. Meter measurements on February 19, 1917 showed an error of only about 15 per cent.*Accuracy.*—During nine months open-water conditions, the results are considered quite reliable.*Discharge Measurements of Clearwater River near Brookfield's Ranch, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 26	F. R. Archibald	1,913	260	3,688	8.10	13.55	29,864
Sept. 15	F. R. Archibald	1,913	219	2,074	2.60	7.01	5,394
Oct. 27	F. R. Archibald	1,055	210	1,829	1.97	5.90	3,661
1917							
Feb. 19	F. R. Archibald	1,055	207	1,653	0.77	Ice	1,281

Daily Gauge Height and Discharge of Clearwater River near Brookfield's Ranch, for 1916.

(Drainage area, 2,400 square miles.)

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 55	1,920	4 25	1,030	4 00	1,400	4 40	1,770	7 00	5,300	9 95	13,990
2	4 55	1,920	4 25	1,030	4 00	1,400	4 45	1,820	7 35	6,060	9 95	13,990
3	4 55	1,920	4 20	1,580	4 00	1,400	4 50	1,870	7 80	7,070	10 15	14,450
4	4 55	1,920	4 20	1,580	3 95	1,360	4 55	1,920	8 50	8,890	10 40	15,420
5	4 50	1,870	4 20	1,580	4 05	1,360	4 60	1,970	8 95	10,070	10 35	15,220
6	4 50	1,870	4 20	1,580	3 95	1,360	4 65	2,020	9 35	11,530	10 25	14,840
7	4 50	1,870	4 15	1,530	3 95	1,360	4 75	2,120	9 65	12,590	10 20	14,640
8	4 50	1,870	4 15	1,530	4 00	1,400	4 85	2,220	9 70	12,770	10 20	14,640
9	4 50	1,870	4 15	1,530	4 05	1,450	5 00	2,300	9 50	12,050	10 20	14,640
10	4 45	1,820	4 15	1,530	4 05	1,450	5 15	2,370	9 50	12,050	10 10	14,260
11	4 45	1,820	4 15	1,530	4 05	1,450	5 25	2,690	9 10	10,680	10 00	13,880
12	4 45	1,820	4 10	1,490	4 00	1,400	5 35	2,820	8 90	10,040	10 05	14,070
13	4 45	1,820	4 10	1,490	3 95	1,360	5 40	2,880	8 60	9,170	10 20	14,640
14	4 45	1,820	4 10	1,490	3 95	1,360	5 45	2,940	8 50	8,890	10 60	16,220
15	4 40	1,770	4 15	1,530	3 90	1,320	5 50	3,010	8 40	8,620	11 25	18,940
16	4 40	1,770	4 20	1,580	4 85	1,280	5 55	3,080	8 40	8,620	11 85	21,590
17	4 40	1,770	4 20	1,580	3 85	1,280	5 55	3,080	8 55	9,030	12 10	22,740
18	4 40	1,770	4 20	1,580	3 80	1,240	5 55	3,080	8 90	10,040	13 05	27,370
19	4 40	1,770	4 20	1,580	3 75	1,200	5 60	3,140	9 20	11,020	13 65	30,370
20	4 40	1,770	4 25	1,630	3 75	1,200	5 60	3,140	9 50	12,050	13 85	31,370
21	4 40	1,770	4 25	1,630	3 70	1,170	5 60	3,140	9 55	12,230	13 90	31,630
22	4 35	1,720	4 25	1,630	3 70	1,170	5 60	3,140	9 60	12,410	14 00	32,140
23	4 35	1,720	4 25	1,630	3 75	1,200	5 65	3,200	9 45	11,880	14 20	33,160
24	4 35	1,720	4 20	1,580	3 80	1,240	5 65	3,200	9 40	11,700	13 95	31,800
25	4 35	1,720	4 20	1,580	3 90	1,320	5 70	3,270	9 35	11,530	13 75	30,870
26	4 35	1,720	4 20	1,580	4 00	1,400	5 75	3,340	9 50	12,050	13 55	29,870
27	4 30	1,670	4 15	1,530	4 10	1,490	6 25	4,070	9 70	12,770	13 80	31,120
28	4 30	1,670	4 15	1,530	4 20	1,580	6 55	4,560	9 80	13,130	13 75	30,870
29	4 30	1,670	4 15	1,530	4 30	1,670	6 70	4,820	9 60	12,500	13 65	29,870
30	4 25	1,630	4 20	1,580	4 40	1,770	6 90	5,180	9 60	13,500	13 15	27,470
31	4 25	1,630	4 20	1,580	4 50	1,870	.....	.....	10 05	14,070	.....	.....
	July.		August.		September.		October.		November.		December.	
1	12 75	25,880	9 90	13,500	8 30	8,350	5 95	3,620	5 15	2,940	4 20	1,580
2	12 40	24,160	9 80	13,130	8 40	8,620	5 80	3,410	5 40	2,880	4 15	1,530
3	12 50	24,650	9 90	13,500	8 45	8,760	5 65	3,200	5 35	2,820	4 15	1,530
4	12 75	25,880	10 10	14,200	8 40	8,620	5 55	3,080	5 35	2,820	4 15	1,530
5	12 45	24,400	9 90	13,500	8 35	8,480	5 45	2,940	5 30	2,750	4 10	1,490
6	12 05	22,500	9 70	12,770	8 30	8,350	5 40	2,880	5 20	2,630	4 10	1,490
7	11 75	21,140	9 50	12,050	8 20	8,060	5 30	2,750	5 15	2,570	4 20	1,580
8	11 55	20,250	9 40	11,700	8 10	7,890	5 20	2,630	5 20	2,630	4 30	1,670
9	11 25	18,940	9 30	11,360	8 05	7,450	5 15	2,570	5 30	2,750	4 40	1,770
10	11 35	19,380	9 30	11,360	7 70	6,830	5 10	2,510	5 30	2,750	4 40	1,770
11	11 30	19,160	9 30	11,360	7 55	6,490	5 05	2,450	5 10	2,510	4 35	1,720
12	11 25	18,940	9 25	11,190	7 40	6,170	5 00	2,390	4 90	2,290	4 35	1,720
13	11 35	19,890	9 20	11,020	7 25	5,850	5 00	2,390	4 80	2,170	4 30	1,670
14	11 35	19,380	9 20	11,020	7 10	5,550	4 95	2,340	4 70	2,070	4 30	1,670
15	11 15	18,510	9 15	10,850	6 80	5,000	5 00	2,390	4 65	2,020	4 30	1,670
16	11 20	18,730	9 10	10,680	6 70	4,820	5 10	2,510	4 65	2,020	4 25	1,630
17	11 40	19,590	8 95	10,190	6 60	4,640	5 60	3,140	4 60	1,970	4 25	1,630
18	11 40	19,590	8 80	9,740	6 55	4,560	6 00	3,700	4 60	1,970	4 25	1,630
19	11 30	19,160	8 65	9,310	6 50	4,470	6 10	3,850	4 55	1,920	4 25	1,630
20	11 35	19,380	8 50	8,890	6 45	4,390	6 25	4,070	4 50	1,870	4 25	1,630
21	11 40	19,590	8 35	8,490	6 40	4,310	6 25	4,070	4 45	1,820	4 25	1,630
22	11 50	20,030	8 20	8,090	6 30	4,150	6 20	4,000	4 40	1,770	4 25	1,630
23	11 50	20,030	8 00	7,570	6 25	4,070	6 15	3,920	4 30	1,670	4 25	1,630
24	11 30	19,160	7 90	7,320	6 25	4,070	6 10	3,850	4 30	1,670	4 25	1,630
25	11 30	19,160	8 00	7,570	6 20	4,000	6 05	3,780	4 25	1,630	4 20	1,580
26	11 00	17,880	8 10	7,830	6 45	4,390	6 00	3,700	4 25	1,630	4 20	1,580
27	10 80	17,040	8 20	8,090	6 40	4,310	5 90	3,650	4 25	1,630	4 20	1,580
28	10 60	16,220	8 30	8,350	6 30	4,150	5 80	3,410	4 25	1,630	4 10	1,490
29	10 40	15,420	8 30	8,350	6 20	4,000	5 65	3,200	4 20	1,580	4 10	1,490
30	10 20	14,640	8 30	8,350	6 10	3,850	5 50	3,010	4 20	1,580	4 10	1,490
31	10 05	14,070	8 35	8,490	.....	.....	5 50	3,010	.....	.....	4 15	1,530

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## Monthly Discharge of Clearwater River near Mouth, for 1916.

(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.
January	1,920	1,640	1,790	0.75	0.86	110,000
February	1,810	1,490	1,570	0.65	0.70	90,300
March	1,870	1,170	1,390	0.57	0.66	84,800
April	3,180	1,770	2,950	1.23	1.37	176,000
May	14,070	5,460	10,830	4.51	5.20	666,000
June	33,160	14,690	22,200	9.24	10.31	1,320,000
July	25,880	14,070	19,750	8.23	9.49	1,214,000
August	14,260	7,320	10,320	4.30	4.96	614,000
September	8,780	3,850	5,820	2.42	2.70	346,000
October	4,070	2,340	3,170	1.32	1.52	194,000
November	2,940	1,580	2,160	0.90	1.00	128,000
December	1,770	1,490	1,600	0.67	0.77	98,000
The year	33,160	1,170	6,960	2.90	49.54	5,061,500

## EDWARDS CREEK (2082).

*Location.*—Three miles from mouth, in section 26, township 22, range 16, west of the 6th meridian. Lyon's and Devick's diversions take water above the gauging station.

*Records Available.*—June 24 to October 31, 1911; April 20 to September 21, 1912; April 13 to September 30, 1915; April 1 to October 30, 1916.

*Drainage Area.*—Fifteen square miles above gauging station. The flow of the stream is regulated by storage dams on lakes near the headwaters and is further affected by water drawn off through Lyons' and Devick's diversions.

*Gauge.*—Vertical staff. This was washed out in the May freshet. It was replaced at another section and a changed rating resulted.

*Channel.*—Gravel. Inclined to shift.

*Discharge Measurements.*—The 1915 rating curve is used before the May freshet. It is fairly well defined by eight measurements. The 1916 rating curve is defined by only three measurements, which do not agree very well.

*Accuracy.*—Poor, on account of the changes during the season and the small number of measurements after the freshet.

It should be noted that water was being drawn off from Edwards creek above the gauging station through Lyons' diversion during May and June, and about 2 cubic feet per second through Devick's ditch from June 13 to July 3, 1916.

## Discharge Measurements of Edwards Creek 3 Miles from Mouth, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 13	C. G. Cline	1,055	9.0	5.8	1.88	1.65	11.0
July 20	F. R. Archibald	1,913	9.0	6.3	1.40	1.45	8.9
Aug 29	F. R. Archibald	1,913	7.5	2.8	0.48	1.04	1.3

## Daily Gauge Height and Discharge of Edwards Creek 3 Miles from Mouth, for 1916.

(Drainage area, 15 square miles.)

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							Old Gauge	0.5	1.27	9.5	1.97	20.0
2							0.55	0.5	1.40	13.0	1.95	20.0
3							0.50	0.5	1.65	19.5	1.90	18.6
4							0.48	0.5	1.80	28.0	1.90	18.6
5							0.52	0.5	2.00	31.0	1.85	17.4
6							0.50	0.5	2.18	37.0	1.80	16.2
7							0.50	0.5	2.17	37.0	1.72	14.3
8							0.52	0.5	Old Gauge		1.70	13.8
9							0.53	0.5			1.63	12.1
10							0.52	0.5			1.60	11.5
11							0.50	0.5			1.55	10.3
12							0.50	0.5	New Gauge		1.47	8.5
13							0.50	0.5	1.65	12.6	1.43	7.7
14							0.50	0.5	1.60	11.5	1.40	7.0
15							0.45	0.5	1.60	11.5	1.40	7.0
16							0.45	0.5		11.5	1.35	6.0
17							0.45	0.5	1.60	11.5	1.35	6.0
18							0.40	0.5	1.60	11.5	1.30	5.1
19							0.63	1.0	1.60	11.5	1.30	5.1
20							0.85	2.0	1.55	10.3	1.30	5.1
21							0.80	1.5	1.58	11.0	1.30	5.1
22							0.75	1.0	1.60	11.5	1.30	5.1
23							0.68	1.0	1.60	11.5	1.25	4.2
24							0.72	1.0	1.60	11.5	1.25	4.2
25							0.78	1.5	1.60	11.5	1.25	4.2
26							0.82	1.5	1.55	10.3	1.40	7.0
27							0.97	3.5	1.55	10.3	1.47	8.5
28							0.98	1.5	1.60	11.5	1.60	11.5
29							1.00	4.0	1.70	13.8	1.75	15.0
30							1.05	5.0	1.70	13.8	1.68	13.3
31									1.83	16.9		

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	1.60	11.5	1.15	2.6	1.00	1.0	1.00	1.0				
2	1.52	9.7	1.15	2.6	1.00	1.0	1.00	1.0				
3	1.87	17.8	1.15	2.6	1.00	1.0	1.00	1.0				
4	2.15	25.0	1.15	2.6	1.00	1.0	1.00	1.0				
5	2.02	22.0	1.15	2.0	1.00	1.0	1.00	1.0				
6	1.92	19.1	1.15	2.6	1.00	1.0	1.00	1.0				
7	1.82	16.7	1.10	1.9	1.00	1.0	1.00	1.0				
8	1.72	14.3	1.10	1.9	1.00	1.0	1.00	1.0				
9	1.62	12.0	1.10	1.9	1.00	1.0	1.00	1.0				
10	1.52	9.7	1.10	1.9	1.00	1.0	1.00	1.0				
11	1.42	7.5	1.15	2.6	1.00	1.0	1.00	1.0				
12	1.40	7.0	1.45	8.1	1.00	1.0	1.00	1.0				
13	1.40	7.0	1.45	8.1	1.00	1.0	1.00	1.0				
14	1.30	5.1	1.40	7.0	1.00	1.0	1.00	1.0				
15	1.30	5.1	1.35	6.0	1.00	1.0	0.95	0.7				
16	1.30	5.1	1.30	5.1	1.00	1.9	0.95	0.7				
17	1.45	8.1	1.25	4.2	1.00	1.0	0.95	0.7				
18	1.50	9.2	1.25	4.2	1.00	1.0	0.95	0.7				
19	1.50	9.2	1.25	4.2	1.00	1.0	0.95	0.7				
20	1.50	9.2	1.20	3.4	1.00	1.0	0.95	0.7				
21	1.45	8.1	1.20	3.4	1.00	1.0	0.95	0.7				
22	1.40	7.0	1.15	2.6	1.00	1.0	0.95	0.7				
23	1.40	7.0	1.10	1.9	1.00	1.0	0.95	0.7				
24	1.35	6.0	1.10	1.8	1.00	1.0	0.95	0.7				
25	1.35	6.0	1.10	1.8	1.00	1.0	0.95	0.7				
26	1.30	5.1	1.05	1.4	1.00	1.0	0.95	0.7				
27	1.30	5.1	1.05	1.4	1.00	1.0	0.95	0.7				
28	1.30	5.1	1.05	1.4	1.00	1.0	0.90	0.5				
29	1.25	4.2	1.05	1.4	1.00	1.0	0.90	0.5				
30	1.25	4.2	1.00	1.0	1.00	1.0	0.90	0.5				
31	1.20	3.4	1.00	1.0			2.90	0.5				



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*Monthly Discharge of Edwards Creek 3 Miles from Mouth, for 1916.*

(Drainage area, 15 square miles.)

Month.	DISCHARGE IN SECOND-FOOT.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April	5.0	0.5	1.2			70
May	20.0	4.2	10.3			610
June	25.0	3.4	9.4			580
July	8.1	1.0	3.1			190
August	1.0	1.0	1.0			60
September	1.0	0.5	0.8			50
October						
The period						

## LYONS DIVERSION FROM EDWARDS CREEK (2083).

*Location.*—Section 34, township 22, range 16, west of 6th meridian. This diversion takes water from Edwards creek above the gauging station.

*Records Available.*—April 13 to September 30, 1915; May 5 to October 31, 1916.

*Gauge.*—Vertical staff.

*Channel.*—Artificial ditch.

*Discharge Measurements.*—One meter measurement and two float measurements.

*Discharge Measurements of Edwards Creek at Lyon's diversion, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 7	H. L. Devick	Float	2.0	0.7	4.0	0.35	2.8
May 13	C. G. Cline	1.055	1.5	0.3	1.3	0.10	0.3
June 4	H. L. Devick	Float	2.0	0.7	4.0	0.40	3.0
July 30	F. R. Archibald						0.0

## Daily Gauge Height and Discharge of Edwards Creek at Lyons Diversion, for 1916.

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.	Sec.	Sec.-ft.	Feet.	Sec.-ft.
1							0.25	1.5			0.00	0.0
2			0.45	3.5								
3							0.30	2.0				
4			0.40	3.0								
5	0.30	2.0										
6					0.00	0.0	0.30	2.0	0.00	0.0		
7	0.35	2.5	0.30	2.0								
8							0.20	1.0				
9			0.25	1.5								
10	0.20	1.0			0.25	1.5	0.15	0.7				
11			0.20	1.0								
12	0.15	0.7			0.25	1.5						
13	0.10	0.3	0.45	3.5			0.00	0.0				
14	0.05	0.1										
15			0.40	3.0					0.00	0.0	0.00	0.0
16	0.05	0.1			0.20	1.0						
17												
18			0.30	2.0								
19	0.25	1.5			0.00	0.0						
20			0.35	2.5	0.00	0.0						
21	0.25	1.5										
22							0.05	0.1				
23	0.25	1.5	0.25	1.5			0.05	0.1				
24												
25												
26	0.25	1.5	0.45	3.5								
27							0.00	0.0				
28	0.25	1.5	0.00	0.0								
29												
30	0.35	2.5	0.00	0.0					0.00	0.0		
31											0.00	0.0

## ESSELL CREEK (2011).

*Location.*—Section 36, township 17, range 14, west of 6th meridian;  $\frac{1}{4}$  mile below Summit lake.

*Records Available.*—The station was re-established June 1, 1916, a short distance upstream from the old station. The flow should be practically the same at the two stations. May 25 to September 30, 1911; April 1 to September 7, 1912; April 16 to September 14, 1913; April 1 to December 4, 1914; June 1 to November 4, 1916.

*Drainage Area.*—Six square miles. The natural run-off is increased by water diverted from upper Monte creek (see station No. 2026) and stored in Summit lake.

*Gauge.*—Vertical staff braced against a rock. Established June 1, 1916. Three readings a week.

*Channel.*—Rocks and gravel; apparently permanent.

*Discharge Measurements.*—Four meter measurements in 1916 agree fairly well and cover practically all stages after the establishment of the station.

*Accuracy.*—Fair. The natural flow of the stream is affected by the storage in Summit lake and the water diverted into the lake from Monte creek.

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*Discharge Measurements of Essell Creek  $\frac{1}{4}$  Mile below Summit Lake, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June	2 C. G. Chne.	1,055	14 0	14 1	1 79	1 38	25 2
July	29 F. R. Archibald	1,913	15 0	4 9	0 87	1 09	4 3
Sept.	9 F. R. Archibald	1,913	16 0	6 0	0 65	1 02	3 9
Oct.	23 F. R. Archibald	1,055	9 0	2 4	0 40	0 87	1 0

*Daily Gauge Height and Discharge of Essell Creek  $\frac{1}{4}$  Mile below Summit Lake, for 1916.*

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		25	1 17	9 1		5 6		4 1		0 5	0 85	0 9
2	1 38	25		9 8	1 10	5 6	1 05	4 1	0 80	0 5		0 9
3		24	1 20	10 6		5 4		4 3		0 5		0 9
4		23		9 8		5 4	1 00	2 6	0 80	0 5	0 85	0 9
5	1 35	22	1 17	9 1	1 07	4 8		2 6		0 5		
6		23		9 6		4 8	1 00	2 6		0 4		
7	1 37	24		10 1	1 07	4 8		2 6	0 77	0 4		
8		25	1 20	10 6		4 8		2 6		1 5		
9		26		13 2	1 07	4 8	1 00	2 6	1 00	2 6		
10	1 40	27	1 27	15 8		4 8		2 6		2 6		
11		27		15 8		4 8	1 00	2 6	1 00	2 6		
12	1 40	27	1 27	15 8	1 07	4 8		2 5		2 5		
13		27		16 5		4 8	0 97	2 3		2 4		
14	1 40	27		17 2	1 07	4 8		2 3	0 97	2 4		
15		26	1 30	18 0		5 2		2 3		2 4		
16		25		15 0	1 10	5 6	0 97	2 3	1 00	2 6		
17	1 37	21	1 22	12 0		5 4		1 8		2 6		
18		23		11 3		5 1	0 90	1 3	1 00	2 6		
19	1 35	22	1 20	10 6	1 07	4 8		1 3		2 6		
20		23		10 6		5 2	0 90	1 3		2 6		
21	1 37	24		10 6	1 10	5 6		1 1	1 00	2 6		
22		25	1 20	10 6		5 2		1 5		2 0		
23		26		8 1	1 07	4 8	0 92	1 6	0 90	1 3		
24	1 40	27	1 10	5 6		4 8		1 2		1 3		
25		25		5 6		4 8	0 82	0 7	0 90	1 3		
26	1 37	24	1 10	5 6	1 07	4 8		0 6		1 2		
27		25		5 6		4 8	0 80	0 5		1 0		
28	1 40	27		5 6	1 07	4 8		0 5	0 85	0 9		
29		21	1 10	5 6		4 5		0 6		0 8		
30		15		5 6	1 05	4 1	0 82	0 7	0 82	0 7		
31			1 10	5 6		4 1				0 8		

*Monthly Discharge of Essell Creek ½ Mile below Summit Lake, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.			RUN-OFF.
	Maximum.	Minimum.	Mean.	Total in Acre-feet.
June .....	27 0	15 0	24 0	1,430
July .....	18 0	5 6	10 4	640
August .....	5 6	4 1	4 9	300
September .....	4 4	0 5	2 0	120
October .....	2 6	0 4	1 6	100
The period .....	27 0	0 4	8 6	2,500

## FISHTRAP CREEK (2067).

*Location.*—Four miles from mouth. About 30 miles north of Kamloops; Provincial Water District No. 2.

*Records Available.*—March 1 to September 30, 1915; April 1 to October 30, 1916.

*Drainage Area.*—Eighty square miles.

*Gauge.*—Vertical staff; two readings a week.

*Channel.*—Gravel. Control formed by log jam, which seems to be permanent.

*Discharge Measurements.*—Two meter measurements in 1915 and three in 1916 agree very well and cover all stages except discharges between 60 and 140 cubic feet per second.

*Accuracy.*—Good except for some uncertainty for discharges between 60 and 140 cubic feet per second.

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Daily Gauge Height and Discharge of Fishtrap Creek 4 Miles from Mouth, for 1915.

(Drainage area, 80 square miles.)

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.
1						3.5		7		57		49
2						3.5	0.60	9		55	1.17	48
3						3.5		10		53		43
4						3.5		11	1.20	51	1.05	38
5						3.5		13	1.25	54		37
6						3.5		14		54		36
7						3.5	0.72	15	1.25	54		35
8						3.5		16		53		34
9						3.5	0.75	17		52	1.00	34
10					0.50	3.5		22		51		30
11						3.5		26		50	0.90	27
12					0.50	3.5		30	1.20	50		28
13						3.5		34		55		30
14						3.5	1.05	38	1.30	59		31
15						3.5		40		67		33
16						3.5	1.10	42		74	1.00	34
17					0.50	3.5		44		82		51
18						3.5		46		90	1.40	68
19					0.50	3.5		49	1.67	97		63
20						3.7		52		99		58
21						3.9	1.25	54	1.72	100		53
22						4.2		57		93		47
23						4.4	1.30	59		85	1.10	42
24					0.52	4.6		59		78		38
25						4.6		59		70	1.00	34
26					0.52	4.6		59	1.35	63		44
27						4.6		59		59		53
28						4.6	1.30	59	1.25	54		62
29						4.6		59		53		72
30						4.6	1.30	59		51	1.52	81
31					0.52	4.6		59		50		

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		70		44	0.70	11						
2	1.30	59		41		11						
3		54		37	0.70	14						
4		50	1.00	34		13						
5		45		30		13						
6		39	0.90	27		12						
7	1.00	34		27		11						
8		34		26	0.65	11						
9	1.00	34		25		10						
10		37		24	0.60	9						
11		41	0.85	24		10						
12		44		22		11						
13		47	0.80	20		12						
14	1.20	50		20		13						
15		50		20	0.70	11						
16	1.20	50		20		11						
17		51		20	0.70	14						
18		53	0.80	20		14						
19		55		20		13						
20		57	0.80	20		12						
21	1.30	59		19		12						
22		55		18	0.65	11						
23	1.20	50		17		11						
24		50		16	0.65	11						
25		50	0.72	15		11						
26		50		15		10						
27		50	0.70	14		10						
28	1.20	50		14		9						
29		50		14	0.60	9						
30	1.20	50		13		10						
31		47		14								

*Monthly Discharge of Fishtrap Creek 4 Miles from Mouth, for 1915.*

(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.....	4.6	3.5	3.8	0.05	0.06	235
April.....	59.0	7.0	37.0	0.46	0.51	2,200
May.....	100.0	50.0	65.0	0.81	0.93	4,000
June.....	81.0	27.0	45.0	0.56	0.63	2,700
July.....	70.0	34.0	49.0	0.61	0.70	3,000
August.....	44.0	14.0	22.0	0.27	0.31	1,350
September.....	14.0	9.0	12.0	0.15	0.17	700
The period.....	100.0	3.5	33.4	0.42	3.31	14,185

*Discharge Measurements of Fishtrap Creek 4 Miles from Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 19	C. G. Cline.....	1,055	28	49	3.02	2.10	149.0
July 23	F. R. Archibald.....	1,913	26	15	1.90	0.92	28.0
Sept. 2	F. R. Archibald.....	1,913	19	7	1.31	0.83	10.0

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Daily Gauge Height and Discharge of Fishtrap Creek 4 Miles from Mouth, for 1916.

(Drainage area, 80 square miles.)

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								9		105		150
2								9		120	2 10	150
3								9	2 00	135		145
4								9		155		140
5							0 60	9	2 30	175		130
6								10		165		130
7							0 65	11		155	1 90	125
8								11		145		110
9								12		135	1 70	100
10								13	1 90	125		95
11								14		110		90
12							0 70	14	1 70	100		80
13								15		105		75
14							0 72	15		115	1 40	68
15								15		120		64
16								16		130	1 30	59
17								17	2 00	135		59
18								18		145		59
19							0 77	19	2 10	150		59
20								20		145		59
21							0 80	20		140	1 30	59
22								20		140		57
23								21		135	1 25	55
24								22	1 95	130		60
25								23		135		65
26							0 85	24	2 05	145		70
27								24		145		75
28							1 30	25		145	1 50	78
29								25		150		73
30								26		150	1 40	68
31								26	2 10	150		..

	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.
1		70		28	0 65	11		9				
2		75	0 90	27		11		9				
3		80		27		11		9				
4		85	0 90	27		10	0 60	9				
5	1 60	89		25		10		9				
6		78		24	0 62	10	0 60	9				
7	1 40	68		23		10		9				
8		64		22	0 62	10		9				
9		60	0 80	20		10		9				
10		57		18		10		9				
11		53	0 75	17		9	0 60	9				
12	1 20	50		16		9		9				
13		46		16	0 60	9	0 60	9				
14	1 10	42		15		9		9				
15		42		15	0 60	9		9				
16		42	0 70	14		9		9				
17		42		15		9		9				
18		42	0 72	15		9	0 60	9				
19	1 10	42		15		9		9				
20		38		15	0 60	9	0 60	9				
21	1 00	34		14		9		9				
22		32		11	0 60	9		9				
23		31	0 70	14		9		9				
24		30		14		9		9				
25		29	0 70	14		9	0 60	9				
26	0 90	27		14		9		9				
27		25		13	0 60	9	0 60	9				
28	0 95	30		13		9		9				
29		29		12	0 60	9		9				
30		29	0 65	11		9		9				
31		28		11				9				

*Monthly Discharge of Fishtrap Creek 4 Miles from Mouth, for 1916.*

(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.....	90	9	22.0	0.28	0.31	1,310
May.....	175	100	135.0	1.69	1.95	8,300
June.....	159	55	87.0	1.09	1.22	5,180
July.....	80	27	48.0	0.60	0.69	2,850
August.....	28	11	17.3	0.22	0.25	1,080
September.....	11	9	9.4	0.12	0.13	580
October.....	9	9	9.0	0.11	0.13	550
The period.....	175	9	46.8	0.59	4.68	19,910

## GREENSTONE CREEK (2013).

*Location.*—Section 33, township 17, range 20, west of 6th meridian; 1 mile from mouth.

*Records Available.*—May 1 to August 1, 1912; April 27 to August 24, 1913; June 5 to September 12, 1915; April 17 to September 30, 1916.

*Drainage Area.*—Twenty square miles.

*Gauge.*—Vertical staff established June 5, 1915; readings three times a week.

*Channel.*—Small rocks and gravel.

*Discharge Measurements.*—Two meter measurements in 1915 and two in 1916 agree fairly well and cover practically all stages except the peak of the freshet in 1915.

*Accuracy.*—Fairly good, except for peak of freshet in 1915.



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Daily Gauge Height and Discharge of Greenstone Creek 1 Mile from Mouth, for 1915.

(Drainage area, 20 square miles.)

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		7.5	1.1	30.0	1.0	11.0						
2		7.5	1.4	30.0		11.0	0.6	1.1				
3		7.5	1.4	30.0		11.0						
4		7.5	1.3	25.0	1.0	11.0						
5		7.5	1.2	20.0		9.8	0.6	1.1				
6	0.9	7.5	1.1	10.0		8.7						
7		6.0	1.0	11.0	0.9	7.5						
8	0.8	4.5	0.9	7.5		6.5						
9		4.5		7.5		5.5	0.6	1.1				
10	0.8	4.5	0.9	7.5	0.8	4.5						
11		4.5	0.8	4.5		1.5						
12	0.8	4.5		4.5		4.5	0.6	1.1				
13		17.0	0.8	4.5	0.8	4.5						
14	1.4	30.0		6.0		4.5						
15		30.0	0.0	7.5		1.5						
16	1.4	30.0		12.0	0.8	4.5						
17	1.4	30.0	1.1	16.0		4.5						
18	1.5	35.0		16.0		4.5						
19	1.5	35.0	1.1	10.0	0.8	1.5						
20	1.5	35.0		14.0		4.5						
21	1.5	35.0	1.0	11.0		1.5						
22	1.3	25.0		9.0		4.5						
23	1.1	16.0	0.9	7.5	0.8	4.5						
24	1.0	11.0		6.0		3.9						
25	0.9	7.5	0.8	4.5		3.2						
26	0.9	7.5		6.0	0.7	2.5						
27	1.2	20.0	0.9	7.5		2.5						
28	1.4	30.0		7.5		2.9						
29	1.4	30.0	0.9	7.5	0.7	2.5						
30	1.5	35.0		8.3		1.8						
31				9.2	0.6	1.1						

Monthly Discharge of Greenstone Creek 1 Mile from Mouth, for 1915.

(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.
June	35	4.5	18.0	0.90	1.00	1,070
July	30	4.5	12.0	0.60	0.69	740
August	11	1.1	5.3	0.26	0.30	325
The period	35	1.1	11.8	0.59	1.99	2,135

*Discharge Measurements of Greenstone Creek 1 Mile from Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
June 7	A. L. McNaughton	1,923	9.0	7.5	2.48	1.16	18.5
Sept. 20	F. R. Archibald	1,913	7.0	1.9	0.63	0.61	1.2

*Daily Gauge Height and Discharge of Greenstone Creek 1 Mile from Mouth, for 1916.*

(Drainage area, 20 square miles.)

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			1.1	15.7	1.2	20.0	1.1	15.7	0.8	4.5	0.7	2.5
2			1.2	20.0	1.2	20.0	1.2	20.0		4.5		2.5
3			1.2	20.0	1.2	20.0	1.2	20.0	0.8	4.5	0.7	2.5
4			1.2	20.0	1.2	20.0	1.2	20.0		4.5		1.8
5			1.3	25.0	1.3	25.0	1.2	20.0	0.8	4.5	0.6	1.1
6			1.3	25.0	1.3	25.0		18.0		4.5		1.1
7			1.3	25.0		22.0	1.1	15.7	0.8	4.5	0.6	1.1
8			1.3	25.0	1.2	20.0		15.7		4.5		1.1
9			1.3	25.0		20.0	1.1	15.7	0.8	4.5	0.6	1.1
10			1.3	25.0	1.2	20.0		15.7		4.5		1.1
11			1.3	25.0	1.2	20.0	1.1	15.7	0.8	4.5	0.6	1.1
12			1.2	20.0		20.0		15.7		4.5		1.1
13			1.2	20.0	1.2	20.0	1.1	15.7	0.8	4.5	0.6	1.1
14			1.2	20.0	1.1	15.7		15.7		4.5		1.1
15			1.2	20.0		15.7	1.1	15.7	0.8	4.5	0.6	1.1
16			1.2	20.0	1.1	15.7		13.5		3.5		1.1
17	0.7	2.5	1.1	15.7	1.1	15.7	1.0	11.3	0.7	2.5	0.6	1.1
18		3.5	1.1	15.7		15.7	1.0	11.3		2.5		1.1
19	0.8	4.5	1.1	15.7	1.1	15.7		11.3	0.7	2.5	0.6	1.1
20		4.5	1.1	15.7		14.3	1.0	11.3		2.5		1.1
21		4.5	1.1	15.7		12.8		9.4	0.7	2.5	0.6	1.1
22	0.8	4.5	1.1	15.7	1.0	11.3	0.9	7.5		2.5		0.7
23	0.9	7.5	1.2	20.0		9.4		7.5	0.7	2.5	0.5	0.2
24		7.5	1.2	20.0	0.9	7.5	0.9	7.5		2.5		0.2
25	0.9	7.5	1.2	20.0	0.9	7.5	0.9	7.5	0.7	2.5	0.5	0.2
26	1.0	11.3	1.2	20.0	0.9	7.5		7.5		2.5		0.2
27	1.0	11.3	1.3	25.0	0.9	7.5	0.9	7.5	0.7	2.5	0.5	0.2
28	1.1	15.7	1.3	25.0	0.9	7.5	0.9	7.5		2.5		0.2
29	1.1	15.7	1.3	25.0	1.0	11.3		6.0	0.7	2.5	0.5	0.2
30	1.1	15.7	1.2	20.0	1.1	15.7	0.8	4.5		2.5		0.2
31			1.2	20.0			0.8	4.5	0.7	2.5		

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## Monthly Discharge of Greenstone Creek 1 Mile from Mouth, for 1916.

(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.
May	25.0	15.7	21.0	1.05	1.21	1,200
June	25.0	7.5	16.0	0.80	0.80	950
July	20.0	1.5	12.6	0.63	0.73	770
August	4.5	2.5	3.5	0.18	0.21	215
September	2.5	0.2	1.0	0.05	0.06	60
The period	25.0	0.2	10.8	0.51	3.10	3,285

## GUICHON CREEK (2014).

*Location.*—One mile above Mamit lake, Water District No. 3, south of township 17, range 21, west of 6th meridian.

*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; March 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Three hundred and fifteen square miles. Water is diverted from Guichon creek drainage area, above gauging station, into Tunkwa lake.

*Gauge.*—Standard vertical staff gauge with auxiliary gauge for high-water stages.

*Channel.*—Bed of stream composed of sand and gravel; velocities fairly high. There was apparently a slight change in the control during the freshet of 1914.

*Discharge Measurements.*—Six discharge measurements, taken during 1914, 1915 and 1916, agree fairly well and cover all stages except for discharges between 120 and 240 cubic feet per second.

*Accuracy.*—Results should be quite reliable except for slight uncertainty in regard to discharges between 120 and 240 cubic feet per second.

## Discharge Measurements of Guichon Creek 1 Mile above Mamit Lake, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 7	C. C. Cline	1,055	22	95	2.00	5.00	247
Sept. 20	F. R. Archibald	1,013	21	13	0.75	1.37	10

*Daily Gauge Height and Discharge of Guichon Creek 1 Mile above Mamit Lake,  
for 1918.*

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.
1							1 67	27	4 65	320	5 07	..
2							1 85	37	4 85	210	5 20	..
3							2 03	48	5 85	315	5 30	..
4							2 15	55	5 03	325	5 18	..
5							2 17	56	6 05	335	4 07	..
6							2 12	53	6 05	335	5	..
7							2 35	67	6 05	335	..	..
8							2 20	58	6 05	335	..	..
9							2 25	61	6 05	335	..	..
10							2 25	61	6 05	335	..	..
11							2 27	62	5 05	300	..	180
12							2 25	61	5 50	285	..	16
13							2 30	64	4 85	210	..	130
14							2 45	73	4 05	220	3 1	130
15							2 40	70	4 45	210	3 1	130
16							2 35	67	4 20	190	2 67	120
17							2 35	67	4 20	190	2 85	100
18							2 40	70	4 20	190	2 73	90
19							2 35	67	4 20	190	2 62	80
20							2 30	64	4 25	190	2 53	78
21							2 40	70	4 35	200	2 50	76
22							2 30	64	4 55	215	2 07	74
23							2 30	64	4 80	235	2 40	70
24							2 35	67	4 80	235	2 33	66
25							2 20	58	4 70	225	2 20	58
26							2 85	90	4 60	220	2 60	82
27							3 80	160	4 45	210	2 86	100
28							4 35	200	4 55	215	2 90	100
29							4 50	210	4 67	225	2 98	110
30							4 50	195	1 85	240	3 07	115
31									4 08	250		
	July.		August.		September.		October.		November		December	
1	3 22	120	1 98	45		18	1 35	10				
2	3 30	130	1 90	40	1 50	18	1 32	8				
3	3 20	120	1 90	40	1 50	18	1 30	7				
4	3 20	120	1 90	40	1 50	18	1 30	7				
5	3 18	120	1 80	40	1 50	18	1 30	7				
6	3 10	115	1 85	37	1 50	18	1 30	7				
7	2 85	99	1 80	34	1 50	18	1 30	7				
8	2 67	86	1 80	34	1 50	18	1 30	7				
9	2 55	79	1 80	34	1 50	18	1 30	7				
10	2 42	71	1 80	34	1 50	18	1 30	7				
11	2 33	66	1 80	34	1 50	18	1 30	7				
12	2 21	59	1 80	34	1 50	18	1 30	7				
13	2 12	53	1 75	31	1 50	18	1 30	7				
14	2 10	52	1 70	28	1 50	18	1 30	7				
15	2 00	46	1 69	28	1 50	18	1 30	7				
16	2 06	50	1 65	25	1 50	18	1 30	7				
17	2 25	61	1 60	23	1 50	18	1 30	7				
18	2 53	78	1 60	23	1 45	15	1 30	7				
19	2 60	82	1 60	23	1 40	12	1 30	7				
20	2 67	86	1 60	23	1 40	12	1 30	7				
21	2 60	82	1 56	21	1 40	12	1 30	7				
22	2 52	77	1 52	19	1 40	12	1 30	7				
23	2 40	70	1 50	18	1 37	11	1 20	7				
24	2 25	61	1 50	18	1 35	10	1 30	7				
25	2 12	53	1 50	18	1 35	10	1 30	7				
26	2 33	66	1 50	18	1 35	10	1 30	7				
27	2 25	61	1 50	18	1 30	7	1 30	7				
28	2 20	58	1 50	18	1 30	7	1 30	7				
29	2 10	52	1 50	18	1 30	7	1 30	7				
30	2 02	47	1 50	18		8	1 30	7				
31	2 00	46	1 50	18			1 30	7				

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*Monthly Discharge of Guichon Creek 1 Mile above Mamit Lake, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET				RUN-OFF.	
	Maximum.	Minimum.	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April	210	27	79 0			4,700
May	345	190	250 0			15,400
June	270	58	150 0			8,930
July	130	16	76 0			4,070
August	45	18	27 0			1,660
September	18	7	14 6			870
October	10	7	7 1			435
The period	345	7	86 3			36,665

NOTE.—Flow of Guichon creek diminished by diversion to Tunkwa lake.

**HEFFLEY CREEK 2 MILES BELOW HEFFLEY LAKE (1919).***Location.*—Section 9, township 22, range 16, west of 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; April 1 to September 30, 1915; April 1 to October 31, 1916.*Drainage Area.*—Twenty-eight square miles. Flow regulated by dam on Heffley lake.*Gauge.*—Standard vertical staff gauge; daily readings.*Channel.*—Straight at measuring section. Bed of rocks and gravel, steep bank.*Discharge Measurements.*—Four measurements during 1916 cover very well the range of water stage. Meterings in 1916 show a change in control from previous years.*Accuracy.*—Results should be quite reliable at all stages.*Discharge Measurements of Heffley Creek 2 Miles below Heffley Lake, for 1916.*

Dt.	Engineer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 14	C. G. Cline	1,055	9 0	6 6	1 07	3 92	7 1
July 21	F. R. Archibald	1,913	9 5	6 6	0 76	3 77	5 0
Aug. 30	F. R. Archibald	1,913	10 0	9 0	1 44	4 15	13 0
Oct. 5	F. R. Archibald	1,913	7 0	3 1	0 45	3 43	1 4

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*Daily Gauge Height and Discharge of Hefley Upper Creek 2 Miles below Hefley  
Lake, for 1916.*

(Drainage area, 28 square miles.)

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 0	3 71	4 2		11 1
2								2 0		4 9	4 08	11 1
3								2 0	3 82	5 6	4 09	11 1
4							3 50	2 0	3 92	7 2	4 10	11 4
5							3 52	2 2	4 02	9 3	4 09	11 1
6							3 51	2 1	4 05	10 1	4 05	10 1
7								2 1	4 05	10 1	4 03	9 6
8							3 52	2 2	4 03	9 6	4 00	8 8
9							3 57	2 7	4 00	8 8	3 97	8 2
10							3 55	2 5	4 00	8 8	3 94	7 6
11							3 55	2 5	3 99	8 6	3 92	7 2
12								2 7	3 98	8 1	3 90	6 8
13							3 59	2 9	3 94	7 6	3 88	6 5
14								2 7		7 5	3 95	7 8
15							3 55	2 5	3 93	7 4	4 00	8 8
16							3 52	2 2	3 91	7 0		9 7
17							3 52	2 2	3 91	7 0		10 5
18							3 52	2 2	3 90	6 8	4 10	11 4
19							3 52	2 2	3 91	7 0	4 13	12 4
20							3 54	2 4	3 91	7 6	4 13	12 4
21							3 52	2 2	3 93	7 4	4 13	12 4
22							3 52	2 2	3 91	7 0	4 13	12 4
23							3 52	2 2	3 91	7 0	4 13	12 4
24							3 54	2 4	3 91	7 0	4 13	12 4
25								2 4	3 91	7 0	4 11	11 7
26							3 53	2 3	3 91	7 0	4 12	12 0
27							3 54	2 1	3 99	8 6	4 13	12 4
28							3 62	3 2	3 99	8 6	4 13	12 4
29							3 68	3 9	4 05	10 1	4 13	12 4
30							3 70	4 1	4 07	10 6	4 12	12 0
31									4 09	11 1		
	July.		August.		September.		October.		November.		December.	
1	4 10	11 1	4 00	8 8	4 11	12 7	3 52	2 2				
2	3 55	6 7	4 08	10 9	4 13	12 4	3 49	1 9				
3	3 39	6 8	4 10	11 4	4 13	12 4	3 45	1 6				
4	3 44	6 9	4 15	13 0	4 13	12 4	3 45	1 5				
5	3 91	7 0		13 4	4 12	12 0	3 45	1 5				
6	3 21	7 0	4 18	13 9	4 12	12 0	3 43	1 1				
7	4 26	6 8	4 20	14 5	4 11	11 7	3 42	1 3				
8	3 57	6 3		15 5	4 10	11 4	3 42	1 3				
9	3 54	5 9	4 23	16 4	4 09	11 1	3 42	1 3				
10	3 54	5 7	4 25	16 4	4 08	10 9	3 42	1 3				
11	3 52	5 4	4 25	16 4	4 07	10 6	3 42	1 3				
12	3 46	5 3	4 25	16 4	4 06	10 4	3 41	1 2				
13	3 40	5 3	4 24	15 7	4 02	9 3	3 41	1 2				
14	3 44	5 3	4 21	15 0	3 99	8 6	3 42	1 3				
15	3 40	5 3	4 20	14 6		8 1	3 41	1 3				
16	3 46	5 3	4 20	14 6	3 99	7 6	3 41	1 5				
17	3 52	5 7	4 20	14 6	3 92	7 2	3 42	1 3				
18	3 52	5 7	4 20	14 6	3 85	6 7	3 41	1 2				
19	3 54	5 4	4 19	14 1		5 9	3 41	1 2				
20	3 54	5 3	4 19	14 3		5 9	3 41	1 2				
21	3 78	5 1	4 18	14 0	3 70	4 1	3 41	1 2				
22	3 71	4 7	4 18	14 0	3 68	3 9	3 41	1 2				
23	3 51	4 6	4 18	14 0	3 70	4 1	3 41	1 2				
24	3 53	4 6	4 17	13 6	3 70	4 1	3 41	1 2				
25	3 53	4 2	4 17	13 6	3 72	4 3	3 41	1 2				
26	3 71	4 2	4 16	13 3	3 68	3 9	3 41	1 2				
27	3 70	4 1	4 16	13 3	3 65	3 5	3 41	1 2				
28	3 68	3 9	4 15	13 0	3 65	3 5	3 41	1 2				
29	3 68	3 9	4 15	13 0	3 64	3 4	3 41	1 2				
30	3 68	3 9	4 15	13 0	3 65	3 4	3 41	1 2				
31	3 70	4 1	4 15	13 0			3 41	1 2				

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*Monthly Discharge of Hefley Creek 2 Miles below Hefley Lake, for 1916.*

(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	11	2.0	2.4	0.09	0.10	145
May	11.1	1.2	7.9	0.28	0.32	485
June	12.1	6.5	10.5	0.37	0.41	620
July	11.4	3.9	5.5	0.20	0.23	340
August	16.1	8.8	13.9	0.50	0.58	850
September	12.7	3.3	7.9	0.28	0.31	470
October	2.2	1.2	1.3	0.05	0.06	80
The period	16.4	1.2	7.1	0.25	2.01	2,000

## HEFLEY CREEK ABOVE DIVERSIONS AT MOUTH (1918).

*Location.*—Section 11, township 22, range 17, west of 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; March 1 to September 30, 1915; March 1 to October 31, 1916.*Drainage Area.*—Sixty-five square miles. The flow is regulated by a dam on Hefley lake, and there are a number of diversions in the upper part of the watershed.*Gauge.*—Vertical staff gauge.*Channel.*—About 15 feet wide, with rocky bed.*Discharge Measurements.*—Five meter measurements in 1916 and thirteen in 1911-15 agree fairly well and cover all stages.*Accuracy.*—Curve is very well defined by a majority of the measurements.*Discharge Measurements of Hefley Creek above Diversion near Mouth, for 1916.*

Date	Time	Mean Stage	Water Height	Area of Section	Mean Velocity	Gauge Height	Dis- charge
		Feet	Feet	Sq. Ft.	Ft. per sec.	Feet	Sq. Ft.
Mar. 20	C. G. Adams	10.0	7.0	1.8	0.73	1.00	2.8
May 11	C. G. Adams	11.0	9.0	2.1	2.00	1.07	14.9
July 19	F. R. Adams	11.0	9.1	2.1	1.70	1.35	12.7
Aug. 28	F. R. Adams	11.0	8.0	1.1	1.20	1.20	6.3
Oct. 1	F. R. Adams	10.0	7.0	1.7	0.48	0.93	1.9

*Daily Gauge Height and Discharge of Hefley Creek above Diversions near Mouth,  
for 1916.*

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 01	2 9	1 02	3 0	1 42	14 2	1 55	20 0
2					1 00	2 7	1 05	3 5	1 60	23 0	1 55	20 0
3					1 00	2 7	1 07	3 5	1 60	23 0	1 55	20 0
4					1 02	3 0	1 07	3 8	1 60	23 0	1 55	20 0
5					1 05	3 5	1 10	4 3	1 60	23 0	1 50	17 8
6					1 00	2 7	1 10	4 3	1 60	23 0	1 47	16 4
7					1 00	2 7	1 10	4 3	1 65	26 0	1 40	13 3
8					1 00	2 7	1 07	3 8	1 65	26 0	1 40	13 3
9					1 00	2 7	1 07	3 8	1 60	23 0	1 37	12 2
10					1 07	3 8	1 07	3 8	1 50	17 8	1 32	10 4
11					1 14	5 2	1 07	3 8	1 50	17 8	1 27	8 8
12					1 09	4 1	1 07	3 8	1 50	17 8	1 20	6 6
13					1 04	3 3	1 00	3 7	1 42	14 2	1 19	6 4
14					1 01	2 9	1 02	3 0	1 34	11 1	1 15	5 4
15					1 00	2 7	1 04	3 3	1 30	9 7	1 10	4 3
16					1 00	2 7	1 07	3 8	1 30	9 7	1 10	4 3
17					1 00	2 7	1 07	3 8	1 30	9 7	1 06	3 7
18					1 03	3 2	1 07	3 8	1 30	9 7	1 15	5 4
19					1 00	2 7	1 00	2 7	1 30	9 7	1 15	5 4
20					1 00	2 7	1 20	6 6	1 30	9 7	1 17	5 0
21					1 06	3 7	1 15	5 4	1 30	9 7	1 17	5 0
22					1 02	3 0	1 15	5 4	1 30	9 7	1 15	5 4
23					1 02	3 0	1 12	4 7	1 30	9 7	1 17	5 0
24					1 02	3 0	1 12	4 7	1 30	9 7	1 17	5 0
25					1 02	3 0	1 11	4 7	1 30	9 7	1 17	5 0
26					1 02	3 0	1 17	5 0	1 30	9 7	1 20	6 6
27					1 02	3 0	1 27	8 8	1 30	9 7	1 40	13 3
28					1 02	3 0	1 34	11 1	1 32	10 4	1 50	17 8
29					1 02	3 0	1 25	8 1	1 40	14 3	1 55	20 0
30					1 02	3 0	1 25	8 1	1 40	14 3	1 50	17 8
31					1 00	2 7			1 50	17 8		
	July.		August.		September.		October.		November.		December.	
1	1 42	11 2	1 05	3 5	1 17	5 9	0 87	1 5				
2	1 40	13 3	1 06	3 7	1 15	5 4	0 87	1 5				
3	1 57	21 0	1 10	4 3	1 15	5 4	0 90	1 7				
4	1 70	29 0	1 10	4 3	1 12	4 7	0 92	1 9				
5	1 67	27 0	1 09	4 2	1 20	6 6	0 95	2 2				
6	1 62	24 0	1 10	4 3	1 20	6 6	0 92	1 9				
7	1 57	21 0	1 14	5 2	1 22	7 2	0 92	1 9				
8	1 52	18 9	1 20	6 6	1 25	8 1	0 95	2 2				
9	1 42	14 2	1 27	8 8	1 22	7 2	0 97	2 4				
10	1 37	12 2	1 30	9 7	1 20	6 6	0 97	2 4				
11	1 30	9 7	1 20	9 4	1 20	6 6	0 97	2 4				
12	1 24	7 8	1 30	9 7	1 17	5 9	0 97	2 4				
13	1 20	6 6	1 32	10 4	1 12	4 7	0 97	2 4				
14	1 17	5 9	1 30	9 7	1 12	4 7	0 97	2 4				
15	1 16	5 6	1 30	9 7	1 15	5 4	0 97	2 4				
16	1 22	7 2	1 30	9 7	1 15	5 4	0 97	2 4				
17	1 32	10 4	1 30	9 7	1 14	5 2	0 97	2 4				
18	1 32	10 4	1 30	9 7	1 07	3 8	0 97	2 4				
19	1 30	9 7	1 30	9 7	1 07	3 8	0 97	2 4				
20	1 29	9 4	1 30	9 7	1 02	3 0	0 97	2 4				
21	1 27	8 8	1 29	9 4	0 95	2 2	0 97	2 4				
22	1 25	8 1	1 27	8 8	0 92	1 9	0 97	2 4				
23	1 21	6 9	1 25	8 1	0 92	1 9	0 97	2 4				
24	1 20	6 6	1 22	7 2	0 90	1 7	0 97	2 4				
25	1 17	5 9	1 20	6 6	0 90	1 7	0 97	2 4				
26	1 15	5 4	1 20	6 6	0 90	1 7	0 97	2 4				
27	1 14	5 2	1 20	6 6	0 91	1 8	0 97	2 4				
28	1 10	4 3	1 20	6 6	0 87	1 5	0 95	2 2				
29	1 10	4 3	1 20	6 6	0 90	1 7	0 95	2 2				
30	1 10	4 3	1 20	6 6	0 87	1 5	0 95	2 2				
31	1 06	3 7	1 20	6 6			0 95	2 2				



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*Monthly Discharge of Hefley Creek above Diversions near Mouth, for 1916.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum	Minimum	Mean.	Per square mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
March	5.2	2.7	3.1			190
April	11.1	2.7	4.8			290
May	26.0	9.7	15.0			920
June	20.0	3.7	10.0			590
July	29.0	3.7	11.0			670
August	10.4	3.5	7.5			460
September	8.1	1.5	4.3			260
October	2.4	1.5	2.2			135
The period	29.0	1.5	7.2			3,515

## INGRAM CREEK (2020).

*Location.*—Section 23, township 17, range 13, west of 6th meridian, above diversions near mouth.

*Records Available.*—April 1 to October 1, 1911; April 1 to August 31, 1912; April 1 to September 16, 1913; May 6 to November 11, 1914; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Twenty-five square miles.

*Gauge.*—Vertical staff gauge; daily readings. The water is rough and the gauge is hard to read accurately at the higher stages.

*Channel.*—Rocky, steep gradient and swift water.

*Discharge Measurements.*—Three measurements, made during 1916, define the rating curve fairly well up to discharges of 25 cubic feet per second. Except at low stages the rating is different from that obtaining in 1914 and 1915.

*Accuracy.*—The accuracy is impaired somewhat by the lack of measurements at discharges greater than 25 cubic feet per second, and also by the waves on the water at the higher stages, which make it rather difficult to get accurate gauge readings.

*Discharge Measurements of Ingram Creek above Diversions near Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. Ft.	Ft. per sec.	Feet.	Sec.-ft.
June 1	C. G. Cline	1055	1.0	7.8	2.80	1.70	21.7
July 29	F. R. Archibald	1914	12.0	5.7	1.22	1.19	6.9
Sept. 9	F. R. Archibald	1913	5.5	2.6	0.62	0.95	1.6

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*Daily Gauge Height and Discharge of Ingram Creek above Diversions near Mouth,  
for 1916.*

(Drainage area, 25 square miles.)

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	4.8					1.10	4.8	1.70	22.0	1.90	28.0
2	1.10	4.8					1.10	4.8	1.80	25.0	1.90	28.0
3	1.15	6.0					1.15	6.0	2.00	31.0	1.90	28.0
4	1.10	4.8					1.10	4.8	2.10	35.0	2.00	31.0
5	1.00	2.6					1.00	2.6	2.20	38.0	2.10	35.0
6	1.00	2.6					1.00	2.6	2.30	41.0	2.00	31.0
7	1.10	4.8					1.10	4.8	2.20	38.0	2.10	35.0
8	1.15	6.0					1.15	6.0	1.90	28.0	1.80	25.0
9	1.20	7.3					1.20	7.3	1.80	25.0	1.80	25.0
10	1.20	7.3					1.20	7.3	1.80	25.0	1.75	23.0
11							1.25	8.6	1.70	22.0	1.70	22.0
12							1.45	14.2	1.70	22.0	1.70	22.0
13							1.00	18.6	1.70	22.0	1.60	18.6
14							1.50	15.6	1.60	18.6	1.50	15.6
15							1.10	12.7	1.70	22.0	1.50	15.6
16							1.30	9.9	1.70	22.0	1.50	15.6
17							1.20	7.3	1.80	25.0	1.50	15.6
18							1.30	9.9	1.80	25.0	1.50	15.6
19							1.10	12.7	1.80	25.0	1.40	12.7
20							1.50	15.6	1.80	25.0	1.10	12.7
21							1.10	12.7	2.00	31.0	1.70	22.0
22							1.10	12.7	1.90	28.0	1.40	9.9
23							1.30	9.9	1.90	28.0	1.30	9.9
24							1.30	9.9	1.75	30.0	1.20	7.3
25							1.10	12.7	1.90	28.0	1.20	7.3
26							1.50	15.6	1.90	28.0	1.40	12.7
27							1.70	22.0	1.95	30.0	1.50	15.6
28							1.80	25.0	2.00	31.0	1.50	15.6
29							1.70	22.0	2.30	41.0	1.50	15.6
30							1.75	23.0	2.00	31.0	1.50	15.6
31									1.90	28.0		
July.												
August.												
September.												
October.												
November.												
December.												
1	1.50	15.6	1.20	7.3	0.95	1.6	1.00	2.6				
2	1.60	18.6	1.30	9.9	0.95	1.6	1.00	2.6				
3	1.55	17.1	1.25	8.6	1.00	2.6	0.95	1.6				
4	1.50	15.6	1.20	7.3	1.00	2.6	1.00	2.6				
5	1.50	15.6	1.20	7.3	1.05	3.7	1.00	2.6				
6	1.60	18.6	1.10	4.8	1.00	2.6	1.00	2.6				
7	1.70	22.0	1.10	4.8	1.05	3.7	1.05	3.7				
8	1.60	18.6	1.10	4.8	1.05	3.7	1.00	2.6				
9	1.60	18.6	1.05	3.7	1.05	3.7	1.00	2.6				
10	1.50	15.6	1.00	2.6	1.05	3.7	1.00	2.6				
11	1.50	15.6	1.00	2.6	1.00	2.6	1.00	2.6				
12	1.50	15.6	1.00	2.6	0.95	1.6	1.00	2.6				
13	1.10	12.7	1.00	2.6	0.90	0.6	1.00	2.6				
14	1.30	9.9	1.00	2.6	0.90	0.6	1.00	2.6				
15	1.10	12.7	1.00	2.6	0.95	1.6	1.00	2.6				
16	1.10	12.7	1.10	4.8	0.95	1.6	1.00	2.6				
17	1.50	15.6	1.10	4.8	0.95	1.6	1.00	2.6				
18	1.60	18.6	1.15	6.0	0.90	0.6	1.00	2.6				
19	1.90	15.6	1.10	4.8	0.90	0.6	1.00	2.6				
20	1.10	12.7	1.05	3.7	0.90	0.6	1.00	2.6				
21	1.10	12.7	1.00	2.6	0.90	0.6	1.00	2.6				
22	1.20	9.9	1.00	2.6	0.95	1.6	1.00	2.6				
23	1.30	9.9	0.95	1.6	0.95	1.6	1.00	2.6				
24	1.10	12.7	0.90	0.6	0.90	0.6	1.00	2.6				
25	1.05	11.3	0.90	0.6	0.90	0.6	1.00	2.6				
26	1.30	9.9	0.90	0.6	0.90	0.6	1.05	3.7				
27	1.35	9.9	0.95	1.6	0.95	1.6	1.10	4.8				
28	1.25	8.6	0.90	0.6	0.90	0.6	1.10	4.8				
29	1.25	8.6	0.90	0.6	0.90	0.6	1.10	4.8				
30	1.20	7.3	0.95	1.6	0.95	1.6	1.10	4.8				
31	1.20	7.3	0.95	1.6	0.95	1.6	1.10	4.8				

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*Monthly Discharge of Ingram Creek above Diversions near Mouth, for 1916.*

Drainage area, 25 square miles.

MONTH	DISCHARGES IN CUBIC FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
April	25.0	2.0	11.4	0.46	0.51	680
May	41.0	18.5	28.1	1.12	1.29	1,730
June	53.1	7.7	19.4	0.78	0.87	1,150
July	22.0	7.3	13.7	0.55	0.63	840
August	9.9	0.6	4.6	0.14	0.16	220
September	1.7	0.6	1.7	0.07	0.08	100
October	1.8	2.6	3.0	0.12	0.14	185
The period	41.0	0.6	11.0	0.46	3.08	4,905

## JAMESON CREEK (2022).

*Location.*—Section 21, township 22, range 17, west of 6th meridian, above B.C. Fruitlands diversion.

*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; April 1 to September 30, 1915; May 1 to October 30, 1916.

*Drainage Area.*—Sixty-six square miles. The natural flow of the stream is regulated to a certain extent by storage on some small lakes near the head waters.

*Gauge.*—Vertical staff; daily readings.

*Channel.*—Rocks; about 30 feet wide.

*Discharge Measurements.*—Four meter measurements, made in 1916, define the rating curve up to discharges of 60 cubic feet per second and also at 325 cubic feet per second. The 1916 measurements all come above the curve located by the measurements made in 1911-15.

*Accuracy.*—There is some uncertainty in discharges between 60 and 300 cubic feet per second.

*Discharge Measurements of Jameson Creek above B.C. Fruitlands Diversion, for 1916.*

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
May 20	C. G. Cline	1955	42.0	56.7	5.70	3.65	325.0
July 24	F. R. Archibald	1914	25.5	27.2	1.57	2.50	43.0
Sept. 3	F. R. Archibald	1914	21.5	21.4	0.67	2.20	14.4
Oct. 9	F. R. Archibald	1914	22.0	46.5	0.30	2.00	5.1

*Daily Gauge Height and Discharge of Jamieson Creek above B.C. Fruitlands  
Diversion, for 1916.*

(Drainage area, 66 square miles.)

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		280	3 50	280	2 80	94	2 40	31	1 90	3	1 95	4
2		280	3 60	210	2 80	94	2 35	26	2 20	14	1 95	4
3	3 60	310	4 00	430	3 00	140	2 35	26	2 20	14	1 95	4
4	3 90	400	3 80	100	3 10	165	2 45	37	2 20	14	1 95	4
5	4 90	430	3 60	310	3 00	140	2 40	31	2 20	14	1 95	4
6	4 00	430	3 10	250	2 95	130	2 35	26	2 20	14	1 95	4
7	3 80	370	3 40	150	2 80	94	2 40	31	2 20	14	1 95	4
8	3 00	310	3 10	250	2 65	65	2 35	26	2 10	9	1 95	4
9	3 40	250	3 30	220	2 65	65	2 35	26	2 16	9	1 95	4
10	3 40	250		205	2 60	57	2 35	26	2 10	9	1 95	1
11	3 20	190	3 20	190	2 50	43	2 30	22	2 10	9	1 95	4
12	3 00	140	3 10	165	2 55	57	2 30	22	2 05	7	1 95	4
13	3 00	140	3 00	140	2 40	33	2 25	18	2 05	7	1 95	4
14	2 90	115			2 50	43	2 25	18	2 05	7	1 95	4
15	2 90	115			2 40	31	2 25	18	2 05	7	1 95	4
16	2 80	94			2 45	37	2 25	18	1 95	4	1 95	4
17	3 40	250			2 40	31	2 25	18	1 95	4	1 95	4
18	3 70	340			2 55	50	2 25	18	1 95	4	1 95	4
19	3 70	340			2 45	37	2 25	18	1 95	4	1 95	4
20	3 80	370			2 50	43	2 25	18	1 90	3	1 95	4
21	3 50	286			2 50	43	2 25	18	1 90	3	1 95	4
22	3 40	250			2 50	43	2 25	18	1 90	3	1 95	4
23	3 30	220			2 50	43	2 25	18	1 90	3	1 95	4
24	3 30	220			2 45	37	2 25	18	1 90	3	1 95	4
25	3 40	250			2 45	37	2 05	7	2 00	5	1 95	4
26	3 80	370			2 45	37	2 05	7	1 95	4	1 95	4
27	3 80	400			2 40	31	2 05	7	1 95	4	1 95	1
28	3 70	340			2 50	43	2 05	7	1 95	4	1 95	1
29	3 60	310			2 55	50	2 05	7	1 95	4	1 90	3
30	3 50	280			2 45	37	2 00	5		4	1 90	3
31	3 60	310			2 40	31	1 95	4			1 90	3

*Monthly Discharge of Jamieson Creek above B.C. Fruitlands Diversion, for 1916.*

(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.	
May	430		94	280 0	4 24	4 89	17 200
June	165		61	60 0			
July	155		31	60 0	0 91	1 05	3 690
August	37		4	19 0	0 29	0 34	1 170
September	14		3	6 9	0 10	0 11	410
October	4		3	3 9	0 06	0 07	240
The period							

LITTLE CLEARWATER RIVER (2056).

*Location.*—Near Raft River post office; Provincial Water District No. 2; 5 miles from mouth of creek.

*Records Available.*—June 17 to December 31, 1914; January 1 to September 30, 1915; May 1 to October 31, 1916.

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**Drainage Area.**—One hundred square miles.

**Gauge.**—Standard vertical staff gauge, set near foot bridge at crossing on Murtle river trail; daily readings.

**Channel.**—Mud and silt; velocities low.

**Discharge Measurements.**—Two meter measurements in 1915 and four in 1916 agree very well and cover the whole range of stage for 1916. The 1914 measurements do not plot on this curve.

**Accuracy.**—Results for 1916 should be quite reliable at all stages. There are no gauge readings for part of June and July.

*Discharge Measurements of Little Clearwater River 5 Miles from Mouth, for 1916.*

Date.	Engineer	Meter No.	Width. Feet	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
				Sq. Ft.	Ft. per sec.	Feet.	Sec.-ft.
May 31	F. R. Archibald	1913	43	149.0	1.75	2.36	261.0
June 31	F. R. Archibald	1913	47	221.5	2.55	3.80	561.0
Sept. 7	C. G. Chre	1955	38	75.2	0.50	0.70	39.8
Nov. 11	F. R. Archibald	1955	39	77.1	0.34	0.50	26.1

*Daily Gauge Height and Discharge of Little Clearwater River 5 Miles from Mouth, for 1916.*

(Drainage area, 100 square miles.)

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	1.50	140	2.25	250			1.55	175	0.65	38	0.70	42
2	1.65	150	2.10	225			1.55	175		39	0.60	34
3	1.90	190	2.35	270			1.80	175		40	0.55	30
4	2.20	245	2.75	345			1.70	160		42	0.55	30
5	2.35	270	2.30	260			1.65	150		44	0.55	30
6	2.45	290	2.30	260			1.50	140	0.75	46	0.55	30
7	2.35	270	2.25	250			1.10	115	0.70	42	0.55	30
8	2.15	235	2.20	245			1.10	115	1.15	86	0.55	30
9	1.95	206	2.10	225			1.30	105	0.95	65	0.55	30
10	1.75	165	2.00	205			1.20	92	0.85	55	0.55	30
11	1.65	150	1.95	200				87	0.75	46	0.55	30
12	1.50	130	2.10	225				81	0.75	46	0.60	34
13	1.35	110	2.45	290			1.05	75	0.75	16	0.60	34
14	1.30	105	3.20	435	1.80	175	1.00	70		14	0.65	38
15	1.30	105	3.80	590	1.65	150	1.00	70		11	0.65	38
16	1.45	125	3.90	580	1.90	190	0.95	65	0.65	38	0.75	46
17	1.55	135	4.00	600	2.60	315	0.95	65	0.60	34	0.85	55
18	1.75	185	3.90	580	2.50	295	1.05	75	0.55	30	0.95	65
19	2.20	245	4.20	644	2.30	260	1.00	70	0.50	26	0.80	51
20	2.31	260	3.80	560	2.40	280	1.00	70	0.50	26	0.70	42
21	2.40	280			2.65	325	0.95	65	0.50	26	0.70	42
22	2.20	245			2.95	385	0.80	51	0.60	26	0.70	42
23	2.00	205			2.50	295	0.75	40	0.50	26	0.65	38
24	1.90	190			2.35	270	0.70	42	0.50	26	0.65	38
25	2.00	205				260	0.70	42	0.70	42	0.80	51
26	2.10	225			2.25	250	0.65	38	0.85	55	0.70	42
27	2.20	245			2.15	245	0.65	38	0.80	51	0.85	55
28	2.30	260			1.95	206	0.60	34	0.70	42	0.65	38
29	2.15	235			1.85	180	0.60	34	0.65	38	0.80	51
30	2.00	205			1.75	165	0.65	38	0.70	42	0.70	42
31	2.30	260			1.70	160	0.65	38			0.65	38

*Monthly Discharge of Little Clearwater River 5 Miles from Mouth, for 1916.*

(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
May	290	105	200	2.00	2.31	12,300
August	175	34	81	0.81	0.93	4,980
September	86	26	42	0.42	0.47	2,500
October	65	30	39	0.39	0.45	2,400
The period:						

## LOUIS CREEK (2023).

*Location.*—Section 33, township 23, range 15, west of 6th meridian; near boundary of Dominion Railway Belt.

*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; April 1 to September 30, 1915; April 1 to November 17, 1916.

*Drainage Area.*—One hundred square miles.

*Gauge.*—Standard vertical staff. Readings daily during freshet; twice a week when the water is steady.

*Channel.*—Silt and gravel. The channel seems to have changed as the 1911 and 1912 measurements do not agree with those taken in 1914-16.

*Discharge Measurements.*—Three meter measurements, taken in 1914 and 1915 and three in 1916 agree very well and cover all discharges up to 200 cubic feet per second. The upper part of the curve was located by means of the 1912 measurements, allowance being made for the change in the rating.

*Accuracy.*—Results should be quite reliable up to a discharge of 200 cubic feet per second, and even above that amount there should be no very serious errors.

*Discharge Measurements of Louis Creek, near Railway Belt Boundary, for 1916*

Date.	Engineer	Meter No.	Width. Feet	Area of Section. Sq. ft.	Mean Velocity Ft. per sec.	Gauge Height Feet	Discharge Sec. ft.
May 15	C. G. Cline	1955	26.0	51.1	2.14	1.29	109
July 21	F. R. Archibald	1913	27.0	58.2	2.02	1.40	117
Aug 31	F. R. Archibald	1913	26.0	56.2	0.65	0.58	23

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*Daily Gauge Height and Discharge of Louis Creek near Railway Belt Boundary, for 1916.*

(Drainage area, 100 square miles.)

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								14		105	2 55	265
2								16	1 35	115	2 50	260
3								16	1 65	150	2 72	285
4							0 45	16	1 92	185	3 10	335
5								16	1 95	185	2 92	300
6								16	2 25	225	2 60	270
7							0 45	16	2 10	205	2 55	265
8								16	1 90	180	2 50	260
9								17	1 65	150	2 45	250
10								15	1 50	130	2 40	245
11							0 50	19	1 40	120	2 40	245
12								19	1 30	105	2 50	260
13								19	1 30	105	2 55	265
14							0 50	19	1 30	105	2 80	295
15								19	1 30	105	3 20	350
16								19		130	3 27	360
17								19	1 75	160	3 45	385
18							0 50	19	1 96	180	3 15	345
19								19	1 92	185	2 95	315
20								19	1 95	185	2 65	275
21							0 50	19	1 90	180	2 45	250
22								21	1 85	175	2 70	285
23								23	1 85	175	2 52	260
24							0 60	25	1 90	180	2 30	230
25								27	2 00	195	2 30	230
26								43	2 15	210	2 60	270
27							0 90	60	2 30	230	3 00	325
28							1 00	72	2 50	260	2 85	305
29								82	2 50	260	2 70	285
30								93	2 40	245	2 30	230
31									2 40	215		

	July		August.		September		October		November.		December.	
1	2 10	205	1 90	72	6 75	27		19		19		
2	2 00	195	0 95	66		24		19		19		
3	1 97	190	1 00	72		25	0 50	19	0 50	19		
4	3 20	350	0 95	66		26		19		18		
5	2 76	285	0 95	66	0 90	27		19		18		
6	2 42	245	0 95	66		27	0 50	19		17		
7	2 15	210		63		27		19	0 45	16		
8	2 00	195	0 90	60	0 90	27		19		16		
9	1 85	175		58		27		19		16		
10	1 70	155		56		27	0 50	19	0 45	16		
11	1 60	145	0 85	54		27		19		16		
12	1 69	145		57	0 60	27		19		16		
13	1 55	140		52		27	0 50	19		16		
14	1 40	120		51		27		19	0 45	16		
15	1 35	115	0 80	49	0 60	27		19		16		
16	1 56	130		45		27		19		16		
17	1 82	170		41		25	0 50	19	0 45	16		
18	1 70	155	0 70	38		24		19	Frozen			
19	1 60	145		35	0 55	24		19				
20	1 50	130		32		22	0 50	19				
21	1 40	120		29		20		19				
22	1 40	120	0 60	27	0 50	19		19				
23	1 30	105		27		19		19				
24	1 30	105		27		19	0 50	19				
25	1 20	95	0 60	27		16		19				
26	1 15	85		27	0 50	19		19				
27	1 10	80		25		19	0 90	19				
28	1 10	80		25		19		19				
29	1 05	75	0 60	25	0 50	19		19				
30	1 00	70		25		19		19				
31	1 00	70		25		19	0 50	19				

*Monthly Discharge of Louis Creek, near Railway Belt Boundary, for 1916.*

(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.....	93	16	27	0 27	0 30	1,600
May.....	260	105	175	1 75	2 02	10,800
June.....	385	230	285	2 85	3 18	17,000
July.....	350	72	155	1 55	1 79	9,530
August.....	72	25	45	0 45	0 52	2,770
September.....	27	19	24	0 24	0 27	1,430
October.....	19	19	19	0 19	0 22	1,170
The period.....	385	16	101	1 04	8 30	44,300

## 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; April 8 to September 7, 1912; April 16 to September 13, 1913; April 1 to December 1, 1914; April 7 to September 30, 1915; April 1 to November 1, 1916.

*Drainage Area.*—One hundred and ten square miles. Flow of creek diminished by diversion into Summit lake.

*Gauge.*—Standard vertical staff gauge, read three times a week.

*Channel.*—About 15 feet wide, with rocky bed.

*Discharge Measurements.*—Eleven measurements, made during 1914-16, agree fairly well and cover the whole range of stage.

*Accuracy.*—Results should be fairly reliable, though the fact that gauge readings were taken only three times a week tends to lessen the accuracy.

*Discharge Measurements of Monte Creek above Bostock's Diversion, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
April 28	A. L. McNaughton	1,923	13.7	7.8	0.83	0.95	6.4
May 30	C. G. Cline	1,055	10.0	12.4	1.47	1.25	18.2
July 28	F. R. Archibald	1,913	10.8	3.1	1.33	0.87	4.1
Sept. 8	F. R. Archibald	1,913	4.7	1.5	0.85	0.55	1.3



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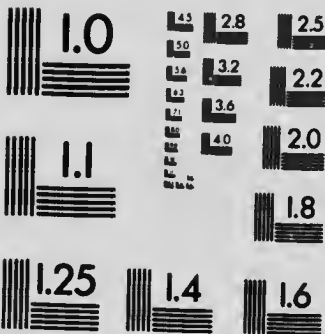
Daily Gauge Height and Discharge of Monte Creek above Bostock's Diversion near Mouth, for 1916.

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								3.0		11.0		19
2								3.0		11.5		18
3							0.80	3.0	1.10	12.0	1.24	18
4								3.0		13.0		17
5							0.77	3.0		13.0	1.22	17
6								4.0	1.11	11.0		18
7								2.5		11.0	1.25	19
8							0.74	2.5	1.10	12.0		18
9								2.5		12.0		16
10							0.75	2.5	1.10	12.0	1.17	15
11								2.5		10.6		14
12							0.75	2.5		8.0	1.10	12
13								2.5	0.95	6.5		11
14								1.0		6.0	1.05	10
15							0.77	3.0	0.92	6.0		9
16								3.0		5.5		9
17								1.0	0.90	5.0	0.60	8
18								2.5				7
19							0.75	2.5		11.0	0.90	5
20								0	1.14	14.0		5
21								1.0		17.0	0.90	5
22							0.8	3.0	1.27	20.0		8
23								1.0		25.0		6
24							0.80	1.0	1.34	24.0	0.97	7
25								3.0		25.0		8
26							0.80	1.0		22.0	1.05	10
27								1.0	1.27	20.0		11
28								5.0		20.0	1.10	12
29								6.5	1.25	19.0		13
30								9.0		16.0		15
31									1.25	19.0		
.....												
	July		August		September		October		November		December	
1	1.20	16.0		3.0		0.1		1.0	0.65	1.5		
2		14.0	0.77	3.0	0.42	0.3	0.60	1.0		1.7		
3	1.12	13.0		3.0		0.6		1.0		1.8		
4		10.5		3.5	0.57	0.8	0.60	1.0	0.70	2.0		
5	1.00	8.0	0.82	3.5		0.9		1.0				
6		7.0		3.5	0.60	1.0		1.2				
7		6.0	0.80	3.0		1.0	0.62	1.2				
8	0.90	5.0		3.0		1.0		1.1				
9		5.5	0.80	3.0	0.60	1.0	0.60	1.0				
10	0.92	6.0		2.7		0.8		1.0				
11		5.0		2.5	0.52	0.6	0.60	1.0				
12	0.82	3.5	0.72	2.2		0.6		1.1				
13		3.5		2.2	0.52	0.6		1.1				
14		3.6	0.72	2.2		0.6	0.62	1.2				
15	0.80	3.0		2.0		0.6		1.1				
16		5.0	0.67	1.7	0.52	0.6	0.60	1.0				
17	0.95	6.5		1.8		0.5		1.0				
18		7.0		1.9	0.50	0.5	0.60	1.0				
19	0.97	7.0	0.70	2.0		0.5		1.2				
20		6.0		1.7	0.50	0.5		1.3				
21		6.0	0.65	1.5		0.5	0.65	1.5				
22	0.90	5.0		1.5		0.6		1.5				
23		5.0	0.65	1.5	0.52	0.6	0.65	1.5				
24	0.80	5.0		1.2		0.6		1.5				
25		5.0		1.0	0.52	0.6	0.65	1.5				
26	0.87	4.5	0.55	0.7		0.6		1.6				
27		4.0		0.7	0.52	0.6		1.6				
28		4.0	0.55	0.7		0.8	0.67	1.7				
29	0.82	3.5		0.8		0.8		1.6				
30		3.0	0.57	0.8	0.60	1.0	0.45	1.5				
31	0.80	3.0		0.6				1.5				



# MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



**APPLIED IMAGE Inc**

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*Monthly Discharge of Monte Creek above Bostock's Diversion, for 1916.*

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 0	2 5	3 3	.....	.....	195
May.....	24 0	5 0	13 8	.....	.....	850
June.....	19 0	5 0	11 9	.....	.....	710
July.....	16 0	3 0	6 1	.....	.....	375
August.....	3 5	0 6	2 0	.....	.....	120
September.....	1 0	0 3	0 7	.....	.....	40
October.....	1 7	1 0	1 2	.....	.....	75
The period.....	24 0	0 3	5 6	.....	.....	2,365

**MONTE CREEK, BELOW DIVERSION TO SUMMIT LAKE (2025).**

*Location.*—Section 22, township 13, range 14, west 6th meridian.

*Records Available.*—May 28 to September 30, 1911; April 1 to September 7, 1912; June 20 to September 30, 1913; April 1 to November 17, 1914; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Gauge.*—Standard vertical staff gauge, read daily.

*Channel.*—Width of channel averages 10 feet; bed of stream gravelly.

*Discharge Measurements.*—Seven measurements made during 1915 and 1916 agree fairly well and cover all stages, except for a few days at the maximum stage. Control was changed during 1914 freshet.

*Accuracy.*—Results should be fairly reliable, except perhaps at the peak of the freshet.

*Discharge Measurements of Monte Creek below Diversion to Summit Lake, 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 30	C. G. Cline	1,055	13	10.0	1.4	4 22	13.5
July 29	F. R. Archibald	1,913	13	5 0	0 6	3 98	2 8
Sept. 9	F. R. Archibald	1,913	13	3 9	0 3	3 77	1 1

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Daily Gauge Height and Discharge of Monte Creek below Diversion to Summit Lake, for 1916.

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							3.70	0.6	3.80	1.0	4.30	20.0
2							3.70	0.6	3.90	1.8	4.30	20.0
3							3.70	0.6	3.90	1.8	4.30	20.0
4							3.70	0.6	3.90	1.8	4.30	20.0
5							3.70	0.6	3.90	1.8	4.25	16.0
6							3.80	1.0	3.80	1.0	4.20	12.0
7							3.80	1.0	3.80	1.0	4.20	12.0
8							3.70	0.6	3.70	0.6	4.26	12.0
9							3.75	0.8	3.70	0.6	4.20	12.0
10							3.70	0.6	3.70	0.6	4.20	12.0
11							3.70	0.6	3.70	0.6	4.20	12.0
12							3.70	0.6	3.70	0.6	4.20	12.0
13							3.70	0.6	3.75	0.8	4.10	7.0
14							3.70	0.6	4.00	3.5	4.10	7.0
15							3.70	0.6	4.10	7.0	4.10	7.0
16							3.70	0.6	4.10	7.0	4.10	7.0
17							3.70	0.6	4.10	7.0	4.10	7.0
18							3.70	0.6	4.20	12.0	4.05	5.2
19							3.70	0.6	4.35	25.0	4.00	3.5
20							3.70	0.6	4.40	31.0	4.00	3.5
21							3.70	0.6	4.40	31.0	4.10	7.0
22							3.70	0.6	4.40	31.0	4.20	12.0
23							3.70	0.6	4.15	9.5	4.20	12.0
24							3.70	0.6	4.20	12.0	4.20	12.0
25							3.75	0.8	4.20	12.0	4.20	12.0
26							3.85	1.4	4.15	9.5	4.20	12.0
27							3.90	1.8	4.30	20.0	4.30	20.0
28							3.80	1.0	4.25	16.0	4.30	20.0
29							3.80	1.0	4.20	12.0	4.20	12.0
30							3.80	1.0	4.20	12.0	4.10	7.0
31									4.25	16.0		

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	4.25	16.0	4.00	3.5	3.80	1.0	3.90	1.8				
2	4.25	16.0	4.00	3.5	3.80	1.0	3.90	1.8				
3	4.20	12.0	4.00	3.5	3.75	0.8	3.90	1.8				
4	4.00	3.5	4.00	3.5	3.70	0.6	3.90	1.8				
5	4.00	3.5	4.00	3.5	3.70	0.6	3.90	1.8				
6	4.00	3.5	4.00	3.5	3.70	0.6	3.80	1.0				
7	4.00	3.5	4.00	3.5	3.70	0.6	3.80	1.0				
8	4.00	3.5	4.00	3.5	3.70	0.6	3.80	1.0				
9	4.00	3.5	4.00	3.5	3.70	0.6	3.80	1.0				
10	3.95	2.6	4.00	3.5	3.70	0.6	3.80	1.0				
11	3.90	1.8	4.00	3.5	3.70	0.6	3.80	1.0				
12	3.90	1.8	4.00	3.5	3.70	0.6	3.80	1.0				
13	3.90	1.8	4.00	3.5	3.70	0.6	3.80	1.0				
14	4.00	3.5	3.95	2.6	3.70	0.6	3.80	1.0				
15	4.10	7.0	3.90	1.8	3.70	0.6	3.80	1.0				
16	4.10	7.0	3.90	1.8	3.70	0.6	3.80	1.0				
17	4.10	7.0	3.90	1.8	3.70	0.6	3.80	1.8				
18	4.10	7.0	3.90	1.8	3.70	0.6	3.90	1.8				
19	4.10	7.0	3.90	1.8	3.70	0.6	3.85	1.4				
20	4.10	7.0	3.90	1.8	3.70	0.6	3.80	1.0				
21	4.10	7.0	3.90	1.8	3.70	0.6	3.80	1.0				
22	4.05	5.2	3.90	1.8	3.70	0.6	3.80	1.0				
23	4.00	3.5	3.90	1.8	3.70	0.6	3.80	1.0				
24	4.00	3.5	3.85	1.4	3.70	0.6	3.80	1.8				
25	4.00	3.5	3.80	1.0	3.75	0.8	3.80	1.0				
26	4.00	3.5	3.80	1.0	3.80	1.0	3.80	1.0				
27	4.00	3.5	3.80	1.0	4.00	3.5	3.80	1.0				
28	4.00	3.5	3.80	1.0	4.20	12.0	3.80	1.0				
29	3.95	2.6	3.80	1.0	4.20	12.0	3.80	1.0				
30	4.00	3.5	3.80	1.0	4.20	12.0	3.80	1.0				
31	4.00	3.5	3.80	1.0			3.80	1.0				

*Monthly Discharge of Monte Creek below Diversion to Summit Lake, for 1916.*

MONTH.	DISCHARGE IN SECOND-FeET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April .....	1.8	0.6	0.8			45
May .....	31.0	0.6	9.3			570
June .....	20.0	3.5	11.8			700
July .....	16.0	1.8	5.2			320
August .....	3.5	1.0	2.3			140
September .....	12.0	0.6	1.9			115
October .....	1.8	1.0	1.2			75
The period	31.0	0.6	4.6			1,965

## MONTE CREEK DIVERSION TO SUMMIT LAKE (2026).

*Location.*—Section 22, township 13, range 14, west of 6th meridian; about 100 yards below point of diversion.

*Records Available.*—May 25 to October 2, 1911; June 20 to September 30, 1913; April 1 to November 17, 1914; July 1 to September 30, 1915; April 1 to October 8, 1916.

*Gauge.*—Vertical staff; daily readings.

*Channel.*—Rocks. Water swift and rough. Section changes readily.

*Discharge Measurements.*—Three meter measurements in 1916 and two in the latter part of 1915 agree fairly well, and cover all stages except above 35 cubic feet per second.

*Accuracy.*—The results should be fairly reliable, except for considerable uncertainty for discharges above 35 cubic feet per second.

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Daily Gauge Height and Discharge of Monte Creek Diversion to Summit Lake, for 1915.

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				16.0	0.30	2.2	0.10	0.5				
2				15.0	0.30	2.2	0.10	0.5				
3			New	14.0	0.30	2.2	0.10	0.5				
4			Gauge	13.0	0.30	2.2	0.10	0.5				
5				0.70	12.0	0.25	1.6	0.10	0.5			
6			0.85	10.5	0.20	1.0	0.10	0.5				
7			0.60	9.0	0.20	1.0	0.10	0.5				
8			0.60	9.0	0.20	1.0	0.10	0.5				
9			0.60	9.0	0.20	1.0	0.10	0.5				
10			0.55	7.5	0.20	1.0	0.10	0.5				
11			0.50	6.0	0.20	1.0	0.10	0.5				
12			0.50	6.0	0.20	1.0	0.10	0.5				
13			0.50	6.0	0.20	1.0	0.15	0.7				
14			0.50	6.0	0.20	1.0	0.20	1.0				
15			0.40	4.0	0.15	0.7	0.20	1.0				
16	Meter	1.8	0.40	4.0	0.10	0.5	0.20	1.0				
17			0.40	4.0	0.20	1.0	0.20	1.0				
18			0.40	4.0	0.20	1.0	0.20	1.0				
19			0.40	4.0	0.20	1.0	0.26	1.0				
20			0.40	4.0	0.20	1.0	0.15	0.7				
21			0.30	2.2	0.26	1.0	0.10	0.5				
22			0.30	2.2	0.20	1.0	0.10	0.5				
23			0.30	2.2	0.20	1.0	0.10	0.5				
24			0.30	2.2	0.20	1.0	0.10	0.5				
25			0.30	2.2	0.15	0.7	0.10	0.5				
26			0.20	2.2	0.10	0.5	0.10	0.5				
27	Freshet		0.30	2.2	0.10	0.5	0.05	0.5				
28			0.30	2.2	0.10	0.5	0.05	0.5				
29			0.30	2.2	0.10	0.5	0.05	0.5				
30			0.30	2.2	0.10	0.5	0.05	0.5				
31			0.30	2.2	0.10	0.5						

Monthly Discharge of Monte Creek Diversion to Summit Lake, for 1915.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
July	16.0	2.2	6.0			370
August	2.2	0.5	1.0			60
September	1.0	0.5	0.6			35
The period	16.0	0.5	2.5			465

Discharge Measurements of Monte Creek Diversion to Summit Lake, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 30	C. G. Cline	1,055	11.0	8.3	3.60	1.25	30.0
July 29	F. R. Archibald	1,913	6.0	2.0	1.57	0.40	3.1
Sept.	F. R. Archibald	1,913	3.5	1.0	0.48	-0.03	0.4

Daily Gauge Height and Discharge of Monte Creek Diversion to Summit Lake, for 1918.

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							0.60	9	1.50	39	1.30	32
2							0.60	9	1.55	40	1.30	32
3							0.60	9	1.90	53	1.35	33
4							0.65	10	2.00	57	1.40	35
5							0.70	12	2.00	57	1.35	33
6							0.70	12	2.00	57	1.30	32
7							0.70	12	1.95	55	1.30	32
8							0.80	16	1.80	49	1.30	32
9							0.80	15	1.75	47	1.20	28
10							0.85	16	1.60	42	1.20	28
11							0.90	18	1.50	39	1.20	28
12							0.90	18	1.45	37	1.15	26
13							0.95	20	1.30	32	1.10	25
14							1.00	22	1.15	26	1.10	25
15							1.00	22	1.00	22	1.10	25
16							0.90	18	1.10	25	1.00	22
17							0.90	18	1.10	25	1.00	22
18							0.90	18	1.05	23	1.00	22
19							0.90	18	1.00	22	0.95	20
20							0.90	18	1.05	23	0.90	18
21							0.90	18	1.05	23	0.65	10
22							0.90	18	0.70	12	0.50	6
23							0.90	18	1.30	32	0.50	6
24							0.90	18	1.30	32	0.50	6
25							1.00	22	1.40	35	0.50	6
26							1.30	32	1.40	35	0.50	6
27							1.55	40	1.45	37	0.60	9
28							1.60	42	1.50	39	0.60	9
29							1.60	42	1.35	33	0.65	10
30							1.55	40	1.25	30	0.90	18
31									1.25	30		
	July.		August.		September.		October.		November.		December.	
1	0.60	9	0.20	1.0	0.10	0.5	0.10	0.5				
2	0.60	9	0.20	1.0	0.10	0.5	0.10	0.5				
3	0.70	12	0.20	1.0	0.10	0.5	0.10	0.5				
4	1.00	22	0.20	1.0	0.10	0.5	0.10	0.5				
5	1.00	22	0.20	1.0	0.10	0.5	0.10	0.5				
6	1.00	22	0.20	1.0	Below	0.4	0.10	0.5				
7	1.00	22	0.20	1.0	Gauge	0.4	0.10	0.5				
8	0.90	18	0.20	1.0		0.4	0.10	0.5				
9	0.90	18	0.20	1.0	Meter	0.4						
10	0.80	15	0.20	1.0		0.4						
11	0.80	15	0.20	1.0		0.4						
12	0.75	13	0.15	0.5		0.4						
13	0.70	12	0.10	0.5		0.4						
14	0.60	9	0.10	0.5		0.4						
15	0.50	16	0.10	0.5		0.4						
16	0.60	9	0.10	0.5		0.4						
17	0.70	12	0.10	0.5		0.4						
18	0.70	12	0.10	0.5		0.4						
19	0.70	12	0.10	0.5		0.4						
20	0.65	10	0.10	0.5		0.4						
21	0.60	9	0.10	0.5		0.4						
22	0.60	9	0.10	0.5		0.4						
23	0.60	9	0.10	0.5		0.4						
24	0.60	9	0.10	0.5		0.4						
25	0.60	9	0.10	0.5	Below	0.4						
26	0.50	6	0.10	0.5	Gauge	0.4						
27	0.50	6	0.10	0.5		2.2						
28	0.50	6	0.10	0.5		2.0						
29	0.45	5	0.10	0.5		1.0						
30	0.40	4	0.10	0.5		1.0						
31	0.40	4	0.10	0.5		1.0						



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## Monthly Discharge of Monte Creek Diversion to Summit Lake, for 1916.

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April.....	42.0	9.0	20.0			1,190
May.....	57.0	12.0	38.0			2,210
June.....	35.0	6.0	21.2			1,260
July.....	22.0	4.0	11.4			700
August.....	1.0	0.5	0.7			45
September.....	2.2	0.4	0.5			30
The period.....	57.0	0.4	15.0			5,435

## MURTLERIVER (2069).

*Location.*—At the Clearwater trail crossing, 15 miles below Murtle lake, 20 miles above Helmcken falls, and 50 miles by pack trail from the Canadian Northern Pacific Railway at Raft River post office.

*Records Available.*—September 1 to December 12, 1914; January 1 to November 20, 1915; June 1 to September 9, 1916.

*Drainage Area.*—Only part of the watershed has been surveyed, so that it is hardly possible to make a close estimate of the drainage area.

*Gauge.*—Gurley Automatic Water Stage Register. The record was interrupted by accident and ice, and the trouble was aggravated by the inaccessibility of the station, especially in the winter.

*Channel.*—Rocks and gravel.

*Discharge Measurements.*—Eight meter measurements made in June 1916 define the rating curve very well for discharges above 3,000 cubic feet per second. The low part of the curve is located approximately by one meter measurement in 1915 and one in 1916.

*Winter Flow.*—The stream was affected by ice in January, February, March, November and December. In January 1917 the ice was 2 feet thick.

*Accuracy.*—The results should be fairly reliable for the period during which the gauge was recording. For the rest of the year and for the ice period the estimates given are necessarily only approximate.

## Discharge Measurements of Murtle River 20 Miles above Helmcken Falls, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
June 4	F. R. Archibald	1,913	260	777	4.18	5.05	3,250
June 9	F. R. Archibald	1,913	260	807	4.12	5.19	3,320
June 14	F. R. Archibald	1,913	256	823	4.24	5.28	3,500
June 15	F. R. Archibald	1,913	261	878	4.43	5.48	3,890
June 16	F. R. Archibald	1,913	263	933	4.65	5.65	4,340
June 17	F. R. Archibald	1,913	265	996	4.82	5.90	4,610
June 18	F. R. Archibald	1,913	266	1,050	5.10	6.13	5,350
June 19	F. R. Archibald	1,913	275	1,186	5.40	6.58	6,400
Sept. 5	C. G. Cline	1,055	255	400	2.85	3.63	1,150
Nov. 14	F. R. Archibald	1,055	258	348	1.02	Ice	565
1917							
Feb. 1	C. G. Cline	1,923	160	200	0.95	Ice	190



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*Monthly Discharge of Murtle River 20 Miles above Helmcken Falls, for 1916.*

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
June	7,000	2,500	4,760			283,000
July	5,700	3,100	4,050			249,000
August	2,900	1,220	1,950			120,000
The period						

## NORTH THOMPSON RIVER (2085).

*Location.*—Forty miles north of Kamloops and one mile above the mouth of Barriere river. Water District No. 2.

*Records Available.*—June 1 to December 31, 1915; April 1 to December 31, 1916.

*Drainage Area.*—Seven thousand square miles.

*Gauge.*—Standard vertical staff gauge fixed on downstream end of western pier of highway bridge. Staff gauge installed April 7, 1916 replacing old chain gauge.

*Channel.*—Stream confined by bridge abutments and piers; riffle near bridge and rapids  $\frac{1}{4}$  mile below.

*Discharge Measurements.*—Six meter measurements made in 1916 agree fairly well, and cover practically the whole range of stage.

*Winter Flow.*—Stream frozen over or affected by ice for 3 or 4 months in the winter. Winter estimate made by comparison of discharges on South Thompson at Chase and Thompson at Spences bridge.

*Accuracy.*—In the case of the winter estimate in November and December the accuracy is naturally not high. For the open water months the results should be quite reliable.

*Discharge Measurements of North Thompson River at Barriere, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 28	A. D. McNaughton	1,923	272	2,934	1.20	3.63	3,490
April 6	C. G. Cline	1,923	269	3,141	1.47	4.16	4,660
May 18	C. G. Cline	1,055	313	4,760	3.98	9.87	18,950
June 19	C. G. C. and A. L. M.	1,055	313	7,542	7.6	18.00	59,900
July 23	F. R. Archibald	1,913	338	6,103	5.60	14.60	35,840
Sept. 1	F. R. Archibald	1,913	317	4,571	3.42	9.45	15,630

*Daily Gauge Height and Discharge of North Thompson River above Barriere River,  
for 1916.*

(Drainage area, 7,000 square miles.)

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								4,000	7.5	11,500	11.60	24,500		
2								4,100	8.3	13,600	11.90	25,700		
3								4,250	8.9	15,400	12.00	26,500		
4								4,400	10.3	19,700	12.70	28,900		
5								4,500	10.3	19,700	12.80	29,300		
6								Meter	4,660	10.6	20,800	12.00	26,100	
7									4,700	10.6	20,800	11.40	23,800	
8									4,750	10.1	19,100	10.40	19,400	
9									4.5	4,750	10.2	19,400	10.40	20,100
10									4.6	4,900	10.1	19,100	11.90	25,700
11									4.7	5,060	10.1	10,100	11.90	25,700
12									4.6	4,900	9.9	18,400	11.70	24,900
13									4.6	4,900	9.5	17,200	12.10	26,500
14									4.9	5,420	9.0	15,700	13.40	31,900
15									4.0	5,420	8.7	14,800	15.39	40,600
16									5.1	5,800	8.7	14,800	15.40	41,100
17									5.0	5,600	9.1	16,000	17.10	49,900
18									5.0	5,600	9.7	17,800	17.30	51,000
19									5.0	5,600	10.6	20,800	18.30	56,600
20									4.9	5,420	11.4	23,809	18.85	59,900
21									4.9	5,420	11.6	24,500	19.10	61,400
22									5.0	5,600	11.4	23,800	19.40	63,200
23									4.8	5,230	11.0	22,300	18.65	58,700
24									4.8	5,230	11.0	22,300	18.25	56,300
25									4.8	5,230	10.9	21,900	17.80	53,800
26									5.1	5,800	10.8	21,500	17.35	51,300
27									5.7	7,000	11.3	23,400	17.30	51,000
28									5.9	7,450	11.8	25,300	18.10	55,500
29						Meter	3,490		6.4	8,600	12.0	26,100	18.00	55,000
30							3,750		7.1	10,300	11.0	25,700	18.35	56,900
31							3,900				11.7	24,900		
	July.		August.		September.		October.		November.		December			
1	16.8	48,300	12.00	26,100	9.60	17,500	5.85	7,330	4.50	4,750		3,100		
2	15.2	40,100	12.00	26,100	9.70	17,800	5.90	7,450	4.45	4,680		3,000		
3	16.7	47,800	12.35	27,500	9.95	18,600	5.65	6,900	4.40	4,600		2,900		
4	16.1	44,701	12.30	27,300	9.90	18,400	5.25	6,100	4.40	4,600		2,900		
5	15.7	42,600	12.10	26,500	9.70	17,800	5.00	5,600		4,500		2,900		
6	14.6	37,300	11.75	25,100	9.75	18,000	4.90	5,420	Ice	4,500		2,800		
7	14.2	35,400	11.70	24,900	9.30	16,600	4.80	5,230		4,300		2,800		
8	14.2	35,400	11.60	24,500	8.70	14,800	4.60	4,900		4,000		2,800		
9	14.3	35,900	11.75	25,100	8.35	13,800	4.65	4,980		3,700		2,700		
10	14.4	36,400	11.70	24,900	7.95	12,600	4.45	4,680		3,800		2,600		
11	15.1	39,600	11.60	24,500	7.60	11,700	4.40	4,600		3,700		2,600		
12	15.6	42,100	11.10	22,600	7.60	11,700	4.20	4,300		3,500		2,500		
13	16.9	48,800	10.95	22,100	7.10	11,200	4.10	4,150		3,400		2,400		
14	16.8	48,300	10.50	20,500	7.00	10,100	4.20	4,300		2,900		2,300		
15	16.2	45,200	10.50	20,500	6.90	9,850	4.40	4,500		2,900		2,500		
16	15.9	43,600	10.60	20,800	6.70	9,350	4.65	4,980		2,900		2,400		
17	15.1	39,600	10.45	20,300	6.40	8,600	4.90	5,420		2,900		2,400		
18	14.9	38,700	10.40	20,100	6.40	8,600	7.20	10,600		3,100		2,300		
19	14.7	37,700	10.10	19,100	6.10	7,910	6.95	9,980		3,300		2,300		
20	14.3	35,900	9.05	15,800	6.25	8,250	6.70	9,350		3,300		2,200		
21	14.8	38,200	8.70	14,800	6.45	8,730	5.60	6,800		3,200		2,200		
22	14.7	37,700	8.35	13,800	6.60	9,100	5.65	6,900		3,100		2,200		
23	14.3	35,900	8.40	13,900	6.65	9,220	5.75	7,110		3,100		2,000		
24	11.0	24,600	8.65	14,600	6.55	8,570	5.65	6,900		2,700		1,800		
25	13.6	32,800	9.10	16,000	6.35	8,480	5.65	6,900		2,700		1,700		
26	13.3	31,400	9.00	15,700	6.30	8,370	5.60	6,800		2,800		1,700		
27	13.0	30,200	8.85	15,300	6.35	8,480	5.50	6,600		2,900		1,600		
28	12.9	29,700	8.15	16,100	6.30	8,370	5.35	6,300		3,100		1,600		
29	12.9	29,700	9.40	16,900	6.00	7,680	5.30	6,200		3,100		1,500		
30	12.3	27,300	9.65	17,600	6.00	7,680	5.30	6,200	Ice	3,100		1,500		
31	12.0	26,100	9.60	17,500			5.25	6,100				1,500		

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*Monthly Discharge of North Thompson River at Barriere, for 1916.*

(Drainage area, 7,600 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.
April	10,300	4,000	5,460	0.78	0.87	425,000
May	26,100	11,500	20,050	2.86	3.30	1,230,000
June	63,200	19,100	40,700	5.81	6.48	2,421,000
July	48,800	26,100	38,000	5.43	6.26	2,337,000
August	27,500	13,800	20,500	2.93	3.38	1,260,000
September	18,600	7,680	11,600	1.66	1.85	690,000
October	10,600	4,150	6,250	0.89	1.03	384,000
November	4,750		3,500	0.50	0.56	208,000
December			2,330	0.33	0.38	143,000
The period	63,200		16,590	2.35	24.11	8,998,000

## PAUL CREEK (2032).

*Location.*—Section 31, township 20, range 16, west 6th meridian; one quarter mile below outlet of Paul lake.

*Records Available.*—Previous to 1916 at gauging station above Western Canadian Ranching Co.'s diversion: July 1 to October 6, 1911; May 12 to September 25, 1912; May 16 to September 30, 1913; April 20 to September 27, 1914; April 25 to September 30, 1915. For 1916 at new gauge  $\frac{1}{4}$  mile below Paul lake; July 1 to September 30.

*Drainage Area.*—Fifty-five square miles; flow regulated by storage dam on Paul lake.

*Gauge.*—Vertical staff gauge, read daily.

*Channel.*—Gravel and rocks.

*Discharge Measurements.*—Four measurements during 1916 give a fairly well defined curve for all stages.

*Accuracy.*—Results should be quite reliable at all stages.

*Discharge Measurements of Paul Creek  $\frac{1}{4}$  Mile below Paul Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 9	C. G. Cline	1,913	17	30.0	1.20	4.77	36.0
July 19	C. G. Cline	1,055	17	9.7	0.96	4.30	9.3
Aug. 25	F. R. Archibald	1,913	14	4.4	0.38	4.01	1.7
Oct. 7	F. R. Archibald	1,913	8	2.6	0.29	3.54	0.7

Daily Gauge Height and Discharge of Paul Creek  $\frac{1}{4}$  Mile below Paul Lake, for 1916.

(Drainage area, 55 square miles.)

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		31	4.5	18	4.5	18	4.4	11.0	4.0	1.7	3.8	0.6
2	4.70	31	4.7	31	4.6	24	4.5	18.0	4.0	1.7	3.8	0.6
3	4.30	18	4.6	24	4.5	18	4.5	18.0	4.0	1.7	3.8	0.6
4	4.70	31	4.3	9	4.4	13	4.5	18.0	4.0	1.7	3.8	0.6
5	4.70	31	4.3	9	4.6	24	4.4	13.0	4.0	1.7	3.8	0.6
6	4.50	18	4.6	24	4.6	24	4.5	18.0	4.0	1.7	3.8	0.6
7	4.40	13	4.5	18	4.7	31	4.4	13.0	4.0	1.7	3.8	0.6
8	4.30	9	4.4	13	4.5	18	4.4	13.0	4.0	1.7	3.8	0.6
9	4.80	38	4.4	13	4.3	9	4.3	9.0	4.0	1.7	3.8	0.6
10	4.70	31	4.4	13	4.5	18	4.1	9.0	4.0	1.7	3.8	0.6
11	4.70	31	4.7	31	4.4	13	4.1	9.0	3.9	1.6	3.8	0.6
12	4.80	38	4.6	24	4.3	9	4.1	9.0	3.9	1.6	3.8	0.6
13	4.80	38	4.5	18	4.4	13	4.2	6.0	3.9	1.6	3.8	0.6
14	4.80	38	4.4	13	4.4	13	4.2	6.0	3.9	1.6	3.8	0.6
15	4.80	38	4.4	13	4.4	13	4.2	6.0	3.9	1.6	3.8	0.6
16	4.60	24	4.7	31	4.3	9	4.2	6.0	3.9	1.6	3.8	0.6
17	4.85	42	4.6	24	4.2	6	4.2	6.0	3.9	1.6	3.8	0.6
18	4.80	38	4.5	18	4.2	6	4.1	3.5	3.9	1.6	3.8	0.6
19	4.70	31	4.6	24	4.3	9	4.1	3.5	3.9	1.6	3.8	0.6
20	4.70	31	4.7	31	4.3	9	4.1	3.5	3.9	1.6	3.8	0.6
21	4.80	38	4.6	24	4.5	18	4.1	3.5	3.9	1.6	3.8	0.6
22	4.80	38	4.3	9	4.3	9	4.1	3.5	3.9	1.6	3.8	0.6
23	4.70	31	4.6	24	4.2	6	4.1	1.7	3.9	1.6	3.8	0.6
24	4.60	24	4.5	18	4.4	13	4.0	1.7	3.9	1.6	3.8	0.6
25	4.70	31	4.5	18	4.6	24	4.0	1.7	3.9	1.6	3.8	0.6
26	4.50	18	4.5	18	4.5	18	4.0	1.7	3.9	1.6	3.8	0.6
27	4.50	18	4.5	18	4.4	13	4.0	1.7	3.9	1.6	3.8	0.6
28	4.80	38	4.3	9	4.5	18	4.0	1.7	3.9	1.6	3.8	0.6
29	4.70	31	4.2	6	4.3	9	4.0	1.7	3.9	1.6	3.8	0.6
30	4.60	24	4.5	18	4.4	13	4.0	1.7	3.9	1.6	3.8	0.6
31	4.50	18			4.4	13	4.0	1.7			3.8	0.6

Monthly Discharge of Paul Creek  $\frac{1}{4}$  Mile below Paul Lake, for 1916.

(Drainage area, 55 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acres-foot
May	42.0	9.0	29.0	0.53	0.61	1,780
June	31.0	6.0	18.7	0.34	0.38	1,110
July	31.0	6.0	14.5	0.26	0.30	860
August	18.0	1.7	7.2	0.13	0.15	440
September	1.7	1.0	1.2	0.02	0.02	70
October	0.6	0.6	0.6	0.01	0.01	35
The period	42.0	0.6	11.0	0.22	1.47	6,325

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## RAFT RIVER (2055).

*Location.*—Raft river, Provincial Water District No. 2; about 1½ miles from North Thompson river.

*Records Available.*—June 1, 1914 to December 19, 1914; February 21 to December 31, 1915; April 5 to November 10, 1916.

*Drainage Area.*—Three hundred square miles.

*Gauge.*—Staff gauge on pile of highway bridge, installed October 26, 1916 to replace chain gauge previously in use at same location.

*Channel.*—About 150 feet wide; rocks, sand and gravel; control permanent.

*Discharge Measurements.*—Nine meter measurements in 1914-16 agree fairly well and cover practically the whole range of stage.

*Winter Flow.*—River frozen for about four months each winter, and discharge falls quite low. Ice measurements on February 20, 1917 gave a discharge of 23 cubic feet per second.

*Accuracy.*—Results should be quite reliable, though perhaps not quite so accurate at extreme high and low stages.

*Discharge Measurements of Raft River near Mouth, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
1916							
June 24	F. R. Archibald	1,913	111	483	5.60	7.70	2,700
Sept. 14	F. R. Archibald	1,913	58	68	1.70	3.50	115
Oct. 26	F. R. Archibald	1,055	58	82	1.38	3.43	85
1917							
Feb. 20	F. R. Archibald	1,055	35	30	0.75	Ice	23

Daily Gauge Height and Discharge of Raft River near Mouth, for 1916.

(Drainage area, 300 square miles.)

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								260	5 75	1,000	6 55	1,560	
2								260	6 25	1,340	6 55	1,560	
3								260	6 90	1,840	6 85	1,800	
4								260	7 45	2,330	7 45	2,330	
5							4 20	260	7 85	2,700	6 95	1,880	
6								4 25	275	7 65	2,500	6 55	1,560
7								4 25	275		2,110	6 60	1,600
8								4 30	290	6 75	1,720	6 75	1,720
9								4 35	305	6 25	1,340	6 70	1,680
10								4 45	345	5 95	1,140	6 55	1,560
11								4 45	345	5 75	1,000	6 55	1,560
12								4 35	305	5 55	880	6 65	1,640
13								4 25	275	5 25	710	6 95	1,880
14								4 30	290	5 45	820	7 35	2,240
15								4 25	275	5 75	1,000	7 95	2,800
16								4 25	275	5 95	1,140	8 35	3,200
17								4 30	290	6 15	1,270	8 55	3,400
18								4 25	275	6 45	1,480	8 35	3,200
19								4 25	275	6 55	1,560	8 65	3,500
20								4 25	275	6 75	1,720	7 95	2,800
21								4 20	260	6 45	1,480	7 45	2,330
22								4 15	245	6 25	1,340	7 95	2,800
23								4 05	215	6 15	1,270	7 85	2,700
24								4 10	230	6 25	1,340	7 75	2,600
25								4 15	245	6 15	1,270	6 90	1,840
26								4 55	385	6 45	1,480	7 00	1,920
27								5 35	770	6 75	1,720	7 20	2,190
28								5 75	1,000	6 95	1,880	6 80	1,760
29								5 55	880	6 55	1,560	6 60	1,600
30								5 55	880	6 50	1,520	6 30	1,380
31								6 75	1,720	7 20	2,190		
	July.		August.		September.		October.		November.		December.		
1	5 00	1,100	4 80	495	3 30	65	3 30	65	3 30	65			
2	5 40	790	4 80	495	3 40	80	3 25	60	3 30	65			
3	6 65	1,600	4 80	495	3 45	90	3 20	55	3 30	65			
4	6 20	1,380	4 70	450	3 50	95	3 20	55	3 30	65			
5	5 90	1,100	4 75	470	3 50	95	3 10	45	3 40	80			
6	5 60	910	4 80	495	3 60	115	3 20	55	3 40	80			
7	5 30	740	4 80	495	3 40	80	3 20	55	3 30	65			
8	5 30	740	4 70	450	3 45	90	3 20	55					
9	5 25	710	4 60	405	3 50	95	3 20	55	3 20	55			
10	5 20	690	4 30	290	3 50	95	3 10	45	3 10	45			
11	5 00	590	4 30	290	3 55	105	3 10	45					
12	5 00	590	4 20	260	3 60	115	3 10	45					
13	5 05	610	4 00	205	3 60	115	3 20	55		Ice			
14	4 90	540	3 90	180	3 50	95	3 20	55					
15	4 80	495	3 90	180	3 45	90	3 20	55					
16		640	3 95	190	3 30	65	3 30	65					
17	5 20	890	3 90	180	3 20	55	3 40	80					
18	5 20	890	3 80	155	3 20	55	3 40	80					
19	5 35	770	3 80	155	3 10	45	3 40	80					
20	5 50	850	3 80	155	3 20	55	3 30	65					
21	5 40	790	3 75	145	3 20	55	3 30	65					
22	5 60	910	3 70	135	3 25	60	3 30	65					
23	5 80	1,030	3 80	155	3 30	65	3 30	65					
24	5 90	1,100	3 75	145	3 30	65	2 30	65					
25	5 60	910	3 70	135	3 30	65	3 30	65					
26	5 40	790	3 65	125	3 40	80	3 40	80					
27	5 20	890	3 40	80	3 40	80	3 40	80					
28	5 20	890	3 40	80	3 20	55	3 40	80					
29	5 00	590	3 30	65	3 30	65	3 30	65					
30	4 90	540	3 20	55	3 40	80	3 30	65					
31	4 90	540	3 20	55			3 30	65					



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*Monthly Discharge of Raft River near Mouth, for 1916.*

(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.
April	1,000	215	360	1 20	1 34	21,000
May	2,700	710	1,490	4 97	5 72	92,000
June	3,500	1,380	2,150	7 17	8 60	128,000
July	1,600	495	800	2 67	3 08	49,000
August	495	55	250	0 83	0 96	15,400
September	115	45	80	0 27	0 30	4,760
October	80	45	60	0 20	0 23	3,690
The period	3,500	45	741	2 47	19 64	313,850

## SALMON RIVER (2078).

*Location.*—Below the mouth of Bolean creek; section 2, township 18, range 12, west of 6th meridian.

*Records Available.*—May 23 to December 31, 1911; January 1 to September 13, 1912; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Three hundred and fifty square miles.

*Gauge.*—Vertical staff gauge, read daily.

*Channel.*—Stream confined between bridge abutments; water fairly swift. Bed of stream, gravel and rocks.

*Discharge Measurements.*—Three measurements in 1916 and thirteen during 1911, 1912, 1913 and 1915 agree fairly well, and cover the whole range of stage.

*Accuracy.*—Results should be fairly reliable.

*Discharge Measurements of Salmon River at Falkland, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 31	C. G. Cline	1,055	30	76	4 3	7 95	324
July 30	F. R. Archibald	1,913	29	54	2 4	7 30	133
Sept. 10	F. R. Archibald	1,913	30	41	1 2	6 82	48

NOTE.—All measurements are referred to new gauge installed March 25, 1915.

Daily Gauge Height and Discharge of Salmon River at Falkland, for 1916.

(Drainage area, 350 square miles.)

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								36	7 35	150	7 90	300
2								36	7 55	200	7 95	320
3								36	7 75	260	7 95	320
4								36	7 80	270	8 00	335
5							6 70	36	7 95	320	8 00	335
6							6 70	36	8 25	420	8 05	350
7							6 70	36	8 15	385	8 00	335
8							6 70	36	8 00	335	7 95	320
9							6 70	36	7 95	320	7 95	320
10							6 70	36	7 80	270	7 85	285
11							6 75	41	7 70	245	7 80	270
12							6 75	41	7 60	215	7 80	270
13							6 75	41	7 50	185	7 75	260
14							6 75	41	7 45	170	7 75	260
15							6 75	41	7 40	160	7 70	245
16							6 80	47	7 40	160	7 70	245
17							6 80	47	7 40	160	7 65	230
18							6 75	41	7 60	215	7 65	230
19							6 75	41	7 75	260	7 80	245
20							6 75	41	7 70	245	7 55	200
21							6 75	41	7 65	230	7 50	185
22							6 70	36	7 70	245	7 50	185
23							6 70	36	7 65	230	7 45	170
24							6 70	36	7 65	230	7 45	170
25							6 80	47	7 70	245	7 40	160
26							6 90	60	7 75	260	7 40	160
27							6 95	68	7 85	285	7 50	200
28							7 20	115	7 90	300	7 75	260
29							7 35	156	7 95	320	7 85	285
30							7 35	150	7 95	320	7 70	245
31										310		

	July.		August		September.		October.		November.		December	
1	7 50	185	7 20	115	6 80	47	6 75	41				
2	7 55	200	7 18	105	6 80	47	6 75	41				
3	7 80	270	7 30	138	6 85	53	6 75	41				
4	7 75	260	7 20	115	6 85	53	6 75	41				
5	7 75	260	7 15	105	6 85	53	6 70	36				
6	7 65	230	7 15	105	6 85	53	6 70	36				
7	7 60	215	6 10	95	6 85	53	6 70	36				
8	7 60	215	7 10	95	6 80	47	6 70	36				
9	7 60	215	7 10	95	6 80	47	6 70	36				
10	7 55	200	7 05	86	6 80	47	6 70	36				
11	7 50	185	7 05	86	6 80	47	6 75	41				
12	7 45	170	7 05	86	6 80	47	6 75	41				
13	7 40	160	7 05	86	6 80	47	6 75	41				
14	7 35	150	7 00	77	6 75	41	6 75	41				
15	7 30	135	7 00	77	6 75	41	6 75	41				
16	7 40	160	7 00	77	6 75	41	6 75	41				
17	7 75	260	7 00	77	6 75	41	6 75	41				
18	7 70	245	7 00	77	6 75	41	6 75	41				
19	7 60	215	7 00	77	6 75	41	6 75	41				
20	7 60	215	7 00	77	6 75	41	6 75	41				
21	7 55	200	6 95	68	6 75	41	6 75	41				
22	7 65	230	6 95	68	6 75	41	6 75	41				
23	7 55	200	6 95	68	6 75	41	6 70	36				
24	7 50	185	6 90	60	6 75	41	6 70	36				
25	7 50	185	6 90	60	6 75	41	6 75	41				
26	7 45	170	6 90	60	6 75	41	6 75	41				
27	7 45	170	6 90	60	6 75	41	6 75	41				
28	7 40	160	6 85	53	6 7	41	6 75	41				
29	7 35	150	6 85	53	6 75	41	6 75	41				
30	7 30	135	6 80	47	6 80	47	6 70	36				
31	7 25	125	6 80	47			6 70	36				

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*Monthly Discharge of Salmon River at Falkland, for 1916.*

(Drainage area, 350 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 .....	150	36	51	0 14	0 16	3,030
May .....	420	150	255	0 73	0 84	15,700
June .....	350	180	257	0 73	0 81	15,290
July .....	270	125	195	0 56	0 65	12,600
August .....	135	47	80	0 23	0 26	4,920
September .....	53	41	45	0 13	0 14	2,680
October .....	41	36	40	0 11	0 13	2,460
The period .....	420	36	132	0 38	2 99	55,990

## SIWASH CREEK (2058).

*Location.*—Section 12, township 22, range 16, west 6th meridian; near mouth of creek.

*Records Available.*—June 7 to July 28, 1914; April 1 to September 30, 1915; April 3 to October 31, 1916.

*Drainage Area.*—Seven square miles.

*Gauge.*—Standard vertical staff gauge installed above a Cippoletti weir and read daily.

*Channel.*—Straight above weir. Velocity, medium.

*Discharge Measurements.*—Weir formula used in calculating discharges. Three meter measurements during 1916 agree fairly well with results from weir formula.

*Accuracy.*—Accuracy of results compiled from weir discharge table should be quite high.

*Discharge Measurements of Siwash Creek near Hefley Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 14	C. G. Cline	1,055	7 0	4 5	1 00	3 11	4 7
July 21	F. R. Archibald	1,913	7 0	1 5	1 37	2 90	2 1
Aug. 30	F. R. Archibald	1,913	2 5	0 5	0 50	2 00	0 2

## Daily Gauge Height and Discharge of Siwash Creek near Heffley Lake, for 1916.

(Drainage area, 7 square miles.)

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 0										
2		0 0	3 20	7 0	3 40	10 5	3 00	4 0	2 75	1 2	2 60	0 2
3	1 70	0 0	3 40	10 5	3 40	10 5	3 00	4 0	2 75	1 2	2 60	0 2
4	2 30	0 1	3 55	12 5	3 30	8 7	3 05	4 7	2 75	1 2	2 60	0 2
5	2 60	0 2	3 60	14 0	3 25	8 7	3 10	5 4	2 75	1 2	2 60	0 2
6	2 60	0 2	3 70	16 0	3 20	7 0	3 30	8 7	2 75	1 2	2 60	0 2
7	2 60	0 2	3 50	12 5	3 20	7 0	3 25	7 8	2 75	1 2	2 60	0 2
8	2 60	0 2	3 40	10 5	3 20	7 0	3 20	7 0	2 75	1 2	2 60	0 2
9	2 60	0 2	3 30	8 7	3 10	6 2	3 10	5 4	2 75	1 2	2 60	0 2
10	2 65	0 5	3 25	7 8	3 10	5 4	3 00	4 0	2 70	0 7	2 60	0 2
11	2 65	0 5	3 20	7 0	3 00	4 0	2 95	3 4	2 70	0 7	2 60	0 2
12	2 65	0 5	3 15	6 2	3 00	4 0	2 90	2 8	2 70	0 7	2 60	0 2
13	2 65	0 5	3 14	5 4	3 00	4 0	2 90	2 8	2 70	0 7	2 60	0 2
14	2 65	0 5	3 10	5 4	3 00	4 0	2 90	2 8	2 70	0 7	2 60	0 2
15	2 65	0 5	3 15	6 2	3 00	4 0	2 90	2 8	2 65	0 5	2 60	0 2
16	2 65	0 5	3 20	7 0	2 95	3 4	2 85	2 2	2 65	0 5	2 60	0 2
17	2 65	0 5	3 20	7 0	2 90	2 8	2 90	2 8	2 65	0 5	2 60	0 2
18	2 65	0 5	3 20	7 0	2 90	2 8	2 90	2 8	2 65	0 5	2 60	0 2
19	2 65	0 5	3 20	7 0	2 90	2 8	2 95	3 4	2 70	0 7	2 60	0 2
20	2 65	0 5	3 25	7 8	2 90	2 8	2 95	3 4	2 65	0 5	2 60	0 2
21	2 65	0 5	3 25	7 8	2 90	2 8	2 90	2 8	2 65	0 5	2 60	0 2
22	2 65	0 5	3 20	7 0	2 90	2 8	2 90	2 8	2 65	0 5	2 60	0 2
23	2 65	0 5	3 20	7 0	2 85	2 2	2 90	2 8	2 65	0 5	2 60	0 2
24	2 65	0 5	3 20	7 0	2 80	1 7	2 90	2 8	2 65	0 5	2 60	0 2
25	2 70	0 7	3 20	7 0	2 85	2 2	2 90	2 8	2 65	0 5	2 60	0 2
26	2 75	1 2	3 20	7 0	2 90	2 8	2 85	2 2	2 60	0 2	2 60	0 2
27	3 10	5 4	3 20	7 0	2 95	3 4	2 80	1 7	2 60	0 2	2 60	0 2
28	3 10	5 4	3 20	7 0	2 90	2 8	2 80	1 7	2 60	0 2	2 60	0 2
29	3 00	4 0	3 25	7 8	3 00	4 0	2 80	1 7	2 60	0 2	2 60	0 2
30	3 10	5 4	3 25	7 8	3 00	4 0	2 80	1 7	2 60	0 2	2 60	0 2
31			3 30	8 7			2 80	1 7	2 60	0 2	2 60	0 2

## Monthly Discharge of Siwash Creek near Heffley Lake, for 1916.

(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.
January						
February						
March						
April						
May	5 4	0 0	1 0	0 14	0 16	60
June	16 0	5 4	8 4	1 20	1 38	520
July	10 5	1 7	4 7	0 67	0 75	280
August	8 7	1 7	3 5	0 50	0 58	215
September	1 2	0 2	0 7	0 10	0 11	43
October	0 2	0 0	0 1	0 01	0 01	7
November						
December						
The period	16 0	0 0	3 1	0 44	2 99	1,125

## SULLIVAN CREEK (2091).

*Location.*—Section 9, township 23, range 16, west 6th meridian; 4 miles below Canough lake.

*Records Available.*—At old station, a mile below present station, for August 21 to November 4, 1911; May 1 to September 15, 1912. April 1 to September 30, 1916 at present station.

*Drainage Area.*—Sixteen square miles. Run-off controlled by storage in Canough lake.

*Gauge.*—Vertical staff gauge, read daily.

*Channel.*—Rocks and gravel.

*Discharge Measurements.*—Four measurements during 1916 agree fairly well and cover all stages up to 4 cubic feet per second.

*Accuracy.*—Results should be fairly reliable except for discharges above 4 cubic feet per second.

*Discharge Measurements of Sullivan Creek 4 Miles below Canough Lake, for 1916.*

Date.	Engineer	Meter No.	Width	Area of Section.	Mean Velocity	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 12	C. G. Cline	1955	7 0	3 9	0 93	0 73	3 6
July 20	F. R. Archibald	1913	5 0	1 2	0 93	0 50	1 1
Aug. 29	F. R. Archibald	1913	4 5	1 2	1 64	0 57	2 0
Oct. 5	F. R. Archibald	1913	1 5	0 2	1 00	0 30	0 21

<sup>1</sup> Various sections used.

*Daily Gauge Height and Discharge of Sullivan Creek 4 Miles below Canough Lake, for 1916.*

(Drainage area, 16 square miles.)

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		0.4	0.72	3.5	0.70	3.2	0.80	4.6	0.70	3.2	0.55	1.6
2	0.35	0.4	0.75	3.9	0.57	1.9	0.80	4.6	0.72	3.5	0.55	1.6
3	0.35	0.4	0.77	4.2	0.57	1.9	0.87	6.0	0.72	3.5	0.55	1.6
4	0.35	0.4	0.77	4.2	0.80	2.1	0.92	7.0	0.72	3.5	0.55	1.6
5	0.40	0.6	0.77	4.2	0.60	2.1	0.90	6.4	0.72	3.5	0.55	1.6
6	0.40	0.6			0.60	2.1	0.90	6.4	0.70	3.2	0.55	1.6
7	0.40	0.6	0.80	4.6	0.60	2.1	0.90	6.4	0.70	3.2	0.55	1.6
8	0.40	0.6	0.80	4.6	0.57	1.9	0.85	5.5	0.70	3.2	0.55	1.6
9	0.40	0.6	0.80	4.6	0.57	1.9	0.85	5.5	0.70	3.2	0.55	1.6
10	0.40	0.6	0.80	4.6	0.55	1.6	0.82	5.0	0.70	3.2	0.55	1.6
11	0.40	0.6	0.77	4.2	0.42	0.7	0.47	1.0	0.70	3.2	0.55	1.6
12	0.40	0.6	0.72	3.5	0.40	0.6	0.45	0.9	0.70	3.2	0.52	1.4
13	0.40	0.6	0.70	3.2	0.45	0.9	0.40	0.8	0.67	2.9	0.50	1.2
14	0.40	0.6	0.70	3.2	0.45	0.9	0.40	0.8	0.65	2.8	0.50	1.2
15	0.40	0.6	0.70	3.2	0.62	2.4	0.40	0.6	0.65	2.8	0.50	1.2
16	0.40	0.6	0.72	3.5	0.75	3.0	0.40	0.6	0.65	2.8	0.50	1.2
17	0.40	0.6	0.72	3.5	0.80	4.6	0.50	1.2	0.65	2.8	0.50	1.2
18	0.40	0.6	0.72	3.5	0.80	4.6	0.50	1.2	0.62	2.4	0.50	1.2
19	0.40	0.6	0.70	3.2	0.80	4.6	0.50	1.2	0.47	1.0	0.50	1.2
20	0.40	0.6	0.70	3.2	0.75	3.0	0.47	1.0	0.40	0.6	0.50	1.2
21	0.40	0.6	0.70	3.2	0.70	3.2	0.47	1.0	0.40	0.6	0.50	1.2
22	0.40	0.6	0.72	3.5	0.70	3.2	0.47	1.0	0.40	0.6	0.47	1.0
23	0.40	0.6	0.72	3.5	0.70	3.2	0.47	1.0	0.40	0.6	0.45	0.9
24	0.40	0.6	0.70	3.2	0.72	3.5	0.47	1.0	0.43	0.6	0.40	0.6
25	0.45	0.9	0.70	3.2	0.72	3.5	0.45	0.9	0.40	0.6	0.40	0.6
26	0.50	1.2	0.67	2.9	0.75	3.0	0.45	0.9	0.40	0.6	0.35	0.4
27	0.55	1.6	0.67	2.9	0.80	4.6	0.45	0.9	0.40	0.6	0.30	0.2
28	0.57	1.9	0.70	3.2	0.82	5.0	0.45	0.9	0.45	0.9	0.30	0.2
29	0.55	1.6	0.72	3.5	0.82	5.0	0.45	0.9	0.55	1.6	0.30	0.2
30	0.60	2.0	0.72	3.5	0.80	4.6	0.45	0.9	0.55	1.6	0.30	0.2
31			0.75	3.0			0.60	2.1	0.55	1.6		

*Monthly Discharge of Sullivan Creek 4 Miles below Canough Lake, for 1916.*

(Drainage area, 16 square miles.)

MONTH	DISCHARGE IN SECOND FEET			Per square Mile	Depth in inches on Drainage Area	Total Volume
	Maximum	Minimum	Mean			
April	2.9	0.4	0.8	0.05	0.06	48
May	4.6	3.2	3.7	0.23	0.26	216
June	5.0	0.6	2.9	0.18	0.20	168
July	7.0	0.6	2.5	0.16	0.18	144
August	7.7	0.6	2.2	0.14	0.16	132
September	1.6	0.2	1.1	0.07	0.08	66
Ther total	7.0	0.2	2.2	0.14	0.14	1188

**THREEMILE (DURAND) CREEK (2080).**

*Location.* Section 23, township 20, range 21, west 6th meridian; below diversion from Guichon creek.

*Records Available.* June 21 to September 30, 1915; May 11 to October 31, 1916.

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*Drainage Area.*—Fifty-five square miles. Flow of creek augmented by diversion from Guichon creek, stored in Timkwa lake.

*Gauge.*—Standard 3 foot staff gauge, read daily.

*Channel.*—Gravel and large stones, fairly permanent.

*Discharge Measurements.*—Three measurements made during 1915 and three during 1916 agree fairly well, and cover almost whole range of stage.

*Accuracy.*—Results should be quite reliable, especially up to 8 cubic feet per second.

*Daily Gauge Height and Discharge of Threemile (Durand) Creek 7 Miles from Mouth, for 1915.*

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			1 1	16	1 1	8	1 00	6 0				
2			1 4	16	1 1	8	1 00	6 0				
3			1 4	16	1 0	6	1 00	6 0				
4	0 90	4	1 4	16	1 0	6	1 00	6 0				
5			1 3	13	1 0	6	1 00	6 0				
6			1 3	13	1 0	6	1 00	6 0				
7			1 3	13	1 0	6	1 00	6 0				
8			1 2	11	1 0	6	1 00	6 0				
9			1 1	8	1 3	13	1 00	6 0				
10			1 1	8	1 3	13	1 00	6 0				
11				8	1 3	13	1 00	6 0				
12			1 1	8	1 3	13	1 00	6 0				
13			1 1	8	1 3	13	1 00	6 0				
14			1 2	11	1 3	13	1 00	6 0				
15			1 2	11	1 3	13	0 90	4 0				
16			1 2	11	1 3	13		4 0				
17			1 1	8	1 3	13		4 0				
18			1 1	8	1 3	13	0 90	4 0				
19			1 1	8	1 3	13	0 80	2 2				
20			1 0	6	1 3	13	0 80	2 2				
21	1 10	16	1 0	6	1 3	13	0 80	2 2				
22			1 0	6	1 1	8	0 80	2 2				
23	1 40	16	0 9	4	1 0	6	0 75	1 5				
24	1 40	16	0 9	4	1 0	6	0 75	1 5				
25	1 40	16	1 1	8	1 0	6	0 75	1 5				
26			1 2	11	1 0	6	0 75	1 5				
27			1 2	11	1 0	6	0 75	1 5				
28			1 2	11	1 0	6	0 75	1 5				
29			1 2	11	1 0	6	0 75	1 5				
30			1 2	11	1 0	6	0 75	1 5				
31			1 2	11	1 0	6	0 75	1 5				

*Monthly Discharge of Threemile (Durand) Creek 7 Miles from Mouth, for 1915.*

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per Square Mile.	Depth in inches in Drainage Area.	Total in Acre-feet.
June	16	4 0	10			600
July	13	6 0	9			550
August	6	1 5	4			240
The period	16	1 5	7 7			1,390

## Discharge Measurements of Threemile (Durand) Creek near Savona, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 6	A. L. McNaughton	1,923	12.5	8.2	2.13	1.40	17.5
June 16	A. L. McNaughton	1,923	11.6	6.8	1.78	1.32	12.1
Sept. 19	F. R. Archibald	1,913	9.0	3.1	0.37	0.73	1.1

## Daily Gauge Height and Discharge of Threemile (Durand) Creek 7 Miles from Mouth, for 1916.

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	16	1.5	19	1.1	8	1.3	13.0		0.8
2			1.4	14	1.4	16	1.1	8	1.3	13.0	0.7	0.8
3			1.3	13	1.5	19	1.1	8	1.3	13.0	0.7	0.8
4			1.4	13	1.4	16	1.1	8		12.0	0.7	0.8
5			1.4	16	1.3	16	1.1	8		12.0	0.7	0.8
6	1.40	16	1.1	16	1.3	13	1.0	6	1.2	11.0		0.8
7			1.3	13	1.2	11	1.0	6	1.2	11.0		0.8
8			1.3	13	1.2	11	1.0	6	1.2	11.0	0.7	0.8
9			1.3	13	1.1	8	1.0	6	1.2	11.0		0.8
10				13	1.1	8	0.9	4	1.2	11.0	0.7	0.8
11	1.10	8	1.3	13	1.0	6	0.9	4	1.1	8.0	0.7	0.8
12	1.10	8	1.3	13	1.0	6	0.9	4	1.1	8.0	0.7	0.8
13	1.10	8	1.3	13	1.0	6	0.9	4	1.1	8.0	0.7	0.8
14	1.10	8	1.3	13	1.0	6	0.9	4	1.1	8.0	0.7	0.8
15	1.10	8	1.3	13	1.3	13	1.1	8	1.1	8.0		0.8
16	1.10	8	1.2	11	1.3	13	1.1	8	1.0	8.0	0.7	0.8
17	1.10	8	1.2	11	1.4	16	1.1	8	0.7	0.8	0.7	0.8
18	1.10	8	1.2	11	1.4	16	1.1	8	0.7	0.8	0.7	0.8
19	1.10	8	1.1	8	1.4	16	1.1	8	0.7	0.8		0.8
20	1.10	8	1.1	8	1.4	16	1.1	8	0.7	0.8	0.7	0.8
21	1.10	8	1.1	8	1.1	18	1.0	6	0.7	0.8	0.7	0.8
22	1.10	8	1.1	8	1.4	16	1.0	6	0.7	0.8		0.8
23	1.10	8	1.1	8	1.1	8	1.0	6	0.7	0.8		0.8
24	1.10	8	1.1	8	1.1	8	1.0	6	0.7	0.8	0.7	0.8
25	1.10	8	1.1	8	1.1	8	1.0	6	0.7	0.8		0.8
26	1.05	7	1.2	11	1.0	6	1.0	6	0.7	0.8	0.7	0.8
27	1.00	6	1.3	13	1.2	11		6	0.7	0.8	0.7	0.8
28	1.10	8	1.4	16	1.2	11		6	0.7	0.8		0.8
29	1.20	11	1.4	16	1.2	11	1.0	6	0.7	0.8		0.8
30	1.30	13	1.4	16	1.2	11	1.3	13	0.7	0.8		0.8
31	1.40	16			1.2	11	1.3	13			0.7	0.8



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*Monthly Discharge of Threemile Creek 7 Miles from Mouth, for 1916.*

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN OFF.	
	Maximum	Minimum	Mean.	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet.
June	16.0	8.0	12.2			730
July	19.0	6.0	11.0			730
August	13.0	4.0	7.0			439
September	13.0	0.8	5.8			345
October	0.8	0.8	0.8			9
The period	19.0	0.8	7.5			2,284

NOTE.—No drainage area given as water is diverted from Guichon creek into Threemile creek.

## TRANQUILLE CREEK (2043).

*Location.*—Section 36, township 20, range 19, west 6th meridian; below one small diversion.

*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; April 1 to September 30, 1915; April 1 to July 14, 1916.

*Drainage Area.*—Two hundred and thirty square miles. The flow of the creek is diminished by a small diversion above the gauging station.

*Gauge.*—Standard vertical staff gauge, read daily.

*Channel.*—Straight at section, about 20 feet wide. Bed of stream composed of stones and boulders.

*Discharge Measurements.*—Eleven measurements made during 1912-14 and two during 1916 agree fairly well, and cover the whole range of water stage for the year.

*Accuracy.*—Results should be quite reliable for all stages, except that for part of the season there was a small amount of water diverted above the gauging station (maximum about 3 cubic feet per second).

*Discharge Measurements of Tranquille Creek below Highest Diversion, for 1916.*

Date	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. Ft.	Ft. per sec.	Feet.	Sec.-ft.
May 5	A. L. McNaughton	1,923				2.40	417.0
Sept 15	A. L. McNaughton	1,923	18.0	13.6	0.39	0.55	5.3

*Daily Gauge Height and Discharge of Tranquille Creek below Highest Diversion, for 1916.*

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			0.75	8	1.67	180						
2			0.75	8	2.07	310	1.85	235	1.32	91		
3			0.77	9	2.37	420	1.95	265	1.25	76		
4			0.77	9	2.47	460	1.95	265	1.52	140		
5			0.80	10	2.40	430	1.95	265	1.47	125		
6									1.45	120		
7				12	2.40	430	1.77	210		105		
8			0.87	15	2.20	355	1.65	175	1.32	91		
9				20	2.02	290	1.65	175		78		
10			0.97	25		240		160	1.20	65		
			0.97	25	1.72	195		140	1.15	55		
11			1.00	28	1.62	185	1.47	125				
12			0.97	25	1.55	145		120	1.12	49		
13			0.97	25	1.50	135		115	1.10	45		
14			1.02	32	1.50	135	1.40	110	1.05	36		
15			1.00	28	1.50	135	1.35	97	1.02	32		
16			0.97	25		155		91				
17			1.00	28	1.65	175	1.32	91	1.25	75		
18			1.00	28	1.77	210	1.20	65	1.20	65		
19			1.00	28	1.77	210	1.20	65				
20			1.00	28		205	1.15	55				
21			0.97	25		200		55				
22			0.95	22	1.72	195	1.15	55	1.12	49		
23				25	1.67	180	1.12	49	1.10	45		
24			1.00	28	1.62	185	1.10	45	1.05	36		
25			1.10	45	1.62	165		60				
26			1.27	81	1.65	175		84				
27			1.60	160	1.70	190	1.40	110				
28			1.62	165		195	1.35	97				
29			1.52	140	1.75	205	1.45	120				
30			1.55	145		205		105				
31	Meter	10.7			1.77	210						

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*Monthly Discharge of Tranquille Creek below Highest Diversion, for 1916.*

MONTH	DISCHARGE IN SECOND-FOOT				RUN-OFF.	
	Maximum	Minimum	Mean	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April	185	8	42			2,500
May	460	115	230			14,100
June	365	36	127			7,500
The period	460	8	133			24,100

## WHITEWOOD CREEK (2066).

*Location.*—Twenty-five miles north of Kamloops on the west bank of the North Thompson river; Provincial Water District No. 2.

*Records Available.*—September 1 to December 12, 1914; March 10 to September 30, 1915; April 1 to May 31, July 11 to October 31, 1916.

*Drainage Area.*—Twenty square miles.

*Gauge.*—Standard vertical staff, read daily.

*Channel.*—Rocky; water fairly swift.

*Discharge Measurements.*—Two measurements made during the freshet in the spring of 1916 fairly well define the discharge curve up to June 1 the time of the spring freshet. Two measurements taken after the freshet period fairly well define the discharge curve for low stages after July 11.

*Accuracy.*—Reliability of results is considerably diminished by the change in the control, which apparently occurred during the June freshet.

*Discharge Measurements of Whitewood Creek 2 Miles from Mouth, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet	Sq. ft.
May 20	C. G. Cline	1-055	15	13.2	2.46	1.80	32.5
July 23	F. R. Archibald	1-913	12	9.2	1.71	1.00	15.8
Sept. 2	F. R. Archibald	1-813	7	6.2	0.45	0.50	2.8



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*Monthly Discharge of Whitewood Creek 2 Miles from Mouth, for 1916.*

(Drainage area, 25 square miles)

MONTH	DISCHARGE IN SECONDS FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet.
April	14.3	0.8	3.3	0.13	0.14	195
May	52.0	17.0	33.0	1.32	1.52	2,030
June						
July						
August	14.8	3.4	7.6	0.30	0.35	465
September	3.1	2.0	2.5	0.10	0.11	150
October	2.8	2.0	2.2	0.09	0.10	138
The period						

## OKANAGAN DISTRICT.

## ADAMS RIVER (2000).

*Location.*—Section 6, township 23, range 12, west 6th meridian.

*Records Available.*—July and August, 1911 and continuous records since January 1, 1912.

*Drainage Area.*—One thousand six hundred square miles.

*Gauge.*—Gurley automatic gauge supplemented and checked during the latter part of 1916 by readings on a staff gauge at approximately the same section.

*Channel.*—Except in very low water the meter measurements are made above the dam; in low water below the dam by wading. The gauge is below the dam.

*Discharge Measurements.*—Seventeen measurements from 1911 to 1916 cover almost the full range of stage.

*Winter Flow.*—Since the installation of the gauge at this section there has apparently been no back water from ice at any time. The winter of 1916 was unusually cold, and as no trouble with the ice was experienced it is probable there will be none in the future.

*Accuracy.*—Some discrepancies in the various measurements will be cleared up during the coming season. The accuracy as a whole is fairly high.

*Discharge Measurements of Adams River below Adams Lake, for 1916.*

Date	Engineer	Meter No.	Width	Area of section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 15	F. R. Archibald	1,913	452	2,218	3.1	6.37	6,793
Oct. 23	A. L. McNaughton	1,915	97	230	1.9	1.26	436 <sup>1</sup>
Oct. 27	A. L. McNaughton	1,915	430	1,720	2.1	4.13	3,630

<sup>1</sup>Different section.

NOTE.—<sup>2</sup> Measurements referred to datum of automatic gauge.

## Daily Gauge Height and Discharge of Adams River below Adams Lake, for 1916.

(Drainage area, 1,600 square miles.)

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	1.85	820	2.18	1,080	2.48	1,340	2.80	1,660	3.80	2,920	5.17	5,310
2	1.87	840	2.13	1,040	2.44	1,300	2.81	1,670	3.86	3,010	5.17	5,310
3	1.90	860	2.12	1,040	2.37	1,240	2.56	1,420	3.92	3,100	5.18	5,330
4	1.91	870	2.13	1,040	2.31	1,190	2.38	1,250	4.00	3,230	5.23	5,430
5	1.94	890	2.13	1,040	2.28	1,160	2.37	1,240	4.33	3,760	5.28	5,520
6	2.00	940	2.08	1,000	2.27	1,160	3.00	1,880	4.12	4,450	5.32	5,600
7	2.03	960	2.01	950	2.28	1,160	3.05	1,940	5.02	5,020	5.34	5,640
8	2.07	1,000	1.98	920	2.26	1,150	3.02	1,900	5.16	5,290	5.34	5,640
9	2.11	1,030	1.98	920	2.17	1,080	1.55	600	5.17	5,310	5.34	5,640
10	2.08	1,000	2.10	1,020	2.12	1,040	1.58	620	5.18	5,330	5.35	5,660
11	1.98	920	2.19	1,090	2.11	1,030	1.62	650	5.40	5,750	5.33	5,620
12	1.98	920	2.22	1,120	2.15	1,060	1.66	680	5.53	6,010	5.31	5,580
13	2.06	990	2.27	1,160	2.20	1,100	1.71	720	5.39	5,730	5.30	5,560
14	2.16	1,070	2.33	1,210	2.25	1,140	1.78	770	5.30	5,560	5.31	5,580
15	2.18	1,080	2.33	1,210	2.30	1,180	1.86	830	5.22	5,410	5.37	5,690
16	2.14	1,050	2.33	1,210	2.35	1,220	2.64	1,500	5.18	5,330	5.48	5,910
17	2.19	1,090	2.29	1,170	2.41	1,280	3.45	2,430	5.13	5,240	5.70	6,350
18	2.22	1,120	2.16	1,070	2.45	1,310	3.69	2,770	5.08	5,130	5.94	6,830
19	2.23	1,120	2.10	1,020	2.49	1,350	3.95	3,150	5.05	5,080	6.15	7,250
20	2.24	1,130	2.14	1,050	2.48	1,340	3.51	2,510	5.05	5,080	6.32	7,590
21	2.19	1,090	2.22	1,120	2.41	1,280	3.07	1,960	5.07	5,110	6.50	7,950
22	2.18	1,080	2.32	1,190	2.46	1,320	3.09	1,990	5.10	5,180	6.57	8,090
23	2.21	1,110	2.38	1,250	2.36	1,230	2.73	1,590	5.10	5,180	6.62	8,190
24	2.10	1,020	2.37	1,240	2.23	1,120	3.32	2,270	5.09	5,160	6.67	8,290
25	1.98	920	2.38	1,250	2.28	1,160	3.32	2,270	5.05	5,080	6.69	8,330
26	1.95	900	2.37	1,240	2.39	1,290	3.34	2,290	5.02	5,020	6.72	8,400
27	1.97	920	2.36	1,230	2.51	1,370	3.36	2,320	5.00	4,980	6.76	8,500
28	2.04	970	2.37	1,240	2.65	1,510	3.48	2,470	5.02	5,020	6.77	8,530
29	2.11	1,030	2.42	1,290	2.72	1,580	3.62	2,770	5.09	5,160	6.83	8,660
30	2.17	1,080	.....	.....	2.74	1,600	3.72	2,810	5.13	5,240	6.80	8,600
31	2.20	1,100	.....	.....	2.81	1,670	.....	.....	5.14	5,260	.....	.....

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	6.74	8,450	5.60	6,150	2.14	1,050	4.14	3,450	1.00	300	.....	450
2	6.65	8,250	5.54	6,030	2.84	1,700	0.95	280	1.20	400	.....	450
3	6.63	8,210	5.49	5,930	2.63	1,490	1.00	300	1.30	450	.....	450
4	6.66	8,270	5.46	5,870	2.14	1,050	1.10	350	.....	450	1.30	450
5	6.68	8,310	5.33	5,620	2.18	1,080	1.15	370	.....	450	.....	450
6	6.69	8,330	4.86	4,710	2.24	1,130	1.20	400	.....	450	.....	450
7	6.63	8,210	4.88	4,750	2.23	1,120	1.25	420	1.30	450	.....	450
8	6.55	8,050	4.90	4,790	1.42	530	1.25	420	.....	450	.....	450
9	6.50	7,950	4.90	4,790	1.38	500	1.30	450	.....	450	1.30	450
10	6.46	7,870	4.87	4,730	1.46	550	1.35	480	.....	450	.....	450
11	5.47	7,890	4.84	4,680	2.37	1,240	1.30	450	.....	450	.....	450
12	6.45	7,850	4.81	4,620	3.11	2,010	1.25	420	.....	450	.....	450
13	6.42	7,790	4.78	4,560	3.18	2,100	1.30	450	.....	450	1.30	450
14	6.40	7,750	4.75	4,500	3.34	2,200	1.35	486	1.30	450	.....	450
15	6.38	7,710	4.70	4,410	3.72	2,810	2.05	980	.....	450	.....	450
16	6.30	7,550	4.67	4,350	3.49	2,490	0.90	270	.....	450	.....	450
17	6.00	4,980	4.67	4,350	1.36	490	0.85	250	.....	450	.....	450
18	5.87	4,690	4.66	4,330	3.74	2,840	0.90	270	.....	450	1.30	450
19	6.42	7,790	4.62	4,270	3.70	2,780	1.00	300	1.30	450	.....	450
20	6.39	7,730	4.60	4,230	3.50	2,500	1.10	350	.....	450	.....	450
21	6.36	7,670	4.55	4,140	3.42	2,400	1.15	370	.....	450	.....	450
22	6.33	7,610	4.56	4,050	3.41	2,380	1.20	400	.....	450	.....	450
23	6.32	7,590	4.46	3,980	3.29	2,230	1.20	400	1.30	450	1.30	450
24	6.28	7,510	4.42	3,910	1.26	430	1.25	420	.....	450	.....	450
25	6.21	7,370	4.40	3,880	3.25	2,150	1.30	450	.....	450	.....	450
26	6.16	7,270	4.37	3,830	3.42	2,400	1.30	450	.....	450	.....	450
27	6.10	7,150	4.35	3,790	3.26	2,190	2.38	1,250	.....	450	.....	450
28	6.02	6,990	2.83	1,690	3.34	2,290	1.20	400	1.30	450	1.30	450
29	5.95	6,850	1.03	960	3.42	2,400	2.45	1,310	.....	450	.....	450
30	5.83	6,610	2.07	1,090	4.16	3,490	1.15	370	.....	450	.....	450
31	5.68	6,310	2.11	1,030	.....	.....	1.20	400	.....	450	.....	450

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*Monthly Discharge of Adams River below Adams Lake, for 1916.*

(Drainage area, 1,660 square miles.)

MONTH.	DISCHARGE IN SECOND-FOOT.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
January .....	1,130	820	1,000	0.62	0.71	61,500
February .....	1,290	920	1,120	0.70	0.75	64,400
March .....	1,670	1,030	1,260	0.79	0.91	77,500
April .....	3,150	600	1,760	1.10	1.23	105,000
May .....	6,010	2,920	4,910	3.07	3.54	302,000
June .....	8,650	5,310	6,680	4.17	4.65	397,000
July .....	8,150	4,980	7,560	4.72	5.44	465,000
August .....	6,150	960	4,190	2.62	3.02	257,000
September .....	3,450	430	1,800	1.12	1.25	107,000
October .....	3,450	250	560	0.35	0.40	34,400
November .....	450	300	440	0.27	0.30	28,200
December .....	450	450	450	0.28	0.32	27,600
The year .....	8,660	250	2,640	1.65	22.52	1,924,600

## ASHNOLA CREEK (2065).

*Location.*—Near Keremeos; Water District No. 4.*Records Available.*—June 27 to December 1914; March 1 to December 11, 1915; March 1 to November 14, 1916.*Drainage Area.*—Four hundred and eighty square miles.*Gauge.*—Chain gauge supported over stream by a pole guyed to a tree. Readings taken three times a week.*Channel.*—Bed of stream, rocks and gravel.*Discharge Measurements.*—Three measurements taken during 1914, one in 1915 and four in 1916 agree very well and cover all stages except at time of freshet.*Accuracy.*—The rating curve is quite well defined at all stages except for the high-water period of June and part of July. The accuracy is somewhat impaired by the fact that the gauge is only read three times a week.

Daily Gauge Height and Discharge of Ashnola Creek at Ashnola, for 1915.

(Drainage area, 480 square miles.)

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						30	1 28	48	2 25	300	3 20	820
2					1 08	31		49		330		780
3						31	1 35	52		370	3 15	740
4					1 08	31		65	2 50	415		890
5						32		80		485	3 70	1,040
6					1 13	33	1 58	93	2 80	560		990
7						33		90		620		930
8						33	1 55	87	3 05	69	3 40	870
9					1 13	33		98		67		820
10						32	1 65	110		640	3 20	770
11					1 08	31		120	2 90	610		770
12						32		135		580	3 20	770
13					1 13	33	1 80	145	2 75	540		800
14						33		140		570		840
15						34	1 75	130	2 85	590	3 40	870
16					1 18	35		200		650		840
17						35	2 20	280		710	3 30	820
18					1 18	35		370	3 20	770		780
19						34		470		850	3 15	740
20					1 13	33	2 80	560	5 50	930		730
21						39		420		970		730
22						46	2 20	280	3 65	1,010	3 10	720
23					1 33	52		270		1,020		770
24						46	2 15	280		1,030	3 30	820
25					1 23	40		280	3 70	1,040		710
26						40				1,050	2 85	590
27					1 23	40	2 50	320	3 75	1,060		580
28						40		400		1,020		570
29						40	2 65	490	3 60	980	2 80	560
30					1 23	40		400		920		570
31						43				870		

	July.		August.		September.		October.		November.		December.	
1	2 85	590		6 20		100		74		115		185
2		560		630	1 62	100	1 45	70	1 65	110	1 90	170
3	2 75	540	2 95	640		99		79		99		50
4		570		580	1 60	97		98	1 55	88	1 75	130
5		590	2 70	510		94	1 60	97		79		110
6	2 90	610		465		91		97	1 45	70		95
7		590	2 50	415	1 55	88	1 60	97		73	1 50	78
8	2 80	560		380		93		92		75		78
9		500		350	1 60	97	1 55	87	1 50	78	1 50	78
10	2 55	440	2 30	320		120		84		83		83
11		450		300	1 80	165		81	1 55	88	1 55	88
12		455	2 20	280		130	1 50	78		105		85
13	2 60	465		260		120		74	1 70	120		85
14		570	2 10	240	1 45	110	1 45	70		115		85
15	3 00	670		240		110		70		110		80
16		660	2 10	240	1 05	110	1 45	70	1 65	110		80
17	2 95	640		230		105		73		94		80
18		620		215	1 60	97		75	1 50	78		80
19		590	2 00	205		94	1 50	78		74		80
20	2 80	560		200		91		78	1 45	70		80
21		520	1 95	190	1 55	88	1 56	78		70		70
22	2 65	490		180		93		78		70		70
23		430		170	1 60	97	50	78	1 45	70		70
24	2 40	365	1 85	160		110		89		70		70
25		420		140	1 70	120		100	1 45	70		70
26		550	1 70	120		115		110		66		60
27	2 95	640		125		115	1 65	110		63		60
28		670	1 75	130	1 65	110		115	1 40	63		60
29	3 05	690		120		94	1 70	120		110		60
30		650		110	1 50	78		120		160		60
31	2 90	610	1 60	100				120	2 00	205		60



SESSIONAL PAPER No. 25d

*Monthly Discharge of Ashnola Creek at Keremeos, for 1915.*

(Drainage area, 480 square miles.)

MONTH.	DISCHARGE IN SECOND-FOOT				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
March.....	52	30	36	0 07	0 08	2,210
April.....	560	46	225	0 47	0 52	13,000
May.....	1,060	360	740	1 54	1 77	45,000
June.....	1,640	560	775	1 61	1 79	46,000
July.....	890	365	560	1 17	1 35	34,000
August.....	640	100	285	0 59	0 68	17,500
September.....	145	78	105	0 22	0 24	6,250
October.....	120	70	88	0 18	0 21	5,400
November.....	205	63	93	0 19	0 21	5,500
December.....	185	60	87	0 18	0 21	5,350
The period.....	1,060	30	299	0 62	7 06	180,210

*Discharge Measurements of Ashnola Creek near Kamloops, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
March 7	A. L. McNaughton.....	1,923	35 0	25 5	1 73	1 30	44 2
May 31	A. L. McNaughton.....	1,923	62 0	194 6	4 22	3 30	821 7
August 3	A. L. McNaughton.....	1,923	64 0	115 3	3 32	2 43	382 5
August 30	A. L. McNaughton.....	1,923	55 0	64 2	2 05	1 75	131 5
1917							
Jan. 19	A. L. McNaughton.....	1,915	29 0	43 1	0 04	.....	40 6

*Daily Gauge Height and Discharge of Ashnola Creek above Diversions near Mouth,  
for 1916.*

(Drainage area, 480 square miles.)

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 08	30	1 55	87		530	3 50	930
3						31		87	2 90			980
4					1 18	33	1 55	88		770	3 70	1,040
5						35		88	3 50	930		1,060
6						39		88		960		1,070
7						43	1 55	87	3 60	980	3 80	1,090
8					1 30	48		92		880		1,150
9					1 45	59	1 60	97		770	4 00	1,210
10						70		100	3 00	670	4 10	1,240
11						74		105		540		1,270
12					1 50	78	1 65	110	2 50	415		1,290
13						76		5		390		1,310
14					1 15	73	1 60	7	2 40	365	4 20	1,320
15						71		100		400		1,410
16						75	1 70	120		435	4 50	1,500
17					1 50	78			2 60	465		1,600
18						78	1 65	115		570	4 80	1,690
19					1 50	78		110	3 00	670		1,550
20						78	1 60	95		760		1,410
21						78		97	3 35	850	4 10	1,270
22					1 50	78	1 55	93		750		1,240
23						74		88		860	4 00	1,210
24					1 45	70		95	2 80	560		1,350
25						70	1 65	100		590	4 50	1,500
26						71		110	2 90	610		1,480
27						70	1 80	125		720		1,460
28						70		145	3 30	820	4 40	1,440
29					1 45	70		255		800		1,440
30						74	2 40	365		790	4 40	1,440
31					1 50	78		450	3 20	770		1,440
						82				850		

	July.		August.		September.		October.		November.		December.	
1	4 40	1 440	2 60	165		183		71				
2		1,380		415	2 10	240		70	1 50	70		55
3		1,320	2 40	365		255	1 45	70		78		55
4	4 10	1,270		325		265		74	1 50	78		55
5		1,300	2 20	280	2 20	280	1 50	78		76		55
6	4 20	1,320		310		235		71				
7		1,300		335		190	1 40	63		73		55
8	4 10	1,270	2 40	365	1 95	180		63	1 45	70		55
9		1,210		345	1 90	170		63	1 50	78		55
10		1,150	2 30	320		165	1 40	63		74		50
11	3 80	1,090		290		155		63	1 45	70		50
12		1,010	2 15	260	1 80	145	1 40	63		70		50
13	3 50	930		255		140		63		70		50
14		1,010		245	1 75	130	1 40	63		70		50
15	3 80	1,090	2 10	240		125		63		70		50
16		1,020		250	1 70	120		63				
17		950	2 15	260		115	1 40	63		70	1 30	48
18	3 40	870		270		115		56		65		48
19		820	2 20	280	1 65	110	1 30	48		65		45
20	3 20	770		285		110		48		65		45
21		720		255	1 65	110	1 30	48		60		45
22	3 00	670	2 10	240		100		48		60		45
23		630		230	1 60	97		48		60		45
24		600	2 05	225		94	1 30	48		60		45
25	2 80	560		190		90		52		60		45
26		560	1 85	160	1 55	87	1 35	56		60		45
27	2 80	560		150		82		60		60		40
28		540		140	1 50	78	1 40	63		60		40
29	2 70	510	1 75	130		75		63		60		40
30		500		130	1 45	71		63		60		40
31		480	1 75	135			1 40	63		60		40

SESSIONAL PAPER No. 25d

*Monthly Discharge of Ashnola Creek above Diversions near Mouth, for 1916.*

(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.
March	82	30	56	0.14	0.16	4,060
April	450	87	125	0.26	0.29	7,440
May	980	365	670	1.40	1.61	41,200
June	1,690	930	1,310	2.73	3.05	78,000
July	1,400	480	930	1.94	2.24	57,000
August	465	130	260	0.54	0.62	16,000
September	280	71	145	0.30	0.33	8,600
October	78	48	61	0.13	0.15	3,750
November	78	60	68	0.41	0.16	4,050
December	55	40	48	0.10	0.11	2,950
The period	1,690	30	368	0.80	8.72	223,250

## BOUNDARY CREEK (2048).

*Location.*—At Greenwood; Water District No. 4.*Records Available.*—January 1 to December 7, 1914; February 21 to December 22, 1915; February 22 to December 31, 1916.*Drainage Area.*—One hundred and twenty-five square miles.*Gauge.*—Standard vertical staff gauge, situated on upstream side of traffic bridge; read daily.*Channel.*—Straight for about 300 feet above and below measuring section. Bed of stream, rocky and permanent.*Discharge Measurements.*—Four measurements made during 1914, two during 1915 and three during 1916 agree very well, and cover all stages except for discharges between 100 and 250, and above 400 cubic feet per second.*Accuracy.*—Considered very reliable except at highest stages.*Discharge Measurements of Boundary Creek at Greenwood, for 1916.*

Date.	Engineer	Meter No.	Width	Area of Section.		Gauge Height.	Discharge.
				Sq. ft.	Feet per sec.		
1916			Feet.			Feet	Sq. ft.
March 15	A. L. McNaughton	1,923	19.5	21.0	0.76	0.90	16.0
June 22	A. L. McNaughton	1,915	39.0	91.0	3.19	2.60	291.0
Aug. 8	A. L. McNaughton	1,923	25.7	37.0	1.44	1.30	53.6
1917							
Jan 15	A. L. McNaughton	1,915	21.0	16.7	0.60		16.0

## DEPARTMENT OF THE INTERIOR

8 GEORGE V, A. 1918

## Daily Gauge Height and Discharge of Boundary Creek at Greenwood, for 1916.

(Drainage area, 125 square miles.)

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			0.8	14	0.80	14	1.15	38	2.70	320	2.70	320
2			0.8	14	0.80	14	1.20	43	2.85	360	2.60	295
3			0.8	14	0.82	14	1.25	48	3.00	405	2.60	295
4			0.8	14	0.85	15	1.30	53	3.20	465	2.60	295
5			0.8	14	0.80	14	1.35	59	3.30	495	2.70	320
6			0.8	14	0.75	13	1.38	63	3.40	525	2.60	295
7			0.8	14	0.77	13	1.40	65	3.50	560	2.50	270
8			0.8	14	0.78	14	1.50	79	3.40	495	2.50	270
9			0.8	14	0.85	15	1.60	93	3.10	435	2.50	270
10			0.8	14	0.80	14	1.70	105	2.90	375	2.50	270
11			0.8	14	0.85	15	1.75	115	2.80	350	2.50	270
12			0.9	17	0.95	20	1.78	120	2.60	295	2.40	245
13			1.0	23	0.90	17	1.80	125	2.50	270	2.40	245
14			1.0	23	0.90	17	1.92	145	2.40	245	2.50	270
15			0.9	17	0.90	17	2.00	160	2.40	245	2.50	270
16			0.8	14	0.87	17	2.00	160	2.40	245	3.00	405
17			0.8	14	0.90	17	2.07	175	2.65	305	3.10	435
18			0.8	14	0.90	17	2.05	170	2.70	320	3.00	405
19			0.8	14	0.95	20	2.00	160	2.80	350	2.90	375
20			0.8	14	1.05	28	2.00	160	2.90	375	2.80	350
21			0.8	14	1.10	33	1.95	150	2.80	350	2.70	320
22	0.8	14	0.8	14	1.10	33	1.90	140	2.60	295	2.70	320
23	0.8	14	0.8	14	1.10	33	1.90	140	2.50	270	2.60	295
24	0.8	14	0.8	14	1.10	33	1.88	140	2.50	270	2.50	270
25	0.8	14	0.8	14	1.05	28	2.00	160	2.50	270	2.50	270
26	0.8	14	0.8	14	1.05	28	2.20	200	2.40	245	2.60	295
27	0.8	14	0.8	14	1.05	28	2.70	320	2.50	270	2.95	390
28	0.8	14	0.8	14	1.05	28	2.80	350	2.50	270	2.90	375
29	0.8	14	0.8	14	1.05	28	2.80	350	2.60	270	2.90	375
30	0.8	14	0.8	14	1.05	28	2.60	295	2.70	320	3.00	405
31	0.8	14	0.8	14	1.10	33	2.70	320	2.70	320		
July.												
August.												
September.												
October.												
November.												
December.												
1	3.00	105	1.40	65	0.9	17	0.80	14	0.85	15		15
2	3.10	135	1.40	65	0.9	17	0.80	14	0.85	15		15
3	3.15	140	1.40	65	0.9	17	0.80	14	0.90	17		15
4	3.30	195	1.35	59	1.0	25	0.80	14	0.90	17		15
5	3.10	145	1.45	70	1.0	23	0.75	13	0.90	17		15
6	2.90	175	1.30	53	1.0	23	0.70	12	0.90	17		15
7	2.70	120	1.30	53	1.0	23	0.70	12	0.90	17		15
8	2.70	120	1.30	53	1.1	33	0.70	12	0.90	17		15
9	2.70	120	1.30	53	1.1	33	0.70	12	0.90	17		15
10	2.60	295	1.30	53	1.1	33	0.70	12	0.90	17		15
11	2.45	245	1.20	43	0.8	14	0.70	12	0.90	17		15
12	2.30	220	1.20	43	0.8	14	0.70	12	0.90	17		15
13	2.30	220	1.20	43	0.5	10	0.70	12	0.90	17		15
14	2.20	200	1.20	43	0.5	10	0.70	12	0.90	17		15
15	2.20	200	1.20	43	0.5	10	0.70	12	0.90	17		15
16	2.10	180	1.20	43	0.5	10	0.70	12	0.90	17		15
17	2.10	180	1.10	33	0.5	10	0.70	12	0.90	17		15
18	2.10	180	1.20	43	0.5	10	0.80	14	0.90	17		15
19	2.00	160	1.20	43	0.5	10	0.80	14	0.90	17		15
20	2.00	160	1.20	43	0.5	10	0.80	14	0.90	17		15
21	1.90	140	1.20	43	0.8	14	0.80	14	0.90	17		15
22	1.80	125	1.10	33	0.8	14	0.80	14	0.90	17		15
23	1.80	125	1.10	33	0.8	14	0.80	14	0.90	17		15
24	1.80	125	1.10	33	0.8	14	0.85	15	0.90	17		15
25	1.80	125	1.10	33	0.8	14	0.85	15	0.90	17		15
26	1.70	105	1.10	33	0.8	14	0.85	15				15
27	1.70	105	1.05	28	0.8	14	0.85	15				15
28	1.65	100	1.05	28	0.8	14	0.85	15				15
29	1.60	93	1.05	28	0.8	14	0.85	15				15
30	1.50	79	1.00	23	0.8	14	0.85	15				15
31	1.40	65	0.90	17	0.8	14	0.85	15				15

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*Monthly Discharge of Boundary Creek at Greenwood, for 1916.*

(Drainage area, 125 square miles.)

MONTH.	DISCHARGE IN SECONDS-FEET				RUN OFF	
	Maximum.	Minimum	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
February	24	14	15	0.12	0.15	860
March	33	14	21	0.17	0.20	1,290
April	350	38	145	1.16	1.29	8,650
May	560	245	310	2.52	3.14	20,000
June	135	245	315	2.52	2.81	18,740
July	510	65	230	1.81	2.12	14,140
August	65	17	33	0.34	0.39	2,610
September	33	10	16	0.13	0.14	850
October	15	12	13	0.10	0.11	800
November	17	15	17	0.11	0.16	1,010
December	15	10	13	0.10	0.11	800
The period	560	10	197	0.85	10.60	70,760

## BRASH CREEK (2070).

*Location.*—Section 27, township 18, range 8, west 6th meridian; Water District No. 2; above intake of the Enderby waterworks.

*Records Available.*—October 28 to December 31, 1915; January 1 to December 31, 1916.

*Drainage Area.*—Ten square miles.

*Gauge.*—Standard vertical staff gauge, read twice a week.

*Channel.*—Boulders and gravel, water swift at high stages, control permanent.

*Discharge Measurements.*—Three measurements taken during 1915, five during 1916 and one in January, 1917 agree fairly well, especially for low stages.

*Accuracy.*—Results, except in high stages, should be quite reliable. The gauge is read only twice a week, but there are no marked fluctuations.

*Discharge Measurements of Brash Creek near Enderby, for 1916.*

Date.	Engineer.	Meter No.	Width	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
Feb. 23	C. G. Cline and A. L. M.	1,923	7.0	3.6	0.50	3.82	1.45
June 12	C. G. Cline	1,953	15.0	1.5	3.20	4.62	43.20
July 9	F. R. Archibald	1,913	18.0	14.8	2.46	4.60	36.50
Sept. 12	A. L. McNaughton	1,923	9.1	4.2	0.80	3.93	3.35
Nov. 21	C. G. Cline	1,913	3.0	0.9	1.20	3.89	1.08
1917							
Jan. 21	F. R. Archibald	1,955	12.0	5.1	0.26	3.67	1.33

## Daily Gauge Height and Discharge of Brash Creek near Enderby, for 1916.

(Drainage area, 10 square miles.)

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		2.7		1.1		1.2		11.2	4.5	32	4.5	32
2		2.7		1.1	3.8	1.2		16.8		37		34
3	3.0	2.7	3.7	1.0		1.2	4.3	19.4		42		36
4		2.7		1.0		1.2		21.0	4.7	47		37
5		2.7		1.0		1.2		21.0		45	4.6	39
6	3.9	2.7		1.0	3.8	1.2	4.4	25.0		41		39
7		2.4	3.7	1.0		1.2		25.0		41		39
8		2.0		1.0		2.1		25.0	4.6	39	4.6	39
9		1.6		1.0	3.9	2.7	4.4	25.0		35		39
10	3.8	1.2	3.7	1.0		4.3		27.0		30		39
11		1.2		1.0		6.0		29.0	4.4	25		39
12		1.2		1.0		7.6		30.0		25	4.6	39
13	3.8	1.2		1.0	4.1	9.2	4.5	32.0		25		41
14		1.6	3.7	1.0		9.2		30.0		25		50
15		2.0		1.1		9.2		30.0	4.4	25	4.8	55
16		2.4		1.1	4.1	9.2		27.0		28		51
17	3.9	2.7	1.8	1.2		9.2	4.4	25.0		30		51
18		2.7		1.2		9.2		21.0	4.5	32		49
19		2.7		1.2		9.2		21.0		32	4.7	47
20	3.9	2.7		1.2	4.1	9.2	4.3	19.0		42		44
21		2.4	3.8	1.2		7.0		19.0		32		42
22		2.0		1.2		6.6		19.0	1.5	32	4.6	39
23		1.6		1.2	4.0	5.3		19.0		30		37
24	3.8	1.2	3.8	1.2		6.1	4.1	19.0		28		36
25		1.2		1.2		7.1		29.0	4.4	25		34
26		1.2		1.2		8.1		38.0		35	4.5	32
27	3.8	1.2		1.2	4.1	9.2	4.7	47.0		35		34
28		1.2	3.8	1.2		9.2		44.0		35		37
29		1.2		1.2		9.2		39.0	4.4	25	4.6	39
30		1.2		1.2	4.1	9.2		36.9		28		43
31	3.8	1.2		1.2		11.2				30		
	July	August		September		October		November		December		
1		47.0		17.5		2.7		1.2		1.2	1.2	
2		51.0		15.6		2.7		1.2		1.2	1.2	
3	4.80	55.0	4.20	13.8		2.7	3.80	1.2		1.2	1.2	
4		50.0		12.6	3.90	2.7		1.2		1.2	1.2	
5		44.0		11.4		3.6	3.80	1.2		1.2	1.2	
6	4.90	39.0		9.1		4.4		1.2	3.80	1.2	1.2	
7		37.0	4.10	9.2	4.00	5.3		1.2		1.2	1.2	
8		36.1		7.9		5.3		1.2		1.2	1.2	
9		34.0		6.9		5.1	3.80	1.2	3.80	1.2	3.80	
10	4.50	32.0	4.00	5.1		5.1		1.2		1.2	1.2	
11		34.0		5.1	4.00	5.1		1.2		1.2	3.80	
12		37.0		5.5		4.4		1.2		1.2	1.2	
13	3.60	39.0		5.1		3.5	1.8	1.2		1.2	1.2	
14		35.0	4.90	5.3	1.90	2.7		1.2	3.80	1.2	3.80	
15		39.0		5.3		2.7		1.2		1.2	1.2	
16		36.0		5.3		2.7	3.80	1.2	3.80	1.2	1.2	
17	4.60	39.0	4.00	5.3		2.7		1.2		1.2	1.2	
18		37.0		5.3	3.90	2.7		1.2		1.2	3.80	
19		34.0		5.3		2.7	3.80	1.2		1.2	1.2	
20	4.50	32.0		5.3		1.7		1.2	3.80	1.2	1.2	
21		32.0	4.60	5.3	3.80	1.2		1.2		1.2	3.80	
22		32.0		5.3		1.2		1.2		1.2	1.2	
23		32.0		5.1		1.2	3.80	1.2	3.80	1.2	1.2	
24	4.50	32.0	4.00	5.3		1.2		1.2		1.2	1.2	
25		32.0		5.3	3.80	1.2		1.2		1.2	3.80	
26		32.0		5.1		1.2	3.80	1.2		1.2	1.2	
27	4.50	32.0		5.1		1.2		1.2	3.80	1.2	1.2	
28		29.0	4.90	5.1	1.80	1.2		1.2		1.2	1.2	
29		26.0		4.4		1.2		1.2		1.2	3.80	
30		23.0		3.5		1.2	3.80	1.2	3.80	1.2	1.2	
31	4.40	19.4	1.90	2.7		1.2		1.2		1.2	1.2	

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## Monthly Discharge of Brash Creek near Enderby, for 1916.

(Drainage area, 10 square miles.)

MONTH	DISCHARGE IN SECOND-FOOT				RUSH-OFF	
	Maximum.	Minimum.	Mean	Per square Mile	Depth in inches on Drainage Area.	Total in Acre-feet
January	2.7	1.2	1.9	0.19	0.22	115
February	1.2	1.0	1.1	0.11	0.12	63
March	11.7	1.2	6.3	0.63	0.73	385
April	47.0	14.2	26.0	2.60	2.90	1,550
May	47.0	25.0	31.0	3.10	3.57	1,910
June	55.0	32.0	40.0	4.00	4.46	2,380
July	55.0	19.4	38.0	3.80	4.15	2,210
August	17.5	2.7	7.0	0.70	0.81	430
September	5.3	1.2	2.8	0.28	0.31	165
October	1.2	1.2	1.2	0.12	0.14	74
November	1.2	1.2	1.2	0.12	0.13	71
December	1.2	1.2	1.2	0.12	0.14	74
The year	55.0	1.0	13.0	1.30	1.768	9,427

## CELESTA CREEK (2050).

*Location.*—At Albas; Water District No. 2.

*Records Available.*—March 1 to December 31, 1914; January 1 to December 31, 1915; May 1 to December 31, 1916.

*Drainage Area.*—Eighty square miles.

*Gauge.*—Standard vertical staff gauge, read daily.

*Channel.*—Average width 25 feet. Bed of stream, rocky.

*Discharge Measurements.*—Two measurements taken during 1914, three during 1915, five during 1916 and one in January 1917 agree fairly well, and cover the range of stage except at high water. During the latter part of December, 1916, when the stream was under ice cover, the flow is obtained by interpolation between the open-water flow of December 16 and a meter measurement in January 1917.

*Accuracy.*—For lower stages the results are reliable. At high and medium stages the turbulence of the water makes an accurate measurement very difficult.

## Daily Gauge Height and Discharge of Celesta Creek at Albas, for 1915.

(Drainage area, 80 square miles.)

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		46		32		28		220		520		490
2		46		32	0 40	28	1 40	270	1 90	520	1 80	400
3	0 00	40		32		28		300		530		435
4		44		32	0 40	28		330	1 95	540	1 70	410
5		43		32		28	1 60	360		550		360
6	0 55	41	0 45	32	0 40	28		360		560	1 50	310
7		41		32		28	1 60	395	2 00	570		325
8	0 55	41		32	0 40	28		360		600		340
9		41	0 45	32		30		360		640	1 60	300
10		41		32	0 45	32	1 60	360	2 20	680		250
11	0 55	41	0 45	32		33		385		620	1 60	360
12		41		32		35	1 70	410	2 00	570		345
13		41	0 45	32	0 50	36		420		570		330
14	0 55	41		32		39		425	2 00	570	1 50	310
15		38		32		42	1 75	435		590		310
16	0 50	38	0 15	32	0 60	43		450		610	1 50	310
17		38		32		46	1 80	460	2 10	360		335
18		39	0 45	32	0 60	46		490		640	1 60	360
19	0 55	41		32		53	1 90	520		660		340
20		40	0 45	32	0 70	60		520	2 20	680		325
21		40		32		65		520		680	1 50	310
22		38	0 45	32	0 75	70	1 90	520	2 20	680		300
23		38		32		73		520		680	1 45	290
24		38	0 45	32		76	1 90	520	2 20	680		280
25		36		32	0 80	80		520		620	1 40	270
26		36		32		80	1 90	520	2 00	570		310
27		36	0 45	32	0 80	80		520		540		300
28		36		32		90	1 90	520	1 90	520	1 70	410
29		34		32	0 90	100		520		520		400
30		34		32		130	1 90	520		520	1 65	385
31		34		32	1 10	160		520	1 90	520		
	July.		August.		September.		October.		November.		December.	
1		360	1 20	195		43		27	0 80	80	0 55	41
2		335		185	0 55	41	0 40	28		80		41
3	1 50	310		170		41		29		80		41
4		300	1 10	160	0 55	41		30	0 80	80	0 58	41
5		280		155		38		30		80		41
6	1 40	270		150	0 50	36		31	0 80	80		41
7		260	1 50	145		34	0 45	32		75	0 58	41
8		250		130	0 45	32		32	0 75	70		43
9		240		115		30		32		67	0 60	46
10	1 30	230	0 90	100	0 40	28	0 45	32		64		46
11		250		95		27		33	0 70	60	0 60	46
12	1 40	270	0 85	90	0 35	26		34		56		44
13		330		87		26		35	0 65	53		43
14		400		83		26	0 50	36		53	0 55	41
15	1 80	460	0 80	80	0 35	26		35		53		41
16	1 95	540		80		26		33	0 65	53		41
17	1 95	540	0 80	80		27	0 45	32		53	0 55	41
18		520		76		27		34	0 65	53		43
19	1 85	490		73		28		37		53		44
20		450	0 75	70	0 40	28		39	0 65	53	0 60	46
21	1 70	410		67		28	0 55	41		50		46
22		385		64	0 40	28		45	0 60	46	0 60	46
23	1 60	360	0 70	60		28		49		46		43
24		330		57		28	0 65	53		46	0 55	41
25		300	0 65	53	0 40	28		56		46		
26	1 40	270		50		28	0 70	60	0 60	46		41
27		250		48	0 40	28		63		50		41
28	1 30	230	0 60	46		27		67	0 65	53	0 55	41
29		220		46		27	0 75	70		49		41
30	1 25	210	0 60	46	0 35	26		73		45		41
31		200		44		26		76		45	0 55	41



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*Monthly Discharge of Celesta Creek at Albas, for 1915.*

(Drainage area, 80 square miles.)

MONTH	DISCHARGE IN SECOND-FEET				RUS-DBS	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet.
January	46	34	40	0.50	0.57	2,460
February	32	32	32	0.40	0.41	1,840
March	100	28	56	0.70	0.81	3,440
April	320	220	145	1.81	6.07	25,000
May	680	520	500	7.37	8.50	36,400
June	490	270	350	4.37	4.87	20,800
July	540	200	330	4.12	4.75	20,300
August	195	14	94	1.16	1.34	5,720
September	43	26	30	0.37	0.41	1,700
October	76	27	42	0.52	0.60	2,520
November	80	45	59	0.74	0.82	3,510
December	46	41	42	0.52	0.60	2,580
The year..	680	26	175	2.10	20.77	127,220

*Discharge Measurements of Celesta Creek at Albas, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity	Gauge Height	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
April 29	Cline and McNaughton	1,923	43.0	67.0	5.00	1.70	336
June 15	C. G. Cline	1,955	45.0	120.0	6.68	2.40	800
July 12	F. R. Archibald	1,913	55.0	100.0	4.67	1.70	467
Sept. 15	Cline and MacLachlan	1,955	30.0	43.0	1.78	0.80	76
Oct. 17	A. L. McNaughton	1,923	40.5	38.5	0.91	0.53	35
1917							
Jan. 23	F. R. Archibald	1,955	40.0	27.2	0.96	0.37	26

## Daily Gauge Height and Discharge of Ceista Creek at Albas, for 1916.

(Drainage area, 80 square miles)

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									1.8	460	2.2	680
2									1.9	520	2.2	680
3									2.1	630	2.1	800
4									2.3	740	2.5	800
5									2.4	800	2.5	800
6									2.6	920	2.4	800
7									2.6	920	2.1	800
8									2.4	800	2.3	740
9									2.3	740	2.3	740
10									2.2	680	2.3	740
11									2.1	610	2.2	680
12									2.0	570	2.2	680
13									1.9	520	2.2	680
14									1.8	460	2.2	680
15									1.8	460	2.4	800
16									1.8	460	2.5	800
17									1.8	460	2.5	800
18									1.9	520	2.6	920
19									2.0	570	2.9	1,110
20									2.1	630	2.8	1,050
21									2.1	630	2.6	920
22									2.1	630	2.5	860
23									2.0	570	2.5	800
24									2.0	570	2.4	800
25									2.0	570	2.2	680
26									2.1	630	2.2	680
27									2.2	680	2.2	680
28									2.3	740	2.1	630
29									2.3	740	2.1	630
30									2.3	740	2.0	570
31									2.2	680		
	July		August		September		October		November		December	
1	1.9	520	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
2	1.8	460	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
3	2.0	570	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
4	2.0	570	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
5	2.0	570	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
6	2.0	570	1.3	230	0.8	80	0.6	46	0.5	36	0.5	36
7	1.9	520	1.2	195	0.8	80	0.6	46	0.5	36	0.5	36
8	1.8	460	1.2	195	0.8	80	0.6	46	0.5	36	0.5	36
9	1.8	460	1.2	195	0.8	80	0.6	46	0.5	36	0.5	36
10	1.7	410	1.2	195	0.8	80	0.6	46	0.5	36	0.5	36
11	1.7	410	1.1	160	0.8	80	0.6	46	0.5	36	0.5	36
12	1.6	360	1.1	160	0.8	80	0.6	46	0.5	36	0.5	36
13	1.6	360	1.1	160	0.8	80	0.6	46	0.5	36	0.5	36
14	1.6	360	1.1	160	0.8	80	0.5	36	0.5	36	0.5	36
15	1.6	360	1.1	160	0.8	80	0.5	36	0.5	36	0.5	36
16	1.6	360	1.0	130	0.8	80	0.5	36	0.5	36	0.5	36
17	1.7	410	1.0	130	0.8	80	0.5	36	0.5	36	0.5	36
18	1.7	410	1.0	130	0.7	60	0.5	36	0.5	36	0.5	36
19	1.7	410	1.0	130	0.7	60	0.5	36	0.5	36	0.5	36
20	1.7	410	1.0	130	0.7	60	0.5	36	0.5	36	0.5	36
21	1.7	410	1.0	130	0.7	60	0.5	36	0.5	36	0.5	36
22	1.6	360	1.0	130	0.7	60	0.5	36	0.5	36	0.5	36
23	1.6	360	0.9	100	0.7	60	0.5	36	0.5	36	0.5	36
24	1.6	360	0.9	100	0.7	60	0.5	36	0.5	36	0.5	36
25	1.6	360	0.9	100	0.7	60	0.5	36	0.5	36	0.5	36
26	1.6	360	0.9	100	0.7	60	0.5	36	0.5	36	0.5	36
27	1.5	310	0.8	80	0.7	60	0.5	36	0.4	28	0.5	36
28	1.5	310	0.8	80	0.7	60	0.5	36	0.4	28	0.5	36
29	1.4	270	0.8	80	0.7	60	0.5	36	0.4	28	0.5	36
30	1.4	270	0.8	80	0.7	60	0.5	36	0.5	36	0.5	36
31	1.3	230	0.8	80	0.7	60	0.5	36	0.5	36	0.5	36

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## Monthly Discharge of Celesta Creek at Albus, for 1916.

(Drainage area, 80 square miles.)

MONTH	DISCHARGE IN SECOND FEET			RUSH CREEK		
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
May	920	460	630	7.87	1.07	38,700
June	1,110	570	780	9.75	10.88	46,400
July	570	230	405	5.06	5.84	24,900
August	230	80	150	1.88	2.17	9,200
September	80	60	71	0.89	0.99	4,220
October	46	36	40	0.50	0.58	2,460
November	36	28	35	0.44	0.49	2,060
December	36	28	34	0.41	0.47	2,030
The period	1,110	28	268	3.45	10.48	129,900

## CHASE CREEK (2073).

*Location.*—Section 25, township 21, range 13, west of the 6th meridian; Provincial Water District No. 2; 4 miles from the mouth.

*Records Available.*—June 1 to November 9, 1911; March 1 to December 7, 1912; May 9 to September 30, 1915; April 9 to October 31, 1916.

*Drainage Area.*—One hundred and twenty square miles.

*Gauge.*—Vertical staff; daily readings.

*Channel.*—Gravel and silt; velocity medium. The control has not shown any tendency to change since the logs and brush were cleared out in June 1915.

*Discharge Measurements.*—Eight meter measurements made during 1915 and 1916 agree very well, and cover all stages up to discharges of 200 cubic feet per second.

*Accuracy.*—The results should be quite accurate, except for the few days when the discharge was more than 200 cubic feet per second.

## Discharge Measurements of Chase Creek 4 Miles above Mouth, for 1916.

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Cu. ft.
April 26	A. L. McNaughton	1,923	20.0	21.7	1.72	4.50	40.7
May 20	A. L. McNaughton	1,923	34.0	54.7	2.45	1.49	144.2
June 6	A. L. McNaughton	1,923	33.5	70.6	2.94	1.94	185.6
Oct. 21	A. L. McNaughton	1,923	33.0	7.3	1.12	0.00	8.2

## Daily Gauge Height and Discharge of Chase Creek 4 Miles above Mouth, for 1916.

(Drainage area, 120 square miles.)

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	90	1.6	145
2									1.3	110	1.6	145
3									1.8	170	1.6	145
4									2.1	205	2.2	220
5									2.2	220	2.1	205
6									2.3	230	1.9	180
7									2.1	205	1.6	145
8									1.7	155	1.7	155
9							0.4	31	1.5	135	1.7	155
10							0.4	31	1.3	110	1.6	145
11							0.4	31	1.2	100	1.6	145
12							0.3	25	1.1	90	1.6	145
13							0.4	31	1.0	80	1.5	135
14							0.4	31	0.9	70	1.6	145
15							0.5	38	0.9	70	2.0	195
16							0.4	31	1.0	80	1.7	155
17							0.4	31	1.1	90	1.8	170
18							0.4	31	1.2	100	1.7	155
19							0.4	31	1.4	120	1.4	120
20							0.3	25	1.5	135	1.2	100
21							0.4	31	1.3	110	1.2	100
22							0.4	31	1.3	110	1.3	110
23							0.3	25	1.2	100	1.2	100
24							0.3	25	1.1	90	1.1	90
25							0.4	31	1.0	80	1.0	80
26							0.6	46	1.4	120	1.0	80
27							0.8	62	1.6	145	2.0	195
28							1.2	100	1.7	155	1.6	145
29							1.1	90	1.7	155	1.4	120
30							1.0	80	1.5	135	1.5	135
31									1.6	145		
	July		August		September		October		November		December	
1	1.3	110	0.6	46	0.1	14	0.0	9				
2	1.1	90	0.6	46	0.1	14	0.0	9				
3	2.5	255	0.5	38	0.1	14	0.0	9				
4	1.7	155	0.5	38	0.1	14	0.0	9				
5	1.7	155	0.5	38	0.1	14	0.0	9				
6	1.3	110	0.5	38	0.0	9	0.0	9				
7	1.2	100	0.5	38	0.0	9	0.0	9				
8	1.2	100	0.5	38	0.0	9	0.0	9				
9	1.2	100	0.4	31	0.0	9	0.0	9				
10	1.0	80	0.4	31	0.0	9	0.0	9				
11	0.9	70	0.3	25	0.0	9	0.0	9				
12	0.9	70	0.3	25	0.0	9	0.0	9				
13	0.9	70	0.3	25	0.0	9	0.0	9				
14	0.9	70	0.3	25	0.0	9	0.0	9				
15	0.9	70	0.3	25	0.0	9	0.0	9				
16	1.0	80	0.3	25	0.0	9	0.0	9				
17	1.6	145	0.4	31	0.0	9	0.0	9				
18	1.5	135	0.4	31	0.0	9	0.0	9				
19	1.4	120	0.4	31	0.0	9	0.0	9				
20	1.2	100	0.3	25	0.0	9	0.0	9				
21	1.1	90	0.3	25	0.0	9	0.0	9				
22	1.0	80	0.2	19	0.0	9	0.0	9				
23	1.0	80	0.2	19	0.0	9	0.0	9				
24	0.9	70	0.2	19	0.0	9	0.0	9				
25	0.9	70	0.2	19	0.0	9	0.0	9				
26	0.9	70	0.2	19	0.0	9	0.0	9				
27	0.8	62	0.2	19	0.0	9	0.0	9				
28	0.8	62	0.2	19	0.0	9	0.0	9				
29	0.7	54	0.1	14	0.0	9	0.0	9				
30	0.7	54	0.1	14	0.0	9	0.0	9				
31	0.7	54	0.1	14	0.0	9	0.0	9				

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*Monthly Discharge of Chase Creek 4 Miles above Mouth, for 1916.*

(Drainage area, 120 square miles.)

Month.	DISCHARGE IN CUBIC FEET				RUN OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
May	230	76	125	1.04	1.20	7,680
June	226	80	140	1.17	1.30	8,320
July	255	54	95	0.79	0.91	5,840
August	46	14	27	0.23	0.26	1,600
September	14	9	10	0.08	0.09	580
October	9	9	9	0.07	0.08	550
The period	230	9	68	0.56	1.84	24,040

## CRAZY CREEK (2051).

*Location.* Section 28, township 23, range 5, west of 6th meridian.*Records Available.* March 8 to December 13, 1914; March 24 to December 31, 1915; April 1 to November 12, 1916.*Drainage Area.* Forty-five square miles.*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.*Discharge Measurements.* Five measurements, made during 1915 and 1916, cover medium stages.*Accuracy.* Results are considered reliable for all but extremely high and very low stages.*Discharge Measurements of Crazy Creek at Taft, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft.
June 14	C. G. Clme	1,055	67	142	4.64	2.87	650
July 11	F. R. Archibald	1,913	73	109	3.95	2.35	430
Sept 13	A. L. McNaughton	1,923	41	48	2.45	1.48	118
Oct. 16	A. L. McNaughton	1,923	42	44	1.76	1.09	90

## Daily Gauge Height and Discharge of Crazy Creek at Taft, for 1916.

(Drainage area, 45 square miles.)

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								60	1 00	210	2 10	315
2							1 20	72	2 10	315	2 20	350
3							1 30	85	2 45	470	2 30	360
4							1 40	100	2 70	550	2 70	580
5							1 60	145	2 55	510	2 55	510
6												
7							1 65	160	3 55	510	2 25	380
8							1 60	145	2 45	470	2 20	360
9							1 65	160	2 20	360	2 35	420
10							1 75	190	1 95	260	2 50	490
							1 85	225	1 85	225	2 10	115
11												
12							1 75	190	1 75	190	2 30	400
13							1 65	150	1 70	175	2 10	115
14							1 60	145	1 60	145	2 10	115
15							1 60	145	1 60	145	2 95	709
							1 60	145	1 60	145	1 05	750
16												
17							1 55	135	1 65	160	3 35	900
18							1 55	135	1 75	190	3 55	1,150
19							1 50	120	2 60	280	3 25	870
20							1 15	110	2 25	380	3 50	980
							1 40	100	2 15	170	2 80	930
21												
22							1 40	100	2 15	340	2 80	670
23							1 40	100	2 00	280	2 80	620
24							1 30	85	1 90	210	2 70	590
25							1 30	85	1 85	225	2 65	550
							1 30	85	1 95	260	2 55	510
26												
27							1 70	175	2 15	340	2 70	560
28							2 20	360	2 50	400	2 75	640
29							2 30	400	2 15	170	2 70	590
30							2 15	340	2 30	400	2 55	540
31							2 00	280	2 10	315	2 30	400
									2 10	315		
									2 10	315		

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	360	1 75	190	1 05	57	1 15	60	0 95	50		
2	2 30	400	1 70	175	1 20	72	1 19	61	1 00	53		
3	3 20	830	1 70	175	1 15	66	1 10	61	1 00	53		
4	2 95	700	1 70	175	1 15	66	1 05	57	1 15	66		
5	2 10	540	1 60	115	1 35	93	1 05	57	1 15	66		
6												
7	2 40	415	1 55	135	1 20	72	1 05	57	1 05	57		
8	2 35	420	1 55	135	1 10	61	1 00	53	1 00	53		
9	2 50	390	1 55	135	1 47	115	1 05	57	1 00	53		
10	2 80	630	1 50	120	1 50	120	1 00	53	1 25	70		
	2 56	490	1 45	110	1 35	93	1 00	53	1 15	66		
11	2 50	400	1 40	100	1 30	85						
12	2 42	355	1 40	100	1 00	53	1 00	53	1 00	53		
13	2 45	370	1 35	93	1 45	130	1 00	53	1 00	53		
14	2 15	349	1 35	93	1 35	93	1 00	53	Frozen			
15	2 00	280	1 30	85	1 25	79	1 05	57				
16	2 05	300	1 30	85	1 20	72	1 10	61				
17	2 40	445	1 30	85	1 15	66	1 15	66				
18	2 65	550	1 45	110	1 10	61	1 10	61				
19	2 35	420	1 35	93	1 10	61	1 05	57				
20	2 20	360	1 30	85	1 05	57	1 00	53				
21	2 00	280	1 25	79	1 00	53	1 00	53				
22	2 57	530	1 20	72	1 00	53	0 90	46				
23	2 30	400	1 20	72	1 00	53	0 90	46				
24	2 10	315	1 20	72	1 00	53	0 99	46				
25	2 50	400	1 20	72	1 05	57	1 00	53				
26												
27	2 10	315	1 15	66	1 30	85	1 00	53				
28	1 95	260	1 15	66	1 20	72	1 00	53				
29	1 90	240	1 10	61	1 10	61	1 00	53				
30	1 85	225	1 10	61	1 10	61	1 00	53				
31	1 80	205	1 10	61	1 35	93	0 95	50				
	1 80	205	1 05	57			0 95	50				

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## Monthly Discharge of Crazy Creek at Taft, for 1916.

(Drainage area, 45 square miles.)

MONTH.	DISCHARGE IN SECONDS-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
April	400	60	155	3.44	3.81	9,220
May	580	145	315	7.00	8.07	19,400
June	1,530	315	570	12.66	14.13	33,900
July	835	205	410	9.11	10.50	25,200
August	180	57	102	2.26	2.61	6,270
September	210	53	79	1.75	1.95	4,700
October	66	46	55	1.22	1.41	3,380
The period	1,050	46	241	5.35	12.31	102,070

## 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; February 7 to December 31, 1915; February 16 to December 13, 1916.

*Drainage Area.*—Four hundred and twenty square miles.

*Gauge.*—Standard vertical staff gauge, read daily.

*Channel.*—Uniform and straight for 100 yards above and below the gauge.

*Discharge Measurements.*—One measurement made in 1914, one in 1915 and four in 1916 agree very well and cover the whole range of stage except at extreme high water.

*Accuracy.*—Results are considered to be quite reliable except at highest stages.

## Discharge Measurements of Eagle River at Malakwa, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Feb. 24	C. G. C. and A. L. M.	1,923	108	387	0.81	2.02	312
June 14	C. G. Cline	1,055	121	850	4.64	5.95	3,960
July 11	F. R. Archibald	1,913	120	790	7.05	5.43	3,200
Sept. 13	A. L. McNaughton	1,923	115	510	1.86	3.27	950

## Daily Gauge Height and Discharge of Eagle River at Malakwa, for 1916.

(Drainage area, 420 square miles.)

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	275	2 80	650	4 40	1,930	4 60	2,140
2					1 85	260	2 85	680	4 70	2,250	4 65	2,190
3					1 80	250	3 00	770	5 70	3,600	5 00	2,600
4					1 80	250	3 15	876	5 35	3,070	5 57	3,680
5					1 80	250	3 55	1,180	5 70	3,600	5 35	3,070
6					1 80	250	3 55	1,180	5 85	3,860	4 95	2,540
7					1 80	250	3 55	1,180	4 90	2,480	1 90	2,480
8					1 90	275	3 60	1,220	4 60	2,140	5 05	2,660
9					2 25	390	3 75	1,340	4 30	1,830	5 15	2,790
10					2 10	450	3 80	1,380	1 30	1,830	5 10	2,730
11					2 70	600	3 75	1,340	4 05	1,600	4 95	2,540
12					2 90	740	3 70	1,300	3 85	1,420	5 00	2,600
13					3 05	800	3 65	1,260	3 80	1,380	5 40	3,140
14					2 95	740	3 55	1,180	3 30	1,080	5 80	3,750
15					6 60	660	3 50	1,140	3 70	1,400	6 80	5,980
16			2 20	370	2 65	580	3 40	1,060	3 75	1,340	7 40	7,750
17			2 25	390	2 55	520	3 40	1,060	4 09	1,560	8 00	9,720
18			2 35	450	2 50	500	3 40	1,060	1 40	1,930	8 10	10,000
19			2 35	430	2 50	500	3 25	940	5 00	2,600	7 90	9,390
20			2 25	390	2 55	520	3 20	910	1 95	2,540	6 40	5,000
21			2 45	355	2 80	650	3 15	870	4 70	2,250	6 70	5,730
22			2 15	355	2 75	620	3 10	840	4 40	1,930	6 40	5,000
23			2 10	335	2 70	600	3 10	770	4 20	1,740	6 30	4,780
24			2 10	335	2 70	600	3 10	840	4 10	1,650	6 00	4,150
25			2 00	305	2 65	580	3 25	940	1 45	1,880	6 00	4,150
26			1 95	290	2 70	600	3 75	1,340	4 75	2,300	6 40	5,000
27			1 90	275	2 70	600	4 60	2,140	5 00	2,600	6 60	5,480
28			1 90	275	2 75	620	4 75	2,300	5 30	3,000	6 50	5,240
29			1 90	275	2 70	600	4 50	2,030	4 90	2,480	5 90	3,950
30					2 80	650	4 25	1,780	4 70	2,250	5 30	3,000
31					2 80	650			1 65	2,190		
	July.		August.		September.		October.		November.		December.	
1	5 20	2,860	4 40	1,930	3 35	1,020	2 55	520	2 20	370	1 95	290
2	5 80	3,770	4 15	1,700	3 60	1,220	2 50	500	2 20	370	1 95	290
3	6 40	5,000	4 25	1,780	3 15	1,100	2 50	500	2 20	370	2 00	305
4	6 20	4,560	4 05	1,600	3 50	1,140	2 40	450	2 35	430	1 95	290
5	5 50	3,290	3 95	1,520	3 60	1,220	2 40	450	2 45	480	2 00	305
6	5 20	2,860	3 90	1,470	3 55	1,180	2 10	450	2 40	450	2 00	305
7	5 40	2,860	3 90	1,470	3 40	1,060	2 35	430	2 30	410	2 00	305
8	3 90	3,950	4 00	1,590	3 40	1,060	2 35	430	2 30	410	1 90	275
9	3 05	4,250	4 00	1,590	3 50	1,140	2 30	410	2 30	500	1 95	290
10	5 90	3,950	3 80	1,390	3 40	1,060	2 35	430	2 45	470	1 95	290
11	5 45	3,210	3 70	1,300	3 10	840	2 35	430	2 15	370	1 90	275
12	5 50	3,290	3 60	1,220	3 60	1,220	1 35	430	2 15	390	1 80	250
13	5 70	2,900	3 65	1,260	3 25	940	2 35	430	2 30	410	1 80	250
14	5 00	2,600	3 55	1,180	3 10	840	2 35	430	2 35	440	1 85	280
15	4 80	2,400	3 60	1,220	2 90	740	2 40	450	2 20	410	1 85	260
16	5 10	2,730	3 50	1,140	2 90	740	2 40	450	2 30	410	1 80	250
17	6 00	4,150	3 45	1,100	2 90	740	2 60	550	2 30	410	1 80	250
18	6 00	4,150	3 45	1,100	2 85	680	2 55	520	2 25	390	1 85	260
19	5 40	3,140	3 25	940	2 80	650	2 40	450	2 20	370	1 80	250
20	5 30	2,900	3 05	800	2 70	600	2 35	430	2 20	370	1 75	235
21	4 75	2,300	3 10	840	2 70	600	2 35	430	2 20	370	1 75	235
22	5 75	3,680	3 10	840	2 65	580	2 30	410	2 10	335	1 75	235
23	5 05	2,660	3 25	940	2 65	580	2 25	390	2 00	305	1 80	250
24	4 75	2,300	3 20	910	2 60	550	2 20	370	1 80	275	1 80	250
25	5 30	3,040	3 20	940	2 70	600	2 15	355	1 90	275	1 80	250
26	4 75	2,300	3 35	1,020	2 85	680	2 25	390	2 00	305	1 80	250
27	4 60	2,140	3 30	980	2 80	650	2 20	370	2 00	305	1 80	250
28	4 50	2,030	3 30	980	2 90	740	2 15	355	2 00	305	1 75	235
29	4 35	1,880	3 40	1,060	2 55	520	2 20	370	1 95	290	1 70	225
30	4 04	1,930	3 35	1,020	2 55	520	2 20	370	2 00	305	1 70	225
31	4 35	1,880	3 30	980			2 20	370			1 75	235



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*Monthly Discharge of Eagle River at Malakwa, for 1916.*

(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.
March	800	250	510	1.21	1.75	31,406
April	2,500	950	1,180	2.81	3.14	70,200
May	3,800	980	2,180	5.20	5.90	131,900
June	19,000	2,110	4,300	10.24	11.42	256,000
July	5,000	1,800	3,070	7.30	8.15	188,800
August	1,930	800	1,220	2.90	3.21	75,900
September	1,220	520	830	1.98	2.21	49,400
October	550	355	430	1.02	1.17	26,400
November	300	275	375	0.90	1.00	22,300
December	305	225	260	0.62	0.71	16,000
The period	10,000	225	1,440	3.12	3.80	809,500

## KETTLE RIVER AT CARSON (2019).

*Location.*—At Carson; Water District No. 5.*Records Available.*—September 5 to December 31, 1913; January 1 to 22 and February 25 to December 9, 1914; March 1 to November 30, 1915; March 1 to December 30, 1916.*Drainage Area.*—Three thousand square miles.*Gauge.*—Chain gauge on highway bridge; 4 miles from Grand Forks.*Channel.*—Straight at measuring section; bed of stream gravel and sand; control good.*Discharge Measurements.*—Four measurements taken during 1914, two during 1915 and three during 1916 agree very well and cover probably the whole range.*Accuracy.* Results considered very accurate.*Discharge Measurements of Kettle River at Carson, for 1916.*

Date.	Engineer.	Gage No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
							Sec-ft
			Feet	Sq. ft.	Ft. per sec.	Feet.	
1916							
March 11	A. L. McNaughton	1,923	113	535	0.53	1.92	310
June 23	A. L. McNaughton	1,915	160	1,219	3.90	6.00	4,759
Aug. 9	A. L. McNaughton	1,923	148	748	1.34	3.11	1601
1917							
Jan. 17	A. L. McNaughton	1,915	175	265	0.51		136

<sup>1</sup> Ice.

NOTE.—All measurements are referred to the new gauge established March 30, 1915.

## Daily Gauge Height and Discharge of Kettle River at Carson, for 1916.

(Drainage area, 3,000 square miles.)

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	2 45	570	5 30	3,760	6 29	5,220
2						210	2 45	570	5 30	4,250	6 30	5,410
3						215	2 60	670	6 20	5,220	6 35	5,510
4						220	2 70	740	6 70	6,200	6 50	5,800
5						230	2 80	810	7 30	7,470	6 55	5,900
6						240	2 90	890	7 40	7,690	6 20	5,410
7						250	2 95	930	8 10	9,340	6 05	4,940
8					1 80	290	3 05	1,010	7 50	7,920	6 00	4,850
9					1 80	290	3 25	1,170	6 80	6,400	6 20	5,220
10					1 85	280	3 35	1,250	6 30	5,410	6 05	4,940
11					1 90	300	3 50	1,400	5 90	4,670	5 90	4,670
12					2 00	340	3 55	1,460	5 30	3,760	5 95	4,760
13					2 10	380	3 55	1,460	5 20	3,550	5 95	4,760
14					2 00	340	3 60	1,510	5 10	3,400	6 20	5,220
15					2 00	340	3 70	1,620	5 05	3,320	6 95	6,710
16					2 05	365	3 95	1,900	5 05	3,330	7 20	7,250
17					2 05	365	3 95	1,900	5 15	3,480	7 60	8,150
18					2 10	380	4 00	1,950	5 45	3,920	7 45	7,800
19					2 10	380	4 00	1,950	5 55	4,760	7 20	7,250
20					2 10	380	3 80	1,730	6 40	5,600	6 40	5,600
21					2 20	420	3 80	1,730	6 50	5,800	6 25	5,310
22					2 25	450	3 75	1,670	6 25	5,310	6 60	4,850
23					2 20	410	3 65	1,560	5 90	4,670	6 90	4,850
24					2 35	510	3 60	1,510	5 60	4,160	5 90	4,670
25					2 35	510	3 65	1,560	5 55	4,080	5 85	4,590
26					2 30	480	3 80	1,730	5 70	4,390	7 15	7,200
27					2 35	510	4 55	2,630	5 90	4,670	7 12	7,070
28					2 35	510	5 37	3,810	6 30	5,410	6 90	6,610
29					2 35	510	5 15	3,920	6 50	5,800	6 50	5,800
30					2 40	540	5 30	3,700	6 21	5,240	6 30	5,410
31					2 35	510			6 10	5,030		
	July		August		September		October		November		December	
1	5 90	4,670	3 40	1,300	2 40	540	2 20	420	2 05	360		250
2	5 65	4,250	3 30	1,210	2 40	540	2 20	420	2 00	340		250
3	7 02	6,860	3 20	1,130	2 35	510	2 20	420	2 00	340		250
4	8 10	9,340	3 20	1,130	2 35	510	2 20	420	2 00	340		240
5	6 97	6,760	3 25	1,170	2 30	480	2 15	400	2 05	360		240
6	6 27	5,350	3 20	1,130	2 35	510	2 10	380	2 10	380		240
7	6 00	4,850	3 15	1,090	2 40	540	2 10	380	2 15	400		240
8	5 60	4,160	3 05	1,010	2 45	570	2 10	380	2 05	360		230
9	5 55	4,080	3 10	1,050	2 45	570	2 10	380	2 00	340		230
10	5 60	4,160	3 15	1,090	2 50	600	2 10	380	2 00	340		220
11	5 30	3,700	3 10	1,050	2 45	570	2 10	380	1 95	320		220
12	5 15	3,480	3 00	970	2 40	540	2 15	400	1 90	300		210
13	5 70	4,330	2 90	890	2 40	540	2 15	400	1 90	300		210
14	4 70	2,830	2 80	810	2 35	510	2 15	400	1 90	300		200
15	4 50	2,560	2 80	810	2 35	510	2 15	400		300		200
16	4 40	2,430	2 75	770	2 30	480	2 15	400		290		200
17	4 30	2,310	2 70	740	2 30	480	2 15	400		290		200
18	5 10	3,400	2 75	770	2 25	450	2 15	400		290		190
19	4 75	2,900	2 75	770	2 25	450	2 15	400		290		190
20	4 55	2,630	2 95	930	2 20	420	2 10	380		280		190
21	4 35	2,270	2 90	890	2 20	420	2 15	400		280		180
22	4 25	2,250	2 99	890	2 20	420	2 05	360		280		180
23	4 15	2,130	2 85	850	2 15	400	2 05	360		280		180
24	4 00	1,950	2 70	740	2 15	400	2 05	360		270		170
25	3 99	1,840	2 65	710	2 15	400	2 05	360		270		170
26	3 85	1,790	2 60	670	2 15	400	2 05	360		270		170
27	3 80	1,730	2 60	670	2 15	400	2 05	360		270		160
28	3 70	1,620	2 55	630	2 15	400	2 00	340		260		150
29	3 60	1,510	2 50	600	2 20	420	2 15	400		260		150
30	3 60	1,510	2 45	570	2 25	450	2 15	400		260		150
31	3 45	1,350	2 40	540			2 10	380				150

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*Monthly Discharge of Kettle River at Carson, for 1916.*

(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
March	540	200	365	0.12	0.14	22,400
April	3,020	570	1,600	0.54	0.60	97,600
May	9,340	3,330	5,000	1.69	1.95	344,000
June	8,150	4,590	5,700	1.91	2.13	341,000
July	9,310	1,350	4,300	1.43	1.70	298,400
August	1,300	540	800	0.30	0.35	54,700
September	600	400	480	0.16	0.18	28,600
October	120	340	300	0.10	0.15	24,000
November	415	260	305	0.10	0.11	17,100
December	250	150	200	0.07	0.08	12,300
The period	9,310	150	4,800	0.62	6.99	1,120,463

## KETTLE RIVER AT CASCADE (2092).

*Location.*—At Cascade; Water District No. 5; below Cascade Rapids and the power plant of the West Kootenay Power and Light Company.

*Records Available.*—April 1 to December 31, 1916.

*Drainage Area.*—Four thousand square miles.

*Gauge.*—Standard staff gauge with enamel facings; reading from zero to 9 feet.

*Channel.*—Straight for 300 feet below and 300 feet above the station. Water fairly swift.

*Discharge Measurements.*—This station was established on March 14, 1916 and is not yet fully rated. Three measurements taken during 1916 and two early in 1917 cover the lower stages fairly well.

*Winter Flow.*—Some backwater effect from ice for a month or two in the winter.

*Accuracy.*—Discharge up to 2,000 cubic feet per second should be quite reliable; between 2,000 and 8,000 and above 9,000 the results may not be so accurate.

*Discharge Measurements of Kettle River at Cascade, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet	Sec.-ft.
1916							
Mar. 14	A. L. McNaughton	1,923	230	555	1.02	1.00	562
June 24	A. L. McNaughton	1,915	359	1,847	4.63	5.57	8,580
Aug. 10	A. L. McNaughton	1,923	265	570	2.51	1.85	1,404
1917							
Jan. 18	A. L. McNaughton	1,915	72	98	2.05	Ice	200
Mar. 26	C. G. Cline	1,923	197	250	1.36	0.48	340

## Daily Gauge Height and Discharge of Kettle River at Cascade, for 1916.

(Drainage area, 1,000 square miles.)

DAY.	January.		February.		March.		A. P.		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								1,400	4 95	7,200	5 60	8,400
2												8,600
3												8,600
4							2 10	1,800	5 90	9,300	5 60	8,600
5							2 25	2,000	6 55	10,700	5 75	8,900
6							2 40	2,300	7 50	12,500	5 85	9,100
7							2 40	2,300	7 80	13,400	5 65	8,700
8							2 55	2,500	7 55	12,900	5 60	8,600
9							2 75	2,900	7 05	11,800	5 75	8,900
10							3 00	3,400	6 90	11,400	5 85	9,100
11							3 20	3,700	6 90	11,400	5 80	9,000
12							3 30	3,000	6 65	10,900	5 65	8,700
13							3 40	4,100	6 40	10,300	5 65	8,700
14							3 36	3,900	5 90	9,300	5 65	8,700
15					1 0	560	3 35	4,000	5 15	7,700	5 85	9,100
16							3 60	4,500	4 35	6,900	6 50	10,600
17							3 65	4,600	1 70	6,700	7 65	13,100
18							3 60	4,500	5 10	7,600	8 05	14,100
19							3 50	4,300	5 45	8,300	8 50	15,200
20							3 35	4,000	6 30	10,100	7 60	13,000
21							3 25	3,800	6 50	10,600	6 85	11,300
22							3 10	3,500	6 20	9,900	6 45	10,400
23							3 10	3,500	5 65	8,700	5 85	9,100
24							3 00	3,400	5 35	8,100	5 60	8,600
25							3 00	3,400	5 05	7,400	5 45	8,300
26							3 00	3,400	4 95	7,200	5 15	7,700
27							3 20	3,700	5 05	7,400	4 90	7,100
28							3 80	4,900	5 30	8,000	4 75	6,800
29							4 90	7,100	6 00	9,500	4 75	6,800
30							4 95	7,200	6 10	9,700	4 55	6,400
31							4 90	7,100	5 80	9,000	4 25	5,800
									5 65	8,700		
July.	August		September		October.		November.		December			
1	4 25	5,800	2 95	3,300	1 10	630	0 70	410	0 70	410	0 40	310
2	2 85	5,000	2 65	2,700	1 10	630	0 70	410	0 70	410	0 40	310
3	3 90	5,100	2 30	2,100	1 10	630	0 70	410	0 70	410	0 35	290
4	4 85	7,000	2 00	1,650	1 11	630	0 70	410	0 70	410	0 30	280
5	4 85	7,000	2 05	1,700	1 15	660	0 70	410	0 70	410	0 30	280
6	5 20	7,800	2 25	2,050	1 10	630	0 70	410	0 70	410	0 30	280
7	4 20	5,700	2 00	1,650	1 10	630	0 70	410	0 67	400	0 30	280
8	3 90	5,100	1 90	1,500	1 10	630	0 70	410	0 65	390		280
9	3 90	5,100	1 80	1,350	1 10	630	0 72	420	0 65	390		270
10	3 80	4,900	1 80	1,350	1 10	630	0 75	430	0 65	390		270
11	3 55	4,400	1 80	1,350	1 10	630	0 80	450	0 65	390		270
12	3 20	3,700	1 80	1,350	1 10	630	0 72	420	0 62	380		260
13	3 00	3,400	1 70	1,200	1 10	630	0 70	410	0 60	370		260
14	3 00	3,400	1 70	1,200	1 10	630	0 70	410	0 60	370		260
15	3 15	3,600	1 60	1,100	1 10	630	0 70	410	0 55	350		250
16	3 45	4,200	1 45	950	1 10	630	0 70	410	0 55	350		250
17	3 50	4,700	1 40	900	1 10	630	0 70	410	0 55	350		240
18	3 80	4,900	1 40	900	1 10	630	0 70	410	0 55	350		240
19	3 60	4,500	1 40	900	1 10	630	0 70	410	0 55	350		240
20	3 25	3,800	1 50	1,000	1 10	630	0 70	410	0 55	350		230
21	3 20	3,700	1 55	1,050	0 95	530	0 76	410	0 55	350		230
22	3 10	3,500	1 60	1,100	0 90	500	0 70	410	0 55	350		230
23	3 10	3,500	1 50	1,000	0 90	500	0 70	410	0 55	350		230
24	3 00	3,400	1 55	850	0 90	500	0 70	410	0 50	340		220
25	3 00	3,400	1 30	800	1 00	560	0 70	410	0 50	340		220
26	2 90	3,200	1 30	800	1 00	560	0 70	410	0 50	340		210
27	2 85	3,000	1 30	850	0 90	500	0 70	410	0 50	340		210
28	2 70	2,800	1 20	700	0 80	450	0 70	410	0 50	340		210
29	2 80	3,000	1 15	660	0 80	450	0 70	410	0 50	340		210
30	2 90	3,200	1 10	630	0 70	410	0 70	410	0 50	340		210
31	2 10	3,200	1 10	630	0 70	410	0 70	410	0 47	330		200
							0 70	410				200

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## Monthly Discharge of Kettle River at Cascade, for 1916.

Drainage area, 4,000 square miles.

Month	DISCHARGE IN SECOND FEET				RESULTS	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre feet
April	7,200	1,400	3,700	0.94	1.05	224,000
May	14,000	3,000	9,150	2.31	2.70	755,000
June	15,200	5,800	10,250	2.61	2.58	550,000
July	7,800	2,800	4,550	1.16	1.26	267,000
August	300	50	1,250	0.32	0.37	78,000
September	0.0	40	580	0.14	0.16	34,000
October	150	40	100	0.10	0.10	25,000
November	40	20	35	0.09	0.10	22,000
December	0.0	20	245	0.06	0.07	15,000
Total period	152,000	200	1,290	0.82	8.40	1,700,000

## KETTLE RIVER AT NICHOLSON'S BRIDGE (2046).

*Location.* Near Kettle Valley; Water District No. 5.*Records Available.* March 1 to December 11, 1914; February 18 to November 30, 1915; March 1 to November 13, 1916.*Drainage Area.* Two thousand one hundred and eighty square miles.*Gauge.* Standard vertical staff gauge, read daily.*Channel.* Average width, 150 feet; bed of stream, gravel and sand, and considered permanent. Velocity high, control good.*Discharge Measurements.* Four measurements made in 1914, two in 1915 and three in 1916 agree very well and cover the whole range of stage.*Accuracy.* Results should be quite reliable for all stages.

## Discharge Measurements of Kettle River at Nicholson's Bridge, for 1916.

Date	Engineer	Stage No.	Width Feet	Area of Section Sq. ft.	Mean Velocity ft. per sec.	Gauge Height, Feet	Dis- charge Cusec.
1916							
Mar. 17	A. I. McNaughton	1924	170	182	1.45	1.59	261
Apr. 21	A. I. McNaughton	1915	154	955	4.76	6.97	1,340
Aug. 7	A. I. McNaughton	1925	141	354	2.22	2.58	780
1917							
Oct. 14	A. I. McNaughton	1915	145	124	0.81		100

Under an over

Note: All gauge heights referred to C.T.S. station No. 1, 25, 2046.

Daily Gauge Height and Discharge of Kettle River at Nicholson's Bridge near Rock Creek, for 1916.

(Drainage area, 2,180 square miles.)

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						250	1 80	350	5 20	3,280	6 30	4,950
2						250	1 90	300	5 55	4,070	6 30	4,910
3						250	2 15	500	6 45	5,170	6 20	4,770
4						250	2 35	610	7 12	6,320	6 50	5,250
5						260	2 42	650	7 60	7,180	6 25	4,850
6								240	7 70	7,560	6 05	4,530
7								260	7 50	7,730	5 95	4,470
8					1 58	265	2 85	920	7 00	6,100	6 10	4,610
9					1 65	290	2 85	920	6 40	5,000	6 20	4,770
10					1 65	290	3 05	1,050	5 90	4,300	6 00	4,450
11					1 58	265	3 15	1,130	5 50	3,700	5 90	4,300
12					1 60	270	3 17	1,150	5 15	3,220	5 90	4,300
13					1 70	310	3 22	1,190	4 85	2,820	6 00	4,450
14					1 70	310	3 35	1,290	4 60	2,520	6 45	5,150
15					1 60	270	3 45	1,370	4 55	2,460	7 22	6,500
16					1 60	270			4 75	2,710	7 95	7,840
17					1 55	255	3 57	1,480	5 05	3,080	8 05	8,010
18					1 55	255	3 55	1,450	5 45	3,630	7 85	7,640
19					1 55	255	3 40	1,330	5 15	4,060	7 35	6,730
20					1 57	260	3 32	1,270	6 60	5,420	6 50	5,350
21					1 62	280	3 20	1,170	6 35	5,010	6 02	4,480
22					1 80	350	3 26	1,170	5 85	4,230	6 00	4,150
23					1 80	350	3 10	1,090	5 50	4,790	5 87	4,250
24					1 75	330	3 10	1,090	5 35	3,480	5 87	4,250
25					1 75	330	3 20	1,170	5 40	3,550	5 92	4,340
26					1 75	330			5 50	3,790	5 95	4,370
27					1 77	340	1 67	2,600	6 15	4,660	7 57	7,110
28					1 72	320	5 35	5,180	6 55	5,310	6 87	5,890
29					1 77	310	5 30	4,410	6 20	4,930	6 92	5,970
30					1 80	350	1 97	2,980	6 95	4,540	6 10	4,610
31					1 80	350			6 95	4,370		
	July		August		September		October		November		December	
1	5 60	3,850	2 75	850	1 75	330	1 60	270	1 40	200		150
2	5 35	3,480	2 65	790	1 70	310	1 60	270	1 40	200		150
3	7 10	8,280	2 57	740	1 95	290	1 60	270	1 40	200		150
4	7 02	7,220	2 65	790	1 62	280	1 60	270	1 40	200		150
5	6 45	5,170	2 70	820	1 75	330	1 66	270	1 40	200		150
6	5 02	4,110	2 55	730	1 82	360	1 60	270	1 40	200		140
7	5 42	3,590	2 50	700	1 80	350	1 60	270	1 40	200		140
8	5 20	3,280	2 45	670	1 75	330	1 60	270	1 35	185		140
9	5 55	3,780	2 40	640	1 80	350	1 60	270	1 30	170		140
10	5 15	3,220	2 45	670	1 80	350	1 55	255	1 30	170		140
11	4 90	2,890	2 40	640	1 80	350	1 50	235	1 30	170		140
12	4 92	2,540	2 30	580	1 80	350	1 40	200	1 30	170		140
13	4 45	2,340	2 32	580	1 77	340	1 40	200		170		140
14	4 27	2,150	2 20	530	1 70	310	1 37	185		170		140
15	3 95	1,830	2 10	480	1 62	280	1 35	185		170		140
16	3 90	1,780	2 05	455	1 60	270	1 35	185		170		130
17	4 45	2,340	2 00	430	1 55	255	1 35	185		170		130
18	4 75	2,700	2 05	455	1 55	255	1 30	170		160		130
19	4 40	2,290	2 20	530	1 50	235	1 30	170		160		130
20	4 00	1,880	2 52	710	1 56	255	1 32	180		160		130
21	3 85	1,730	2 42	650	1 15	220	1 37	190		160		120
22	3 75	1,630	2 25	580	1 45	220	1 16	220		160		120
23	3 55	1,450	2 03	465	1 43	220	1 40	200		160		120
24	3 40	1,330	2 00	430	1 45	220	1 40	200		160		120
25	3 40	1,330	1 90	390	1 45	220	1 35	185		160		110
26	3 40	1,330	1 82	360	1 45	220	1 35	185		150		110
27	3 30	1,250	1 85	350	1 47	225	1 40	200		150		110
28	3 17	1,150	1 86	350	1 50	200	1 40	200		150		110
29	3 10	1,080	1 80	350	1 60	270	1 40	200		150		110
30	3 02	1,040	1 80	350	1 55	255	1 40	200		150		110
31	2 90	950	1 75	330			1 40	200				110

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## Monthly Discharge of Kettle River at Nicholson's Bridge, for 1916.

(Drainage area, 2,180 square miles.)

Month	DISCHARGE IN SECOND FEET.				RUNOFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre feet.
March	350	250	290	0.13	0.15	17,800
April	1,180	350	1,280	0.59	0.56	76,200
May	7,730	2,000	4,450	2.05	2.36	274,000
June	8,040	4,250	7,250	2.41	2.69	317,000
July	6,220	950	2,920	1.29	1.48	161,000
August	850	330	500	0.26	0.30	34,400
September	560	225	280	0.13	0.15	16,700
October	270	170	220	0.10	0.12	13,500
November	200	150	170	0.08	0.09	10,000
December	150	100	130	0.06	0.07	8,000
The period	8,040	100	4,530	0.70	7.97	923,600

## KETTLE RIVER, WEST FORK (2015).

*Location.*—Near Westbridge; Water District No. 5.

*Records Available.*—February 23 to September 30, 1914; January 1 to February 6 and March 29 to December 31, 1915; February 27 to December 31, 1916.

*Drainage Area.*—Six hundred and ninety square miles.

*Gauge.*—Standard vertical staff gauge, read daily.

*Channel.*—Straight for 500 feet above and below measuring section. Bed composed of gravel and boulders.

*Discharge Measurements.*—Three measurements made during 1914, two during 1915 and three during 1916 agree very well and cover all stages to a discharge of 1,300 cubic feet per second.

*Accuracy.*—Considered very reliable except at extreme high water.

## Discharge Measurements of West Fork of Kettle River at Westbridge, for 1916.

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
March 15	A. L. McNaughton	1,923	97	88	0.91	0.59	50
June 21	A. L. McNaughton	1,915	97	285	3.52	2.59	1,063
Aug. 7	A. L. McNaughton	1,923	97	133	1.55	1.08	267
1917							
Jan. 15	A. L. McNaughton	1,915	33	23	1.43		33 <sup>1</sup>

<sup>1</sup> Ice cover.

NOTE.—All gauge heights are referred to new gauge installed March 24, 1915.





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## Monthly Discharge of Kettle River at Westbridge, for 1916.

Drainage area, 900 square miles.

MONTH	DISCHARGE IN SECONDS				RISINGS	
	Minimum	Maximum	Mean	Mean	Days of Discharge Above	Feet Above
March	1.4	77	9.5	14	0.10	1.04
April	14.0	150	130	7.8	0.11	2.10
May	750	950	1,310	1.9	0.12	0.80
June	2,020	600	1,360	1.96	0.13	0.80
July	7,020	250	255	1.00	0.14	0.40
August	270	80	165	0.4	0.15	0.10
September	98	52	70	0.11	0.16	1.4
October	67	52	55	0.08	0.17	0.8
November	67	50	50	0.08	0.18	1.5
December	45	5	41	0.06	0.19	2.50
The period	2,500	15	407	0.07	7.60	28.50

## OKANAGAN RIVER AT OKANAGAN FALLS, 2088.

*Location.*—At outlet of Dog lake, 300 feet above Okanagan falls. Provincial Water District No. 1.

*Records Available.*—At old station near Fairview: April 8 to December 31, 1914. At Okanagan falls: January 1 to December 31, 1915; March 18 to December 31, 1916.

*Drainage Area.*—Three thousand square miles. Some artificial regulation by dam at outlet of Okanagan lake.

*Gauge.*—Standard vertical staff, spiked to bridge pile; readings six times a week.

*Channel.*—Clean gravel, current moderately slow at all stages at gauging section; control is solid rock near falls.

*Discharge Measurements.*—Five meter measurements in 1916 and four in 1915 agree very well and cover practically all ranges of stage.

*Accuracy.*—Results should be very accurate and reliable.

## Discharge Measurements of Okanagan River at Okanagan Falls, for 1916.

Date.	Engineer.	Meter No.	Width. Feet	Area of	Mean Velocity ft. per sec.	Gauge Height. Feet	Discharge Sec. ft.
				Section. Sq. Ft.			
Mar. 18	A. L. McNaughton	1,923	225	385	0.75	2.14	287
Jan. 26	A. L. McNaughton	1,915	250	758	1.58	3.66	1,167
Aug. 5	A. L. McNaughton	1,923	245	693	1.52	3.48	1,055
Aug. 29	A. L. McNaughton	1,923	238	594	1.40	3.08	820
Nov. 18	C. G. Cline and A. L. McNaughton	1,923 1,915	230	391	0.66	2.10	259

Daily Gauge Height and Discharge of Okanagan River near Okanagan Falls, for 1916.

(Drainage area, 3,000 square miles.)

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 17	300	2 55	500	3 35	980
2							2 17	300	2 57	510	3 35	980
3							2 17	300	2 65	560	3 37	990
4							2 17	300	2 70	580		1,020
5							2 17	300	2 72	590	3 45	1,050
6							2 26	315	2 77	620	3 45	1,050
7							2 20	315		660	3 47	1,060
8							2 20	315	2 87	680	3 50	1,080
9								315	2 97	740	3 50	1,080
10							2 20	315	3 00	760	3 52	1,090
11							2 22	325	3 00	760		1,090
12							3 20	315	3 00	760	3 52	1,090
13							2 17	300	3 00	760	3 52	1,090
14							2 17	300		760	3 52	1,090
15							2 20	315	3 00	760	3 55	1,110
16								325	3 00	760	3 57	1,130
17					Meter		2 25	340	3 00	760	3 60	1,150
18					2 14	290	2 22	325	3 00	760		1,150
19							3 22	325	3 07	800	3 60	1,150
20							2 25	340	3 10	820	3 57	1,130
21							2 30	365		840	3 57	1,130
22							2 32	375	3 17	860	3 57	1,130
23								380	3 20	880	3 57	1,130
24							2 35	390	3 22	900	3 60	1,150
25							2 37	400	3 22	900		1,170
26							2 37	400	3 22	900	3 65	1,180
27							2 42	425	3 22	900	3 67	1,200
28							2 47	455		920	3 70	1,220
29							2 50	470	3 27	930	3 75	1,250
30								485	3 30	950	3 80	1,290
31									3 32	960		

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 80	1,290	3 57	1,130	3 00	760		520	2 20	315	2 10	265
2		1,300	3 57	1,130	3 00	760	2 60	520	2 20	315	2 10	265
3	3 82	1,300	3 55	1,110		760	2 60	520	2 17	300		265
4	3 82	1,300	3 52	1,090	3 00	760	2 55	495	2 47	455	2 10	265
5	3 82	1,300	3 52	1,090	2 97	740	2 50	470		370	2 10	265
6	3 82	1,300		1,080	2 07	740	2 50	470	2 17	300	2 10	265
7	3 82	1,300	3 47	1,080	2 95	730	2 50	470	2 15	290	2 10	265
8	3 82	1,300	3 45	1,050	2 92	710		470	3 15	290	2 10	265
9		1,300	3 42	1,030	2 92	710	2 50	470	2 15	290		265
10	3 80	1,290	3 42	1,030		700	2 50	470	2 12	275		265
11	3 77	1,270	3 40	1,020	2 87	680	2 50	470	2 12	275	2 10	265
12	3 72	1,230	3 40	1,020	2 87	680	2 50	470		275	2 10	265
13	3 72	1,230		1,000	2 85	670	2 47	455	2 12	275	2 10	265
14	3 70	1,220	3 37	990	2 82	650	2 45	445	2 12	275	2 10	265
15	3 70	1,220	3 35	980	2 80	640		445	2 10	265	2 10	265
16		1,240	3 32	960	2 80	640	2 45	445	2 10	265	2 10	265
17	3 75	1,250	3 32	960		640	2 42	430	2 10	265		265
18	3 72	1,230	3 30	950	2 80	640	2 40	415	2 10	265	2 10	265
19	3 70	1,220	3 30	950	2 80	640	2 35	390		265	2 10	265
20	3 70	1,220		950	2 80	640	2 30	365	2 10	265	2 10	265
21	3 70	1,220	3 30	950	2 77	620	2 27	350	2 10	265	2 10	265
22	3 70	1,220	3 37	930	2 77	620		345	2 10	265	2 10	265
23		1,210	3 22	900	2 75	610	2 25	340	2 10	265	2 10	265
24	3 67	1,200	3 17	860		600	2 22	325	2 10	265		265
25	3 65	1,180	3 15	850	2 70	580	2 22	325	2 10	265	2 10	265
26	3 65	1,180	3 12	830	2 70	580	2 20	315		265	2 10	265
27	3 62	1,160		810	2 65	550	2 20	315	2 10	265	2 10	265
28	3 62	1,160	3 07	800	2 65	550	2 20	315	2 10	265	2 10	265
29	3 62	1,160	3 07	800	2 60	520		315	2 10	265	2 10	265
30		1,150	3 05	790	2 60	520		315	2 10	265	2 10	265
31	3 60	1,150	3 02	770				315				265

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*Monthly Discharge of Okanagan River near Okanagan Falls, for 1916.*

(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	485	300	350	0 12	0 13	21,000
May	960	509	770	0 26	0 30	47,000
June	1,290	980	1,110	0 37	0 41	66,000
July	1,300	1,150	1,230	0 41	0 47	76,000
August	1,130	770	970	0 32	0 37	60,000
September	760	520	650	0 21	0 23	39,000
October	520	315	410	0 14	0 16	25,000
November	455	265	285	0 09	0 10	17,000
December	265	265	265	0 09	0 10	16,000
The period	1,300	265	671	0 22	2 27	367,000

## SEYMOUR RIVER (2061).

*Location.*—Three miles above head of Seymour Arm; Water District No. 2.

*Records Available.*—August 17 to December 11, 1914; March 8 to December 31, 1915; April 28 to December 31, 1916.

*Drainage Area.*—Two hundred and fifty square miles.

*Gauge.*—Standard vertical staff gauge installed April 28, 1916 to replace old chain gauge; read daily.

*Channel.*—Rocks and gravel; current swift.

*Discharge Measurements.*—Made from cable car on a section about 200 feet above gauge. One measurement taken in 1914, eight during 1915 and seven during 1916 agree very well and cover whole range of stage except for discharges above 6,000 cubic feet per second.

*Winter Flow.*—During the latter part of December, the stream being under ice cover, the discharge has been determined by interpolation between the open-water flow of December 7 and a meter measurement on January 24, 1917.

*Accuracy.*—Considered reliable except at very high stages.

*Discharge Measurements of Seymour River near Seymour Arm, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
April 28	Cline and McNaughton	1,923	110	514	4.50	4.15	2,290
April 30	Cline and McNaughton	1,923	107	432	3.77	3.33	1,630
June 15	C. G. Cline	1,055	115	775	5.70	6.00	4,410
July 13	F. R. Archibald	1,913	123	784	5.00	6.47	5,260
Aug. 12	F. R. Archibald	1,055	99	525	2.23	2.70	1,170
Sept. 15	Cline and McLachlan	1,055	85	394	1.72	1.78	680
Oct. 19	A. L. McNaughton	1,923	90	378	1.36	1.59	513
1917							
Jan. 24	F. R. Archibald	1,055	95	322	0.51	.....	164

8 GEORGE V, A. 1918

## Daily Gauge Height and Discharge of Seymour River 2 Miles from Mouth, for 1916.

(Drainage area, 250 square miles.)

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 40	1,690	3 70	1,940
2									3 95	2,170	3 60	1,850
3									4 70	2,940	3 92	2,140
4									5 40	3,740	5 75	4,180
5									5 05	3,320	4 70	2,940
6									5 10	3,380	3 85	2,080
7									5 20	3,500	3 65	1,900
8									4 10	2,320	4 30	2,520
9									3 45	1,750	4 55	2,780
10									3 10	1,450	4 25	2,470
11									3 20	1,530	4 05	2,270
12									2 60	1,090	4 35	2,570
13									2 60	1,090	4 20	2,420
14									2 40	960	5 40	3,740
15									2 50	1,020	6 15	4,700
16									2 70	1,160	6 90	5,750
17									3 00	1,370	7 30	6,350
18									3 80	2,030	7 50	6,650
19									4 10	2,320	7 90	7,270
20									4 20	2,420	6 70	5,460
21									3 70	1,940	6 20	4,760
22									3 60	1,850	6 10	4,630
23									3 00	1,370	6 35	4,970
24									3 10	1,450	6 30	4,900
25									3 50	1,770	6 20	4,760
26									4 10	2,320	6 15	4,700
27									4 60	2,830	6 75	5,530
28							4 10	2,320	4 70	2,940	6 50	5,180
29							3 70	1,940	4 80	3,050	6 00	4,500
30							3 35	1,650	3 70	1,940	5 50	3,860
31									3 90	2,120		
	July		August		September		October		November		December	
1	4 50	2,720	3 20	1,530	2 90	1,300	1 65	570	1 30	440	1 35	455
2	4 80	3,050	3 40	1,690	2 90	1,300	1 60	550	1 30	440	1 35	455
3	6 59	5,180	3 80	2,030	3 10	1,450	1 80	550	1 50	440	1 35	455
4	6 75	5,730	3 40	1,690	3 10	1,450	1 60	550	1 45	390	1 57	530
5	5 60	4,980	3 10	1,450	2 85	1,100	1 60	550	1 55	550	1 45	490
6												
7	4 90	3,160	3 00	1,370	2 70	1,100	1 40	470	1 40	470	1 30	410
8	4 60	2,830	3 20	1,610	2 60	1,090	1 20	410	1 20	410	1 30	410
9	4 90	3,160	3 10	1,450	2 30	960	1 45	395	1 30	410		320
10	6 00	4,500	3 00	1,370	2 10	780	1 45	395	1 40	470		490
11	5 40	3,740	3 00	1,370	2 40	960	1 15	395	1 25	425		490
12												
13	5 20	3,000	3 10	1,450	2 3	900	1 15	395	1 15	395		390
14	5 16	2,980	3 05	1,410	2 65	1,126	1 20	410	1 25	425		380
15	6 32	4,930	2 15	810	2 20	840	1 20	410	1 30	440		370
16	5 16	2,980	2 90	1,400	2 20	840	1 25	425	1 30	440		360
17	4 20	2,420	2 90	1,400	2 00	1,170	1 40	470	1 25	425		350
18												
19	5 00	3,250	2 95	1,340	2 40	960	1 45	490	1 50	510		340
20	5 46	3,740	3 20	1,530	1 75	610	1 40	550	1 50	510		330
21	6 40	4,930	3 00	1,410	1 75	610	1 40	550	1 40	470		320
22	6 10	4,600	3 35	1,690	1 75	620	1 40	470	1 20	440		340
23	4 40	2,220	2 60	1,090	1 70	590	1 15	395	1 15	395		300
24												
25	4 50	2,720	2 20	840	1 70	600	1 40	470	1 25	425		290
26	5 20	3,740	2 20	840	1 72	600	1 35	435	1 35	455		280
27	4 00	2,220	2 50	1,020	1 72	600	1 35	435	1 45	490		270
28	4 26	2,420	2 20	990	1 67	580	1 35	435	1 40	470		260
29	3 50	1,770	2 65	1,120	1 60	550	1 40	470	1 20	590		260
30	3 46	1,690	2 60	1,090	1 65	570	1 20	410	1 50	510		240
31	3 50	1,770	2 60	1,090			1 20	410				240

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*Monthly Discharge of Seymour River 2 Miles from Mouth, for 1916.*

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.
May.....	2,740	960	2,090	8.36	9.64	129,000
June.....	5,270	1,850	3,990	15.96	17.81	237,000
July.....	5,530	1,690	3,300	13.20	15.22	203,000
August.....	2,120	810	1,310	5.24	6.04	81,000
September.....	1,150	550	860	3.44	3.84	51,000
October.....	910	395	470	1.88	2.17	29,000
November.....	590	395	180	1.92	2.14	28,500
December.....	50	200	310	1.36	1.57	21,000
The period.....	7,270	200	1,610	6.42	78.43	779,500

## SHUSWAP RIVER AT ENDERBY (2034).

*Location.*—Section 26, township 18, range 9, west 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; January 1 to December 31, 1915; March 19 to December 31, 1916.*Drainage Area.*—One thousand six hundred and fifty square miles.*Gauge.*—Standard vertical staff gauge, situated on highway bridge pile; read daily.*Channel.*—Straight for 100 yards at section; control good.*Discharge Measurements.*—Two measurements taken during 1911, two in 1912, three in 1913, two in 1915 and four in 1916 agree very well and cover whole stage.*Accuracy.*—Results considered very accurate for all stages.*Discharge Measurements of Shuswap River at Enderby, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of	Mean	Gauge	Discharge.
				Section.	Velocity.		
			Feet.	Sq. Ft.	Ft. per sec.	Feet.	Sq. ft.
1916							
Feb. 21	C. G. and A. I. M.	1,052	215	1,470	5.10	3.40	745
June 13	C. G. Cline	1,055	210	2,970	2.40	9.00	7,170
July 8	E. R. Archibald	1,913	247	3,900	2.55	11.50	13,180
Sept. 11	A. I. McNaughton	1,923	229	2,030	1.06	4.34	2,150
Nov. 21	A. I. McNaughton	1,915	215	1,100	0.69	2.45	820
1917							
Jan. 22	E. R. Archibald	1,055	210	1,580	0.33		520

Under no cover.

Daily Gauge Height and Discharge of Shuswap River at Enderby, for 1916.

(Drainage area, 1,650 square miles.)

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							3 65	1,620	5 60	3,400	7 90	5,870	
3							3 75	1,700	5 80	3,600	8 00	5,080	
4							3 85	1,780	6 10	3,900	8 00	5,980	
5							3 85	1,780	6 55	4,370	8 25	6,260	
6							3 32	1,900	6 80	4,660	8 40	6,440	
7							3 32	2,060	7 25	5,150	8 50	6,560	
8							3 35	2,040	7 70	5,650	8 90	6,680	
9							3 50	2,060	7 55	5,810	8 70	6,800	
10							3 60	2,200	8 00	5,980	8 40	6,920	
11							3 60	2,240	8 00	5,980	8 90	7,040	
12							3 45	2,330	7 90	5,870	8 00	7,050	
13							3 30	2,330	7 80	5,760	9 00	7,160	
14							3 20	2,330	7 65	5,590	9 00	7,160	
15							3 05	2,330	7 50	5,430	9 25	7,460	
16							2 90	2,420	7 30	5,210	9 65	7,940	
17							2 90	1,100	4 60	2,420	7 15	5,040	
18							2 90	1,100	4 60	2,420	7 05	4,930	
19							2 95	1,130	4 70	2,510	7 05	4,930	
20							3 00	1,160	4 70	2,510	7 15	5,040	
21							3 05	1,160	1 60	2,420	7 30	5,210	
22							3 20	1,390	4 60	2,420	7 30	5,210	
23				745			3 30	1,370	4 60	2,420	7 35	5,270	
24				745			3 30	1,370	4 60	5,120	7 35	5,260	
25							3 32	1,390	1 55	2,380	7 35	5,260	
26							3 37	1,420	4 60	2,420	7 30	5,210	
27							3 37	1,420	4 80	2,600	7 4 330	12 95	11,850
28							3 47	1,490	5 10	2,900	7 5 3,480	13 10	12,170
29							3 50	1,510	5 50	3,300	7 75	5,700	
30							3 50	1,510	5 40	3,200	7 85	5,810	
31							3 50	1,510	5 50	3,300	7 90	5,870	
							3 55	1,550	7 90	5,870			

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	12 72	11,680	7 40	5,320	4 30	2,150	3 50	1,510	2 62	930	2 30	760
2	12 37	11,220	7 20	5,100	4 30	2,150	3 45	1,480	2 62	930	2 30	760
3	12 35	11,200	7 07	4,960	4 30	2,150	3 42	1,450	2 60	920	2 30	760
4	12 50	11,390	6 95	4,820	4 20	2,150	3 40	1,440	2 65	950	2 30	760
5	12 35	11,200	6 90	4,770	4 32	2,170	3 32	1,380	2 70	980	2 27	750
6	12 66	10,760	6 65	4,490	4 30	2,150	3 30	1,370	2 70	980	2 25	740
7	11 75	10,460	6 50	4,320	4 30	2,150	3 30	1,370	2 65	950	2 22	720
8	11 50	10,160	6 35	4,150	4 30	2,150	3 20	1,300	2 67	970	2 20	710
9	11 50	10,160	6 20	4,060	4 37	2,210	3 17	1,280	2 70	980	2 20	710
10	11 26	9,860	6 10	3,960	4 35	2,260	3 12	1,240	2 70	980	2 20	710
11	11 10	9,680	5 97	3,770	4 32	2,170	3 10	1,230	2 67	970	2 20	710
12	10 95	9,500	5 85	3,650	4 32	2,170	3 05	1,200	2 60	920	2 20	710
13	10 85	9,380	5 70	3,560	4 30	2,150	3 00	1,160	2 60	920	2 20	710
14	10 60	9,080	5 60	3,460	4 30	2,150	3 00	1,160	2 60	920	2 15	680
15	10 30	8,720	5 50	3,300	4 20	2,060	2 95	1,130	2 55	890	2 10	660
16	10 10	8,480	5 37	3,170	4 17	2,040	2 95	1,130	2 56	860	2 10	660
17	10 10	8,480	5 30	3,170	4 10	1,980	2 90	1,100	2 50	860	2 10	660
18	10 05	8,420	5 30	3,160	4 05	1,940	2 90	1,100	2 50	860	2 10	660
19	9 95	8,360	5 35	3,150	4 00	1,900	2 87	1,080	2 50	860	2 10	660
20	9 85	8,180	5 30	3,100	3 95	1,860	2 85	1,070	2 47	850	2 10	660
21	9 70	8,000	5 20	3,060	3 90	1,820	2 82	1,050	2 42	820	2 10	660
22	9 55	7,820	5 10	2,990	3 82	1,760	2 80	1,040	2 42	820	2 05	640
23	9 40	7,640	5 00	2,800	3 75	1,700	2 80	1,040	2 40	810	2 00	620
24	9 29	7,400	4 95	2,750	3 70	1,600	2 77	1,030	2 40	810	2 00	620
25	9 50	7,160	4 85	2,650	3 70	1,600	2 77	1,030	2 40	810	2 00	600
26	8 80	6,920	4 77	2,570	3 70	1,660	2 75	1,010	2 40	810	2 00	600
27	8 57	6,640	4 70	2,510	3 67	1,640	2 70	980	2 40	810	2 00	600
28	8 15	6,500	4 60	2,420	3 60	1,580	2 70	980	2 37	800	2 00	600
29	8 15	6,140	4 50	2,330	3 57	1,560	2 67	970	2 35	780	2 00	600
30	7 90	5,570	4 47	2,300	3 52	1,520	2 65	950	2 30	760	2 00	600
31	7 85	5,590	4 40	2,240	.....	.....	2 62	930	.....	.....	.....	600

SESSIONAL PAPER No. 25d

*Monthly Discharge of Shuswap River at Enderby, for 1916.*

(Drainage area, 1,650 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.....	3,300	1,620	2,360	1.43	1.60	140,000
May.....	5,870	3,400	5,220	3.16	3.61	320,000
June.....	12,330	5,870	9,100	5.51	6.15	542,000
July.....	11,680	5,590	8,770	5.31	6.12	539,000
August.....	5,320	2,240	3,470	2.10	2.42	213,000
September.....	2,210	1,520	1,950	1.18	1.32	116,000
October.....	1,510	930	1,170	0.70	0.81	72,000
November.....	980	760	890	0.54	0.60	53,000
December.....	760	600	670	0.46	0.53	41,200
The period.....	12,330	600	3,730	2.27	23.19	2,036,200

## SIMILKAMEEN RIVER (2054).

*Location.*—Near Ashnola; Water District No. 4.*Records Available.*—April 8 to December 31, 1914; January 1 to December 31, 1915; January 1 to December 31, 1916.*Drainage Area.*—Two thousand three hundred square miles.*Gauge.*—Standard vertical staff gauge, read daily. The datum of this gauge was lowered 1 foot on March 8, 1916, and all gauge readings prior to that date were increased by 1 foot.*Channel.*—Average width of channel at measuring section is about 200 feet. Channel is straight at the section. Bed of stream is very rocky, and water swift at all stages.*Discharge Measurements.*—Seven measurements taken during 1914, two in 1915, six in 1916 and one in January, 1917, agree very well and cover all stages up to discharge of 16,000 cubic feet per second.*Winter Flow.*—Short periods of ice disturbances in cold winters.*Accuracy.*—Results considered very reliable at all stages.*Discharge Measurements of Similkameen River at Ashnola, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
March 8	A. L. McNaughton	1,923	142	300	1.64	0.97	494
May 31	A. L. McNaughton	1,923	225	1,230	7.75	5.60	9,530
June 28	A. L. McNaughton	1,915	235	1,615	8.70	7.30	14,000
Aug. 3	A. L. McNaughton	1,923	161	585	3.63	2.50	2,120
Aug. 31	A. L. McNaughton	1,923	148	350	2.30	1.15	802
Nov. 17	C. G. Cline and A. L. McNaughton	1,913 1,915	190	207	1.80	0.50	374
1917							
Jan. 20	A. L. McNaughton	1,915	125	225	1.22	0.30	274

NOTE.—Gauge was lowered 1 foot on March 8, 1916. Gauge readings prior to that date have been increased by 1 foot to conform to the new datum.

## Daily Gauge Height and Discharge of Similkameen River at Ashnola, for 1916.

(Drainage area, 2,300 square miles.)

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 40	320	0 38	310	1 10	680	1 60	1,070	4 00	4,800	5 40	8,300
2	0 35	300	0 40	320	1 07	660	1 67	1,130	5 15	7,650	5 55	8,750
3	0 40	320		340	1 00	620	1 82	1,280	6 35	9,620	5 95	9,870
4		300		320	1 00	620	2 00	1,480	6 85	12,550	6 65	11,950
5		300	0 40	320	0 95	580	2 10	1,600	7 20	13,600	6 60	10,000
6		300		320	0 95	580	2 05	1,510	6 90	12,700	5 60	8,900
7		300		320	0 95	580	2 05	1,540	6 05	10,150	5 80	9,450
8		300		310	1 00	620	2 05	1,790	5 65	9,620	6 25	10,750
9		300		310	1 00	620	2 05	2,070	5 20	7,800	6 60	11,800
10		300	0 45	310	1 05	650	2 00	2,360	4 00	7,000	6 00	10,000
11		300	0 40	320	1 02	1,090	2 05	2,350	4 50	6,000	5 70	9,150
12		300	0 40	320	2 75	2,470	2 60	2,360	4 35	5,620	5 80	9,450
13		300	0 40	320	2 85	2,620	2 65	2,350	4 20	5,250	6 50	11,500
14	0 35	300	0 45	340	2 40	2,000	2 75	2,470	1 10	5,100	7 25	13,750
15	0 40	320	0 50	360	2 30	1,850	2 85	2,620	1 15	5,170	8 10	16,600
16	0 40	320	0 50	360	2 25	1,780	2 80	2,550	4 45	5,870	9 25	20,550
17	0 40	320	0 50	360	2 10	1,660	2 85	2,620	4 95	7,120	9 15	20,200
18	0 40	320	0 78	480	2 00	1,480	2 80	2,550	5 20	7,800	9 05	19,850
19	0 40	320	1 00	620	1 95	1,410	2 65	2,350	5 55	8,750	7 10	13,300
20		300	1 00	620	1 90	1,360	2 50	2,300	5 70	9,150	6 25	10,750
21		300	1 00	620	1 90	1,360	2 60	2,300	5 55	8,750	6 75	12,250
22		300	1 00	620	1 87	1,330	2 50	2,150	5 20	7,800	7 15	13,450
23		300	1 05	650	1 82	1,280	2 50	2,150	4 95	7,120	6 95	12,850
24		300	1 07	660	1 80	1,260	2 45	2,070	4 75	6,630	7 15	13,450
25		300	1 17	730	1 70	1,160	2 65	2,350	4 65	6,870	6 90	12,700
26		300	1 25	780	1 70	1,160	3 00	2,850	5 25	7,920	7 70	15,200
27		300	1 20	750	1 72	1,180	3 85	4,450	5 70	9,150	7 55	14,750
28		300	1 15	700	1 67	1,130	4 60	6,250	6 05	10,150	7 00	13,000
29		300	1 15	700	1 60	1,070	4 35	5,620	5 65	9,020	6 60	11,800
30		300			1 60	1,070	4 15	5,120	5 50	8,600	6 16	10,450
31	0 35	300			1 55	1,030			5 40	8,300		

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	5 75	9,300	2 55	2,220	1 12	690	0 80	490	0 60	400	0 52	370
2	6 05	10,150	2 55	2,220	1 10	680	0 80	490	0 55	380	0 45	350
3	6 20	10,600	2 50	2,150	1 37	890	0 75	460	0 62	410	0 47	350
4	5 75	9,300	2 45	2,070	1 75	1,210	0 75	490	0 65	420	0 50	360
5	5 15	8,450	2 35	1,920	1 60	1,070	0 70	440	0 72	450	0 55	380
6	5 20	7,800	2 25	1,790	1 52	1,010	0 70	440	0 80	490	0 47	350
7	5 15	7,550	2 20	1,720	1 32	850	0 70	440	0 72	450	0 37	310
8	5 30	8,050	2 15	1,660	1 27	810	0 70	440	0 70	440	0 30	280
9	5 50	8,600	2 10	1,600	1 17	730	0 70	440	0 70	440	0 37	310
10	5 20	7,800	2 10	1,600	1 15	710	0 65	420	0 79	440	0 40	320
11	4 96	7,000	2 05	1,540	1 12	690	0 65	420	0 65	420	0 65	330
12	4 85	6,870	1 95	1,420	1 07	660	0 65	420	0 60	400	0 52	370
13	4 75	6,620	1 85	1,310	1 02	630	0 65	420	0 60	400	0 60	400
14	4 40	5,750	1 80	1,260	1 00	620	0 65	420	0 50	360	0 50	360
15	4 10	5,000	1 80	1,260	0 92	560	0 65	420	0 45	340	0 35	300
16	4 35	5,620	1 85	1,310	0 90	550	0 65	420	0 40	320	0 42	330
17	4 35	5,620	1 80	1,260	0 90	550	0 65	420	0 40	320	0 50	360
18	4 35	5,620	1 75	1,210	0 87	530	0 65	420	0 42	330	0 50	360
19	4 00	4,800	1 75	1,210	0 82	500	0 65	420	0 45	340	0 50	360
20	3 80	4,350	1 70	1,160	0 80	490	0 60	400	0 45	340	0 45	340
21	3 70	4,150	1 70	1,160	0 80	490	0 60	400	0 52	370	0 45	340
22	3 50	3,750	1 60	1,070	0 80	490	0 60	400	0 55	380	0 52	370
23	3 35	3,470	1 45	950	0 75	460	0 60	400	0 57	390	0 55	380
24	3 25	3,300	1 40	910	1 02	630	0 60	400	0 60	400	0 50	360
25	3 20	3,200	1 35	870	0 90	550	0 60	400	0 60	400	0 45	340
26	3 05	2,920	1 30	830	0 85	520	0 55	380	0 62	410	0 40	320
27	3 10	3,050	1 27	800	0 95	580	0 55	380	0 70	440	0 32	290
28	3 15	3,120	1 25	790	0 95	580	0 55	380	0 65	420	0 30	280
29	2 95	2,770	1 22	770	0 85	520	0 55	380	0 60	400	0 22	255
30	2 75	2,470	1 20	750	0 80	490	0 50	360	0 57	390	0 32	290
31	2 70	2,400	1 15	710			0 67	430			0 37	310



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## Monthly Discharge of Similkameen River at Ashnola, for 1916.

(Drainage area, 2,500 square miles.)

Month	DISCHARGE IN SECS.—FEET			R. S. OF.		
	Maximum	Minimum	Mean	Per square Mile	Inches on Drainage Area	Total in Acre-feet
January	320	300	300	0.13	0.15	18,400
February	790	310	465	0.29	0.22	26,700
March	2,620	580	1,190	0.52	0.60	73,200
April	6,250	1,050	2,520	1.10	1.23	150,000
May	13,600	4,800	8,140	3.34	4.68	500,000
June	26,550	8,500	12,400	5.43	6.66	743,000
July	16,600	2,400	5,790	2.52	2.90	356,000
August	2,220	710	1,740	0.58	0.67	82,400
September	1,210	460	660	0.29	0.32	39,300
October	520	400	440	0.19	0.22	27,000
November	190	320	395	0.17	0.19	23,500
December	380	255	330	0.14	0.16	20,300
The year	26,550	255	2,840	1.23	16.80	2,039,800

## SOUTH SIMILKAMEEN RIVER (2063).

*Location.*— At Princeton; Water District No. 4.*Records Available.*— May 14 to December 19, 1914; March 22 to November 30, 1915; March 27 to November 12, 1916.*Drainage Area.*— Four hundred and forty square miles.*Gauge.*— Chain gauge situated on highway bridge; read daily.*Channel.*— Bed of stream of gravel, with a few boulders. Average width at measuring section, about 170 feet.*Discharge Measurements.*— Change of section occurred during freshet on June 14. Five measurements taken subsequent to this date cover range of stage fairly well except at high water.*Accuracy.*— Results considered fairly reliable except at highest stages.

## Discharge Measurements of South Similkameen River at Princeton, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
June 27	A. I. McNaughton	1915	217	763	8.00	5.60	6080
July 15	A. I. McNaughton	1915	206	484	4.40	4.00	2150
Aug. 4	A. I. McNaughton	1923	202	310	3.00	2.92	930
Aug. 30	A. I. McNaughton	1923	95	155	2.30	2.25	356
Nov. 16	A. I. McNaughton	1915	73	86	0.75	1.70	66
1917							
Jan. 12	A. I. McNaughton	1915	65	76	1.43		109

DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1918

Daily Gauge Height and Discharge of South Similkameen River at Princeton, for 1916.

(Drainage area, 440 square miles.)

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 90	4,040	3 15	1,110	2 30	410	1 90	170	1 90	170	1 90	170
2	5 00	4,300	3 10	1,060	2 40	480	1 90	170	1 90	170	1 90	170
3	5 30	5,150	3 00	960	2 55	580	1 90	170	1 90	170	1 90	170
4	4 95	4,170	2 95	910	2 50	550	1 90	170	1 90	170	1 90	170
5	4 90	4,040	2 90	860	2 40	480	1 90	170	1 90	170	1 90	170
6	4 60	3,320	2 90	860	2 30	410	1 90	170	1 90	170	1 90	170
7	4 70	3,550	2 85	820	2 20	340	1 90	170	1 90	170	1 90	170
8	4 90	4,040	2 85	820	2 20	340	1 90	170	1 85	145	1 85	145
9	5 20	4,850	2 80	780	2 15	310	1 85	145	1 85	145	1 85	145
10	4 65	3,410	2 80	780	2 15	310	1 85	145	1 85	145	1 85	145
11	4 50	3,100	2 75	740	2 10	280	1 85	145	1 85	145	1 85	145
12	4 50	3,100	2 70	700	2 10	280	1 85	145	1 85	145	1 85	145
13	4 30	2,710	2 70	700	2 10	280	1 85	145	1 85	145	1 85	145
14	4 00	2,200	2 70	700	2 05	255	1 85	145	1 85	145	1 85	145
15	4 00	2,200	2 65	660	2 00	225	1 85	145	1 85	145	1 85	145
16	4 10	2,360	2 60	620	2 00	225	1 85	145	1 7	65	1 7	65
17	4 50	3,100	2 55	580	1 95	200	1 85	145	Meters	65	1 85	145
18	4 00	2,200	2 50	550	1 95	200	1 85	145	1 85	145	1 85	145
19	4 00	2,200	2 45	520	1 95	200	1 85	145	1 85	145	1 85	145
20	3 85	1,980	2 45	520	2 00	225	1 80	210	1 80	210	1 80	210
21	3 75	1,830	2 40	480	2 00	225	1 80	210	1 80	210	1 80	210
22	3 75	1,830	2 40	480	2 00	225	1 80	210	1 80	210	1 80	210
23	3 60	1,630	2 35	445	2 00	225	1 80	210	1 80	210	1 80	210
24	3 54	1,440	2 35	445	2 10	280	1 80	210	1 80	210	1 80	210
25	3 40	1,380	2 35	445	2 10	280	1 80	210	1 80	210	1 80	210
26	3 30	1,270	2 30	410	2 05	255	1 80	210	1 80	210	1 80	210
27	3 20	1,160	2 30	410	2 05	255	1 80	210	1 80	210	1 80	210
28	3 20	1,160	2 25	375	2 00	225	1 90	170	1 90	170	1 90	170
29	3 15	1,110	2 25	375	2 00	225	1 90	170	1 90	170	1 90	170
30	3 15	1,110	2 25	375	1 95	200	1 90	170	1 90	170	1 90	170
31	3 10	1,060	2 20	340	1 95	200	1 90	170	1 90	170	1 90	170

Ice conditions probably 100 ft or less

meter 200

Change in section 1,630

Meters

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*Monthly Discharge of South Similkameen River at Princeton, for 1916.*

(Drainage area, 410 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	2,270	310	820	1.86	2.07	4,000
May	6,700	1,550	3,450	7.84	9.04	212,000
June	11,340	3,530	6,340	14.41	16.08	377,000
July	5,150	1,960	2,610	5.53	6.84	160,000
August	1,110	340	610	1.45	1.67	39,000
September	580	200	300	0.68	0.76	18,000
October	170	120	150	0.31	0.39	9,200
November	170	65	115	0.26	0.29	6,800
December	100	100	100	0.23	0.26	6,150
The period	11,340	65	1,610	3.67	37.40	877,150

## SOUTH THOMPSON RIVER AT CHASE (2042).

*Location.*—Section 35, township 2, range 13, west 6th meridian, at outlet of Little Shuswap lake at Chase.

*Records Available.*—April 22 to July 31, 1911; April 10 to December 21, 1912; April 12 to December 31, 1913; January 1 to 27, March 24 to December 31, 1914; January 1 to December 31, 1915; January 1 to December 31, 1916.

*Drainage Area.*—Seven thousand square miles.

*Gauge.*—Vertical staff gauge for open water and chain gauge for winter use; daily readings.

*Channel.*—The measuring section is below Little Shuswap lake and above the Chase riffle.

*Discharge Measurements.*—Four meter measurements, made in 1916, cover practically the whole range of stage and agree very well with seven measurements made in 1912-15.

*Winter Flow.*—There is very little ice at the Chase riffle, which forms the control for the gauging station, so that though some ice forms at the gauging station the gauge height is not affected by it.

*Accuracy.*—The result obtained should be quite reliable and accurate at all stages and at all times of the year.



SOUTH THOMPSON RIVER. Idle land, suitable for irrigation by pumping.

*Discharge Measurements of Thompson River at Chase, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. Ft.	Ft. per sec.	Feet.	Sec. Ft.
Feb. 12	Cline and McNaughton	1,055	505	6,440	0.43	2.60	2,800
July 22	A. L. McNaughton	1,915	490	7,366	4.03	10.70	23,700
Aug. 14	F. R. Archibald	1,055	450	5,883	2.93	7.51	17,200
Oct. 23	A. L. McNaughton	1,915	415	4,254	1.10	3.55	1,690

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## Daily Gauge Height and Discharge of South Thompson River at Chase, for 1916.

Discharge given in cubic feet per second.

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 10	4,100	2 60	2,800	2 60	2,800	3 10	2,850	5 05	8,850	7 82	18,300
2	3 30	4,100	2 60	2,800	2 60	2,800	3 10	3,650	5 15	9,150	7 87	18,500
3	1 30	4,100	2 60	2,800	2 60	2,800	3 20	3,850	5 30	9,600	7 92	18,700
4	2 80	3,050	2 60	2,800	2 60	2,800	3 20	3,850	5 45	10,150	8 02	19,100
5	2 80	3,050	2 60	2,800	2 60	2,800	3 30	4,100	5 65	10,750	8 15	19,600
6	2 80	3,050	2 60	2,800	2 60	2,800	3 30	4,100	5 95	11,750	8 27	20,100
7	2 80	3,050	2 60	2,800	2 60	2,800	3 40	4,350	6 15	12,350	8 30	20,200
8	2 80	3,050	2 60	2,800	2 60	2,800	3 40	4,350	6 47	13,420	8 35	20,400
9	2 80	3,050	2 60	2,800	2 60	2,800	3 50	4,600	6 57	13,800	8 37	20,500
10	2 80	3,050	2 60	2,800	2 60	2,800	3 50	4,600	6 72	14,300	8 40	20,600
11	2 80	3,050	2 60	2,800	2 60	2,800	3 70	5,100	6 82	14,880	8 40	20,600
12	2 80	3,050	2 60	2,800	2 60	2,800	3 70	5,100	6 87	14,810	8 52	21,100
13	2 80	3,050	2 60	2,800	2 60	2,800	3 80	5,350	6 95	15,100	8 55	21,200
14	2 80	3,050	2 60	2,800	2 60	2,800	3 85	5,180	7 00	15,000	8 62	21,500
15	2 80	3,050	2 60	2,800	2 60	2,800	3 90	5,600	7 00	15,300	8 77	22,100
16	2 80	3,050	2 60	2,800	2 60	2,800	3 95	5,750	7 00	15,300	8 92	22,700
17	2 80	3,050	2 60	2,800	2 60	2,800	4 00	5,900	7 00	15,300	9 25	24,000
18	2 80	3,050	2 60	2,800	2 70	2,900	4 10	6,100	7 05	15,500	9 55	25,200
19	2 80	3,050	2 60	2,800	2 70	2,900	4 20	6,400	7 10	15,700	9 87	26,500
20	2 80	3,050	2 60	2,800	2 75	2,900	4 30	6,700	7 17	15,940	10 17	27,700
21	2 80	3,050	2 60	2,800	2 70	2,900	4 40	6,700	7 22	16,160	10 40	28,700
22	2 60	2,800	2 60	2,800	2 80	3,050	4 40	7,000	7 27	16,300	10 70	29,900
23	2 60	2,800	2 60	2,800	2 80	3,050	4 40	7,000	7 30	16,400	10 90	30,800
24	2 60	2,800	2 60	2,800	2 80	3,050	4 40	7,000	7 30	16,400	11 07	31,500
25	2 60	2,800	2 60	2,800	2 90	3,250	4 40	7,000	7 30	16,400	11 27	32,400
26	2 60	2,800	2 60	2,800	2 90	3,250	4 40	7,000	7 37	16,640	11 42	33,020
27	2 60	2,800	2 60	2,800	2 90	3,250	4 50	7,200	7 42	16,800	11 60	33,800
28	2 60	2,800	2 60	2,800	3 00	3,450	4 60	7,500	7 52	17,200	11 77	34,560
29	2 60	2,800	2 60	2,800	3 00	3,450	4 75	7,950	7 62	17,600	11 95	35,450
30	2 60	2,800	2 60	2,800	3 00	3,450	4 95	8,550	7 72	17,980	12 00	35,600
31	2 60	2,800	2 60	2,800	3 10	3,650	5 05	9,150	7 75	18,050	.....	.....
	July		August		September		October		November		December	
1	12 00	35,600	9 42	24,700	7 75	14,950	4 40	7,000	3 40	4,100	2 80	3,050
2	11 10	35,100	9 27	24,100	7 70	10,900	4 10	7,000	3 30	4,100	2 80	3,050
3	11 50	35,100	9 10	23,100	5 65	10,750	4 35	6,850	3 30	4,100	2 80	3,050
4	12 05	35,800	8 87	22,900	5 55	10,450	4 30	6,700	3 30	4,100	2 80	3,050
5	12 12	36,120	8 85	22,400	5 50	10,300	4 25	6,550	3 30	4,100	2 70	2,900
6	12 11	36,000	8 65	21,600	5 40	10,000	4 15	6,450	3 20	3,850	2 70	2,900
7	12 65	35,800	8 52	21,100	5 40	10,000	4 05	6,000	3 20	3,850	2 70	2,900
8	11 95	35,350	8 40	20,600	5 30	9,600	4 00	5,900	3 20	3,850	2 70	2,900
9	11 96	35,100	8 22	19,600	5 20	9,300	4 00	5,900	3 20	3,850	2 70	2,900
10	11 82	34,800	8 07	19,300	5 10	9,600	3 90	5,600	3 10	3,650	2 60	2,800
11	11 77	34,560	7 92	18,700	5 10	9,000	3 90	5,600	3 10	3,650	2 60	2,800
12	11 70	34,200	7 80	18,200	5 10	9,000	3 80	5,350	3 10	3,650	2 60	2,800
13	11 60	33,800	7 65	17,700	5 00	8,700	3 80	5,350	3 10	3,650	2 60	2,800
14	11 50	33,400	7 52	17,200	5 00	8,700	3 80	5,350	3 10	3,650	2 60	2,800
15	11 37	32,800	7 42	16,800	5 00	8,700	3 70	5,100	3 10	3,450	2 60	2,800
16	11 27	32,480	7 22	16,100	4 90	8,400	3 70	5,100	3 00	3,450	2 60	2,800
17	11 17	31,860	7 12	15,780	4 90	8,400	3 70	5,100	3 00	3,450	2 55	2,750
18	11 07	31,600	7 02	15,400	4 80	8,100	3 70	5,100	2 90	3,250	2 50	2,700
19	11 00	31,200	6 92	15,000	4 80	8,100	3 70	5,100	2 90	3,250	2 50	2,700
20	10 92	30,900	6 85	14,750	4 80	8,100	3 70	5,100	2 90	3,250	2 50	2,700
21	10 82	30,500	6 77	14,500	4 70	7,800	3 70	5,100	2 90	3,250	2 50	2,700
22	10 72	30,020	6 67	14,130	4 65	7,650	3 60	4,850	2 90	3,250	2 50	2,700
23	10 62	29,600	6 57	13,800	4 60	7,500	3 60	4,850	2 90	3,250	2 50	2,700
24	10 52	29,200	6 47	13,430	4 60	7,500	3 55	4,720	2 90	3,250	2 50	2,700
25	10 42	28,800	6 40	13,200	4 50	7,200	3 50	4,600	2 90	3,250	2 50	2,700
26	10 32	28,400	6 30	12,900	4 50	7,200	3 50	4,600	2 90	3,250	2 40	2,600
27	10 20	27,800	6 25	12,700	4 50	7,200	3 50	4,600	2 90	3,250	2 40	2,600
28	10 05	27,200	6 20	12,500	4 45	7,100	3 40	4,350	2 80	3,050	2 40	2,600
29	9 85	26,400	6 07	12,130	4 40	7,000	3 40	4,350	2 80	3,050	2 40	2,600
30	9 67	25,700	6 00	11,900	4 40	7,000	3 40	4,350	2 80	3,050	2 40	2,600
31	9 55	25,200	5 10	11,600	.....	.....	3 40	4,350	.....	.....	2 40	2,600

*Monthly Discharge of South Thompson River at Chase, for 1916.*

(Drainage area, 7,000 square miles.)

MONTH	DISCHARGE IN SECOND FEET				ROUNDS	
	Maximum	Minimum	Mean	Per square Mile	Depth in Inches on Drainage Area	Total in Acre-feet <sup>1</sup>
January	4,100	2,800	3,070	0.44	0.54	189,000
February	2,800	2,800	2,800	0.40	0.43	161,000
March	3,650	2,800	2,970	0.42	0.48	183,000
April	4,550	3,650	5,720	0.82	0.91	310,000
May	18,050	8,850	14,610	2.10	2.42	898,000
June	35,600	18,300	25,140	3.59	4.00	1,496,000
July	36,120	25,200	31,940	4.56	5.26	1,964,000
August	24,700	11,600	17,050	2.44	2.81	1,048,000
September	11,050	7,000	8,660	1.24	1.38	515,000
October	7,000	4,350	5,380	0.77	0.89	331,000
November	4,100	3,050	3,540	0.50	0.56	211,000
December	3,050	2,600	2,800	0.40	0.46	172,000
The year	36,120	2,600	10,300	1.47	20.68	7,508,000

**TULAMEEN RIVER (2062).**

*Location.*—At Coalmont; Water District No. 4.

*Records Available.*—May 15 to October 3, 1914; April 11 to December 31, 1915; February 17 to December 31, 1916.

*Drainage Area.*—Four hundred square miles.

*Gauge.*—Chain gauge for low water. Steel cable and 3-pound sash weight on downstream side of bridge at measuring section. Standard staff gauge on right hand abutment for high water. Readings taken daily.

*Channel.*—Straight for about 700 feet at section. Bed of stream of clean gravel. Average width about 100 feet.

*Discharge Measurements.*—Change of section occurred during freshet on May 5, 1916. Six measurements taken during 1916, after May 5, and one measurement in January 1917 agree very well and cover all stages except at high water.

*Accuracy.*—Results should be fairly reliable except for highest stages.

*Discharge Measurements of Tulameen River at Coalmont, for 1916.*

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sec. ft.
1916							
May 29	A. L. McNaughton	1,915	120	471	5.80	5.85	2,746
June 27	A. L. McNaughton	1,915	120	440	6.90	5.70	3,020
July 14	A. L. McNaughton	1,915	120	274	3.71	3.95	1,020
Aug. 2	A. L. McNaughton	1,923	85	177	2.38	3.05	422
Aug. 31	A. L. McNaughton	1,923	55	74	1.30	2.00	95
Nov. 16	C. G. Cline	1,913	48	76	1.32	2.20	100
1917							
Jan. 11	A. L. McNaughton	1,915	46	67	1.13	1.00	76

<sup>1</sup>Ice.



*Monthly Discharge of Tulameen River at Coalmont, for 1916.*

(Drainage area, 400 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET				RIS-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-feet.
March	1,690	200	580	1.45	1.67	36,000
April	1,960	570	1,020	2.55	2.84	60,000
May	3,174	1,740	2,880	7.20	8.30	177,000
June	7,859	1,900	3,480	8.70	9.71	207,000
July	2,050	480	1,130	2.82	3.25	69,000
August	435	110	250	0.62	0.72	15,400
September	170	30	93	0.23	0.26	5,500
October	170	50	72	0.18	0.21	4,200
November	1,020	65	175	0.44	0.49	10,400
December	225	75	96	0.24	0.28	5,800
The period	7,859	30	980	2.44	27.73	591,100

ASHCROFT DISTRICT.

BARNES CREEK (2001).

*Location.* Section 23, township 20, range 24, west of 6th meridian, just above Barnes lake.

*Records Available.*— April 26 to September 14, 1912; May 1 to December 14, 1913; April 1 to December 8, 1914; April 1 to September 30, 1915; April 1 to October 30, 1916.

*Drainage Area.*—Thirty-eight square miles.

*Gauge.*—Standard vertical staff gauge; daily readings.

*Channel.* Rocky, permanent. Two channels at very low water.

*Discharge Measurements.*—Seven meter measurements during 1915 and 1916 cover all stages except very high water, and agree fairly well.

*Accuracy.*—Fairly good for discharges below 20 cubic feet per second. A comparison with previous year's results seems to indicate a small change in the section since the station was first established.

*Discharge Measurements of Barnes Creek above Barnes Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 9	A. J. McNaughton	1525	11.0	7.7	1.57	0.65	12.0
June 14	A. J. McNaughton	1923	11.4	8.8	2.24	0.85	19.7
Dec. 8	F. R. Archibald	1055	8.5	3.4	0.83	0.40	2.8



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Daily Gauge Height and Discharge of Barnes Creek above Barnes Lake, for 1916.

(Drainage area, 38 square miles.)

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 40	2 8	0 90	22 0	1 00	27 0
2							0 40	2 8	0 90	22 0	1 00	27 0
3							0 40	2 8	1 00	27 0	1 00	27 0
4							0 40	2 8	0 97	25 0	1 00	27 0
5							0 40	2 8	0 90	22 0	1 00	27 0
6							0 40	2 8	0 90	22 0	0 95	24 0
7							0 45	4 0	0 82	18 2	0 95	24 0
8							0 45	3 0	0 73	14 0	0 90	22 0
9							0 45	4 0	0 67	11 5	0 87	20 0
10							0 45	4 0	0 62	9 5	0 85	19 6
11							0 50	5 2	0 58	8 0	0 85	19 6
12							0 50	5 2	0 53	6 2	0 80	17 2
13							0 50	5 2	0 50	5 2	0 80	17 2
14							0 50	5 2	0 50	5 2	0 80	17 2
15							0 50	5 2	0 52	5 9	0 85	19 6
16							0 50	5 2	0 58	8 0	0 85	19 6
17							0 50	5 2	0 63	9 0	0 85	19 6
18							0 50	5 2	0 68	11 0	0 85	19 6
19							0 50	5 2	0 70	12 7	0 80	17 2
20							0 50	5 2	0 70	12 7	0 80	17 2
21							0 50	5 2	0 70	12 7	0 80	17 2
22							0 50	5 2	0 70	12 7	0 80	17 2
23							0 50	5 2	0 70	12 7	0 80	17 2
24							0 50	5 2	0 70	12 7	0 80	17 2
25							0 50	5 2	0 72	13 6	0 80	17 2
26							0 50	5 2	0 70	12 7	0 80	17 2
27							0 70	12 7	0 78	16 3	0 87	20 0
28							0 70	12 7	0 80	17 2	0 90	22 0
29							0 75	15 0	0 83	18 6	0 95	24 0
30							0 82	18 2	0 87	20 0	1 05	29 0
31							0 82	18 2	0 90	22 0	1 10	32 0
									0 93	23 0		

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 00	27 0	0 70	12 7	0 40	2 8	0 40	2 8				
2	1 00	27 0	0 65	10 7	0 40	2 8	0 40	2 8				
3	1 00	27 0	0 65	10 7	0 40	2 8	0 40	2 8				
4	0 95	24 0	0 60	8 7	0 40	2 8	0 40	2 8				
5	0 90	22 0	0 60	8 7	0 40	2 8	0 40	2 8				
6	0 90	22 0	0 60	8 7	0 40	2 8	0 40	2 8				
7	0 90	22 0	0 60	8 7	0 43	4 5	0 40	2 8				
8	0 90	22 0	0 60	8 7	0 17	4 5	0 40	2 8				
9	0 90	22 0	0 55	6 0	0 50	5 2	0 40	2 8				
10	0 83	18 6	0 55	6 0	0 50	5 2	0 40	2 8				
11	0 72	13 6	0 50	5 2	0 45	4 0	0 40	2 8				
12	0 68	11 9	0 50	5 2	0 45	4 0	0 40	2 8				
13	0 62	9 5	0 50	5 2	0 40	2 8	0 40	2 8				
14	0 60	8 7	0 50	5 2	0 40	2 8	0 40	2 8				
15	0 60	8 7	0 50	5 2	0 40	2 8	0 40	2 8				
16	0 75	15 0	0 50	5 2	0 40	2 8	0 40	2 8				
17	0 95	24 0	0 50	5 2	0 40	2 8	0 45	4 0				
18	1 10	32 0	0 50	5 2	0 40	2 8	0 45	4 0				
19	1 05	29 0	0 50	5 2	0 40	2 8	0 45	4 0				
20	0 95	24 0	0 50	5 2	0 40	2 8	0 45	4 0				
21	0 85	19 6	0 45	4 0	0 40	2 8	0 45	4 0				
22	0 70	12 7	0 45	4 0	0 40	2 8	0 45	4 0				
23	0 70	12 7	0 45	4 0	0 40	2 8	0 45	4 0				
24	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
25	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
26	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
27	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
28	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
29	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
30	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				
31	0 70	12 7	0 40	2 8	0 40	2 8	0 45	4 0				

*Monthly Discharge of Barnes Creek above Barnes Lake, for 1916.*

(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	18.2	2.8	5.9	0.16	0.15	350
May	27.0	5.2	14.9	0.39	0.45	920
June	32.0	17.2	21.4	0.56	0.62	1,270
July	32.0	8.7	18.0	0.47	0.54	1,110
August	12.7	2.8	5.7	0.15	0.17	350
September	5.2	2.8	3.1	0.08	0.09	185
October	4.0	2.8	3.4	0.09	0.10	210
The period	32.0	2.8	10.3	0.27	2.15	4,395

BEAVER CREEK (2089).

*Location.*—Five miles above Nicola lake; Water District No. 3.

*Records Available.*—June 12 to September 30, 1915; April 6 to November 15, 1916.

*Drainage Area.*—Eighty-three square miles.

*Gauge.*—Original vertical staff gauge was washed out on May 5, 1916. It was replaced by a standard cable gauge on May 27, 1916. On July 10, 1916 a subsidiary gauge was installed near the gauge reader's house. Readings were taken daily on this gauge and referred to the main gauge, which was read only about three times a week after that date.

*Channel.*—Rocks and gravel; water swift at high stages; control permanent.

*Discharge Measurements.*—Six meter measurements during 1915 and 1916 agree very well and cover practically all stages for which there are gauge readings.

*Accuracy.*—The results given should be fairly accurate. Unfortunately the gauge was washed out in the May freshet, and there is no way of determining the flow for the greater part of that month. The results for 1915 have been completed and should be quite reliable, as there does not seem to have been any change in the control.

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## Daily Gauge Height and Discharge of Beaver Creek 5 Miles above Nicola Lake, for 1915.

(Drainage area, 83 square miles.)

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			1 70	53								
2			1 60	41	1 15	11 0	0 90	4 5				
3			1 60	41	1 15	11 0	0 87	4 0				
4			1 50	37	1 10	9 5	0 85	3 5				
5			1 45	28	1 05	8 0	0 82	3 0				
6			1 40	24	1 00	6 5	0 85	3 5				
7			1 35	21	0 95	5 5	0 85	3 5				
8			1 30	18	1 00	6 5	0 90	4 5				
9			1 45	28	1 00	6 5	0 87	4 0				
10			1 40	24	0 97	6 0	0 85	3 5				
11			1 30	18	1 00	6 5	0 85	3 5				
12	1 25	16	1 30	18	0 97	6 0	0 85	3 5				
13	1 32	19	1 25	16	0 95	5 5	0 87	4 0				
14	1 30	18	1 30	18	0 92	5 0	0 87	4 0				
15	1 30	18	1 30	18	0 90	4 5	0 85	3 5				
16	1 25	16	1 30	18	0 90	4 5	0 85	3 5				
17	1 55	36	1 30	18	0 90	4 5	0 82	3 0				
18	1 80	66	1 30	18	0 87	4 0	0 85	3 5				
19	1 77	63	1 25	16	0 99	4 5	0 82	3 0				
20	1 85	73	1 20	13	0 87	4 0	0 85	3 5				
21	1 65	47	1 15	11	0 87	4 0	0 82	3 0				
22	1 65	47	1 10	9	0 87	4 0	0 90	4 5				
23	1 60	41	1 10	9	0 87	4 0	0 87	4 0				
24	1 65	47	1 07	9	0 85	3 5	0 85	3 5				
25	1 70	53	1 05	8	0 90	4 5	0 85	3 5				
26	1 75	60	1 30	18	0 87	4 0	0 82	3 0				
27	2 00	96	1 10	9	0 85	3 5	0 82	3 0				
28	2 00	96	1 15	11	0 85	3 5	0 80	3 0				
29	1 90	80	1 10	9	0 85	3 5	0 80	3 0				
30	1 80	66	1 10	9	0 85	3 5	0 82	3 0				
31			1 20	13	0 85	3 5						

*Monthly Discharge of Beaver Creek 5 Miles above Nicola Lake, for 1915.*

(Drainage area, 83 square miles.)

MONTH	DISCHARGE IN SECONDS-FEET.				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
July	53.0	8.0	19.0	0.23	0.26	1,170
August	12.0	3.5	5.6	0.07	0.08	345
September	5.0	3.0	3.6	0.04	0.04	219
The period	53.0	3.0	9.4	0.11	0.38	1,725

*Discharge Measurements of Beaver Creek 5 Miles above Mouth, for 1916.*

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Fect.	Sq. ft.	Ft. per sec.	Fect.	Sec.-ft.
May 27	A. E. McNaughton	1923				2.15	122.0
June 22	C. G. Cline	1055	19.0	17.1	1.20	1.35	29.3
Sept 24	F. R. Archibald	1913	14.0	7.8	0.40	0.86	3.1

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Daily Gauge Height and Discharge of Beaver Creek 5 Miles above Nicola Lake, for 1916.

(Drainage area, 83 square miles.)

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								8.0	2.15	120	2.05	105	
2								8.2	2.40	165	2.00	96	
3								8.5	2.65	210	1.95	88	
4								8.7	3.20	315	2.00	96	
5								9.0		Gauge Went out	2.10	115	
6							1.05	7.9				80	
7							1.10	9.4				80	
8							1.10	9.1				73	
9							1.15	11.3				60	
10							1.05	7.9				52	
11							1.10	9.4				47	
12							1.15	11.3				47	
13							1.12	10.2				41	
14							1.20	13.2				41	
15							1.20	13.2				36	
16							1.20	13.2				32	
17							1.25	15.6				28	
18							1.25	15.6				28	
19							1.37	16.6				24	
20							1.25	15.6				24	
21							1.27	16.6				24	
22							1.32	19.2				21	
23							1.32	19.2				13	
24							1.15	15.6				13	
25							1.55	36.0			Gauge Replaced	1.20	18
26							1.67	47.0			May 27	1.40	24
27							1.75	60.0			2.10	115	18
28							1.85	72.0			2.19	115	32
29							1.97	91.0			2.15	120	30
30							2.15	195.0			2.10	115	28
31											2.15	120	

	July.		August.		September.		October.		November.		December.	
1	1.45	28.0	0.98	6.0	0.92	4.9	0.87	4.0	0.95	5.5		
2	1.40	24.0	0.98	6.0	0.92	4.9	0.89	4.5	0.97	5.8		
3	1.35	21.0	1.07	8.5	1.05	6.4	0.86	4.5	1.01	9.4		
4	1.30	18.0	0.98	6.0	0.97	5.8	0.85	4.0	0.97	5.8		
5	1.30	18.0	0.98	6.0	1.20	13.2	0.85	4.0	0.95	5.5		
6	1.25	15.6	0.98	6.0	1.08	8.8	0.85	4.0	1.00	11.4		
7	1.20	13.2	1.09	7.9	0.95	5.5	0.84	4.0	1.05	17.0		
8	1.15	11.3	0.97	5.8	0.94	5.1	0.82	3.5	0.97	11.4		
9	1.15	11.3	1.00	6.4	0.93	5.1	0.85	4.0	0.97	11.8		
10	1.06	8.2	0.97	5.1	0.95	5.1	0.80	3.5	0.95	11.1		
11	1.15	11.3	0.93	5.1	0.90	4.5	0.90	4.5	0.97	5.8		
12	1.08	8.8	1.09	6.4	0.89	4.5	0.89	4.0	0.97	11.8		
13	1.10	9.4	0.95	5.5	0.90	4.5	0.87	4.0	0.97	11.8		
14	1.02	7.0	0.93	5.1	0.87	4.0	0.87	4.0	0.97	11.8		
15	1.04	7.6	0.93	5.1	0.89	4.4	0.85	3.7	0.94	11.8		
16	1.08	8.8	0.94	5.1	0.89	4.4	0.85	3.7				
17	1.12	10.2	0.95	5.5	0.85	3.7	1.02	4.9				
18	1.20	13.2	0.97	5.8	0.89	4.4	0.93	5.1				
19	1.14	10.9	0.95	5.5	0.89	4.4	1.03	5.1				
20	1.17	12.1	0.95	5.5	0.85	3.7	1.03	7.9				
21	1.10	9.4	0.95	5.5	0.89	4.4	0.95	5.1				
22	1.05	8.2	0.93	5.1	0.89	4.4	0.97	4.9				
23	1.15	11.2	0.93	5.1	0.89	4.4	0.93	5.1				
24	1.04	7.6	0.92	4.9	0.87	3.9	0.84	3.7				
25	1.10	9.4	0.92	4.9	1.00	6.4	0.90	4.5				
26	1.02	7.0	0.93	5.1	1.00	6.4	0.90	4.5				
27	1.10	9.4	1.00	6.1	0.95	5.5	0.90	4.5				
28	1.02	7.0	0.93	5.1	0.95	5.5	0.87	4.0				
29	1.00	6.4	0.93	5.1	0.89	4.4	0.80	4.4				
30	1.00	6.4	0.93	5.1	0.90	4.5	0.87	4.0				
31	1.00	6.4	0.95	5.5			0.90	4.5				

*Monthly Discharge of Beaver Creek 5 Miles above Nicola Lake, for 1916.*

(Drainage area, 83 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 .....	105.0	7.9	24.0	0.29	0.32	1,430
May .....					0.64	2,800
June .....	115.0	13.2	47.0	0.57	0.15	710
July .....	28.0	6.4	11.5	0.13	0.08	350
August .....	8.5	4.9	5.7	0.07	0.07	310
September .....	13.2	3.7	5.2	0.06	0.06	270
October .....	7.9	3.3	4.4	0.05		
The period .....						

## 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; February 20 to December 25, 1915; February 1 to December 31, 1916.*Drainage Area.*—Two thousand square miles.*Gauge.*—Standard vertical staff gauge; read daily.*Channel.*—Straight at measuring section; average width 50 feet. Velocity high.*Discharge Measurements.*—Change of section required a new curve and rating table for 1916. Four measurements taken during 1916 agree fairly well. During the latter part of December, when the stream was under ice cover, the flow was obtained by interpolation between the open-water flow of December 5 and a meter measurement in January 1917.*Accuracy.*—Not very high, as not quite a sufficient number of measurements were taken to give a perfectly satisfactory rating.*Discharge Measurements of Bonaparte River near Ashcroft, for 1916.*

Date	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
May 13	A. L. McNaughton .....	1,923	31.0	137	2.57	2.28	354
June 13	A. L. McNaughton .....	1,923	55.0	176	5.20	3.55	915
Aug. 22	A. L. McNaughton .....	1,923	59.0	103	2.50	1.96	258
Oct. 17	F. R. Archibald .....	1,913	44.8	57	1.72	1.36	99
1917							
Jan. 17	F. R. Archibald .....	1,055	45.0	38	1.31		50

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Daily Gauge Height and Discharge of Bonaparte River near Ashcroft, for 1916.

(Drainage area, 2,000 square miles.)

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				76	1 15	57	1 50	130	2 45	425	3 70	980
2			1 25	76	1 20	66	1 55	110	2 70	520	3 65	960
3				76	1 25	76	1 65	165	3 05	680	3 70	980
4				76	1 15	57	1 70	180	3 30	790	3 80	1,030
5				76	1 15	57	1 75	190	3 30	790	3 85	1,060
6				76	1 15	57	1 75	190	3 20	750	3 80	1,030
7				76	1 15	57	1 80	205	3 05	680	3 75	1,010
8				76	1 15	57	1 85	220	2 90	610	3 70	980
9				76	1 25	76	2 00	265	2 70	520	3 70	980
10				76	1 50	130	1 95	250	2 60	480	3 70	980
11			1 25	76	1 55	140	1 90	235	2 45	425	3 65	960
12			1 15	57	1 70	180	1 85	220	2 30	370	3 60	940
13			1 40	105	1 70	180	1 80	205	2 30	370	3 65	960
14			1 40	105	1 45	115	1 85	220	2 30	370	3 55	960
15			1 25	76	1 50	130	1 90	235	2 35	365	3 70	980
16			1 30	86	1 50	130	1 90	235	2 40	405	3 65	960
17			1 15	57	1 50	130	1 85	220	2 45	425	3 60	940
18			1 20	66	1 50	130	1 85	220	2 50	440	3 60	940
19			1 10	48	1 50	130	1 80	205	2 55	460	3 55	910
20			1 15	57	1 50	130	1 80	205	2 60	480	3 50	900
21			1 10	48	1 65	165	1 75	190	2 65	500	3 35	820
22			1 15	57	1 60	150	1 75	190	2 65	500	3 30	790
23			1 20	66	1 60	150	1 75	190	2 65	500	3 30	790
24			1 25	76	1 55	140	1 75	190	2 65	500	3 30	790
25			1 30	86	1 50	130	1 80	205	2 65	500	3 40	840
26			1 15	57	1 50	130	1 85	220	2 70	520	3 55	910
27			1 20	66	1 50	130	1 95	250	2 85	590	3 55	910
28			1 10	48	1 55	140	2 10	300	3 00	660	3 50	890
29			1 40	105	1 45	115	2 15	315	3 15	730	3 40	840
30					1 45	115	2 20	330	3 35	820	3 40	840
31					1 50	130			3 50	890		

	July.		August.		September.		October.		November.		December.	
1	3 30	790	2 50	440	1 65	165	1 45	115	1 35	96	1 35	96
2	3 30	790	2 40	405	1 60	150	1 50	130	1 35	96	1 30	86
3	3 30	790	2 60	480	1 60	150	1 50	130	1 35	96	1 30	86
4	3 25	770	2 60	480	1 60	150	1 50	130	1 35	96	1 30	86
5	3 25	770	2 50	440	1 60	150	1 45	115	1 35	96	1 30	86
6	3 20	750	2 50	440	1 60	150	1 45	115	1 35	96		85
7	3 20	750	2 40	405	1 55	140	1 45	115	1 35	96	Ice	84
8	3 15	725	2 40	405	1 55	140	1 40	105	1 35	96		85
9	3 15	725	2 35	385	1 60	150	1 40	105		96		80
10	3 10	700	2 35	385	1 65	165	1 45	115		96		80
11	3 05	680	2 30	370	1 60	150	1 45	115		96		80
12	3 00	660	2 25	350	1 55	140	1 40	105		96		75
13	2 90	610	2 20	330	1 55	140	1 40	105		96		75
14	2 80	570	2 20	330	1 55	140	1 35	96	1 35	96		75
15	2 70	520	2 15	315	1 50	130	1 35	96	1 35	96		70
16	2 70	520	2 10	300	1 50	130	1 35	96	1 35	96		70
17	2 85	590	2 05	280	1 50	130	1 35	96	1 35	96		70
18	3 00	660	2 00	265	1 50	130	1 35	96	1 35	96		65
19	3 05	680	1 95	250	1 45	115	1 35	96	1 35	96		65
20	3 00	660	1 95	250	1 45	115	1 30	86	1 35	96		65
21	2 95	630	1 95	250	1 45	115	1 30	86	1 30	86		60
22	2 90	610	1 90	235	1 40	105	1 30	86	1 30	86		60
23	2 80	570	1 85	220	1 40	105	1 30	86	1 30	86		60
24	2 75	540	1 85	220	1 40	105	1 30	86	1 35	96		55
25	2 70	520	1 80	205	1 50	130	1 35	96	1 40	105		55
26	2 80	570	1 80	205	1 50	130	1 35	96	1 45	115		55
27	2 90	610	1 75	190	1 45	115	1 35	96	1 40	105		50
28	2 80	570	1 75	190	1 45	115	1 35	96	1 30	86		50
29	2 70	520	1 70	180	1 40	105	1 35	96	1 30	86		50
30	2 65	500	1 70	180	1 45	115	1 35	96	1 30	86		50
31	2 60	480	1 65	165			1 35	96				

*Monthly Discharge of Bonaparte River near Mouth, for 1916.*

(Drainage area, 2,000 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
February	105	48	72	0 04	0 05	4,140
March	180	57	115	0 06	0 07	7,070
April	330	130	215	0 11	0 12	12,790
May	890	370	550	0 27	0 31	35,820
June	1,060	730	930	0 46	0 51	55,340
July	790	480	640	0 32	0 37	39,350
August	480	165	310	0 15	0 17	19,060
September	165	105	130	0 06	0 07	7,740
October	130	86	100	0 05	0 06	6,150
November	115	86	95	0 05	0 06	5,650
December	96	50	70	0 03	0 04	4,300
The period	1,060	48	293	0 15	1 83	195,410

CACHE CREEK (2071).

*Location.*—Section 34, township 21, range 24, west 6th meridian; Provincial Water District No. 2. This station is above all diversions except the one to Eightmile creek, on which a regular gauging station is maintained (No. 2072).

*Records Available.*—June 9 to September 24, 1911; April 1 to September 3, 1912; May 9 to September 30, 1915; May 11 to October 30, 1916.

*Drainage Area.*—Thirty-five square miles; but part of the run-off is diverted to Eightmile creek.

*Gauge.*—Standard vertical staff gauge; readings three times a week.

*Channel.*—Rocks and gravel; current swift. The channel has changed so that the rating for 1916 is different from that of previous years.

*Discharge Measurements.*—Four meter measurements in 1916 define the rating curve very well up to discharges of 45 cubic feet per second.

*Accuracy.*—Gauge readings only taken three times a week; curve not defined by measurements above discharges of 45 cubic feet per second.

*Discharge Measurements of Cache Creek 5 Miles below Diversion to Eightmile Creek, for 1916.*

Date	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
May 11	A. L. McNaughton	1,923	20 0	16 8	2 42	1 20	40 6
June 12	A. L. McNaughton	1,923	14 0	13 2	1 53	1 00	20 2
Aug. 22	A. L. McNaughton	1,923	10 0	7 9	0 57	0 63	4 5
Dec. 7	F. R. Archibald	1,055	8 5	3 7	0 61	0 53	2 3



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*Daily Gauge Height and Discharge of Cache Creek 5 Miles below Diversion to Eightmile Creek, for 1916.*

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		40	1 46	82 0	0 90	14 2	6 2		1 6	0 60	3 8	
2		40		82 0		11 2	6 2	0 70	1 6		3 8	
3		40	1 40	82 0	0 90	14 2	6 2		1 6	0 60	3 8	
4		40		61 0		14 2	6 2	0 70	1 6		3 8	
5		40	1 27	40 0	0 90	14 2	6 2		2 3		3 8	
6		40		31 0		14 9	6 2	0 75	3 1	0 60	3 8	
7		40	1 40	28 0	0 80	9 6	6 2	0 60	3 8		3 8	
8		40		28 0		9 6	6 2	0 70	3 8	0 60	3 8	
9		40	1 41	28 0		9 6	6 2		3 8		3 8	
10		40		26 0	0 80	9 6	6 2	0 70	3 8	0 60	3 8	
11	1 20	40		23 0		7 9	6 2		3 1		3 8	
12	1 15	44	1 00	20 0	0 70	6 2	6 2		2 3		3 8	
13		36		17 1		6 2	6 2	0 70	1 6	0 60	3 8	
14		38	0 90	14 2		6 2	6 2	0 70	1 6		2 8	
15	1 20	40		12 6	0 70	6 2	6 2		1 6		3 8	
16		44		11 1		7 9	6 2	0 70	1 6	0 60	3 8	
17	1 30	50	0 80	9 6	0 80	9 6	6 2		1 6		3 8	
18		50		9 6		7 9	6 2	0 70	1 6	0 60	3 8	
19		50	0 80	9 6	0 70	1 2	6 2	0 70	1 6		3 8	
20		50		11 9		6 2	6 2	0 70	1 6	0 60	3 8	
21	1 20	50	0 90	13 2	0 70	6 2	6 2	0 70	1 6		3 8	
22		49		14 2		6 2	6 2	0 70	1 6	0 60	3 8	
23		38		14 2		6 2	6 2	0 70	1 6		3 8	
24	1 10	28	0 90	13 2	0 70	6 2	3 4	0 50	1 6	0 60	3 8	
25		28		14 2		7 9	4 6		1 6	0 60	3 8	
26		28	0 90	11 2	0 80	9 6	0 10	3 8	1 6		3 8	
27	1 40	28		17 1		7 9	2 7		1 6		2 8	
28		32	1 05	2 4 0	0 70	6 2	0 50	1 6	2 3	0 60	3 8	
29		36		17 1		6 2	1 6		3 1		3 8	
30	1 20	40	0 90	14 2		6 2	0 50	1 6	3 8	0 40	3 8	
31		61			0 70	6 2		1 6		0 60	3 8	

*Monthly Discharge of Cache Creek 5 Miles below Diversion to Eightmile Creek, for 1916.*

MONTH	DISCHARGE IN SECOND FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean	Per square Mile	Depth in inches on Drainage Area.	Total in Acre feet.
May	61 0	28 0	42 0			2,580
June	82 0	0 6	26 0			1,550
July	11 2	6 2	8 6			530
August	6 2	1 6	5 3			326
September	3 8	1 6	2 2			130
October	3 8	3 8	3 8			235
The period	82 0	1 6	14 6			5,360

NOTE.—McAbee's diversion to Eightmile creek takes water from Cache creek above this station in April and May. See station No. 2,072

MCABEE'S DIVERSION FROM CACHE CREEK TO EIGHTMILE CREEK (2072).

*Location.*—Section 12, township 22, range 24, west of 6th meridian; Provincial Water District No. 2. This diversion takes water from Cache creek above the regular gauging station.

*Records Available.*—May 21 to July 8, 1915; April 6 to May 12, 1916.

*Gauge.*—Vertical staff in flume; read twice a week while the diversion is in operation.

*Channel.*—Measurements are made in a lumber flume 2.8 feet wide.

*Discharge Measurements.*—Three measurements at different stages were made during 1915. The diversion was only in use for a short time in 1916.

*Accuracy.*—Probably no very great error is introduced by using the 1915 rating for 1916, as there could hardly be any very great change in the discharge conditions in the lumber flume.

*Daily Gauge Height and Discharge of McAbee's Diversion from Cache Creek to Eightmile Creek, for 1916.*

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												
3									0 90	8 0		
4										8 0		
5									0 90	8 0		
6										8 0		
7							0 50	3 2		8 0		
8								3 3	0 90	8 0		
9								3 4		6 5		
10								3 5		5 1		
11								3 6		3 7		
12								3 8		2 2		
13								3 9	0 20	0 8		
14							0 60	4 1	Turned off for rest of season			
15								4 2				
16								4 2				
17							0 00	4 2				
18								0 0				
19								No				
20								Water				
21								diverted				
22												
23												
24								0 00	0 0			
25								0 40	2 2			
26									2 2			
27									2 2			
28							0 40		2 2			
29									2 2			
30									2 2			
31							0 40		2 2			

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## COLDWATER RIVER (2006).

*Location.*—The present station is located three miles above Merritt on the Kettle Valley Railroad bridge. This replaces the former station at Merritt washed out during the 1916 freshet. Provincial Water District No. 3.

*Records Available.*—Former station: April 17 to August 31, 1913; April 1 to December 6, 1914; March 17 to December 31, 1915; March 19 to May 4, 1916. Present station: June 23 to December 31, 1916.

*Drainage Area.*—Three hundred and sixty square miles.

*Gauge.*—Former station: Vertical staff gauge, read daily by J. Skimming. Present station: Standard tape-wrapped steel cable gauge, read twice daily by Albert Savage.

*Channel.*—Former station: Bed of loose rock and small gravel; completely changed during 1916 freshet. Present station: banks fairly high; bed consists of loose rock and coarse gravel, probably permanent.

*Discharge Measurements.*—Former station: The stage during the period is well defined by seven discharge measurements. Present station: Six measurements, taken during 1916, completely cover the range of stage during the open period.

*Winter Flow.*—The flow under ice cover was obtained by interpolation between the open-water flow of November 9 and a meter measurement in January, 1917.

*Accuracy.*—The results are considered accurate at all stages during the open-water period.

*Discharge Measurements of Coldwater River near Merritt, for 1916.*

Date.	Engineer.	Meter No.	Width. Feet	Area of Section. Sq. ft.	Mean Velocity. Ft. per sec.	Gauge Height Feet.	Discharge. Sec.-ft.
1916							
May 3	Gauge washed out, and section changed.						
May 26	A. L. McNaughton	1,923	82	219	5.37		1,180
June 23	New gauge installed three miles above former section.						
June 23	C. G. Chene	1,055	85	273	6.02	5.20	1,650
July 12	A. L. McNaughton	1,915	79	174	4.81	4.00	839
July 17	A. L. McNaughton	1,915	74	134	4.66	3.65	623
Aug. 1	A. L. McNaughton	1,923	49	81	3.63	2.95	293
Sept. 1	A. L. McNaughton	1,923	35	44	1.55	1.95	67
Sept. 22	F. R. Archibald	1,913	34	33	1.09	1.66	35
1917							
Jan. 23	A. L. McNaughton	1,915	31	20	1.47	Ice	30

DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1918

Daily Gauge Height and Discharge of Coldwater River near Merritt, for 1916.

(Drainage area, 260 square miles.)

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							1.55	435				
3							1.70	440				
4							1.75	440				
5							1.90	540				
6							1.90	540				
7							1.95	570				
8							2.00	600				
9							2.05	640				
10							2.25	730				
11							2.25	780				
12								740				
13							2.15	700				
14							2.10	670				
15							2.20	700				
16							2.35	790				
17							2.25	700				
18								740				
19							2.25	700				
20							1.75	440				
21							1.75	440				
22						1.80	470	2.05	640			
23						1.75	440	2.05	595			
24						1.75	440	2.05	600			
25						1.85	485	2.10	670			
26						1.90	485	2.15	830			
27						1.90	485	2.10	1,665			
28						1.95	500	2.00	1,275			
29						1.95	485	2.00	1,270			
30						1.85	445	2.05	1,170			
31						1.60	360					
	July		August		September		October		November		December	
1	1.25	980	2.50	275	1.95	67	1.70	41	1.77	48	11	35
2	1.30	1,100	2.50	275	1.95	67	1.70	41	1.80	54		35
3	1.35	1,220	2.50	275	1.95	67	1.80	41		52		35
4	1.40	980	2.50	275	1.95	67	1.75	46		51		35
5	1.45	980	2.50	275	1.90	62	1.70	41		54		35
6	1.50	700	2.50	275	1.90	62	1.70	41		55		35
7	1.55	710	2.50	275	1.90	62	1.70	41	1.84	50		35
8	1.60	940	2.50	275	1.90	62	1.70	41	1.87	56		35
9	1.65	950	2.50	180		58	1.68	36	1.85	50		35
10	1.70	960	2.50	175		54	1.65	33		52		35
11	1.75	870	2.50	160	1.80	51	1.65	36				35
12	1.80	870	2.50	170	1.80	51	1.65	36		48		35
13	1.85	840	2.50	155	1.75	48	1.60	32		41		35
14	1.90	910	2.45	145	1.75	46	1.65	37		40		35
15	1.95	940	2.45	145	1.80	51	1.65	32		35		35
16	1.90	600	2.45	115	1.75	46	1.65	37		35		35
17	1.95	610	2.45	125	1.75	46	1.65	32		35		35
18	1.95	610	2.45	100	1.75	41	1.65	32		35		35
19	1.95	590	2.45	100	1.75	41	1.65	32		35		35
20	1.95	520	2.45	91	1.70	41	1.60	32		35		35
21	1.90	445	2.40	85	1.70	41	1.60	32		35		35
22	1.90	355	2.40	71	1.70	41	1.60	32		35		35
23	1.90	355	2.40	71	1.70	41	1.60	32		35		35
24	1.90	344	2.40	71	1.70	41	1.60	32		35		35
25	1.90	365	2.40	73	1.70	41	1.60	32		35		35
26	1.90	365	2.40	73	1.70	41	1.60	32		35		35
27	1.90	320	2.40	71	1.70	41	1.60	32		35		35
28	1.90	315	2.40	71	1.70	41	1.60	32		35		35
29	1.90	275	2.40	71	1.70	41	1.60	32		35		35
30	1.90	275	2.40	73	1.70	41	1.60	32		35		35
31	1.90	275	2.40	73	1.70	41	1.72	44		35		35

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## Monthly Discharge of Colquhoun River near Merril, for 1916.

(Drainage area, 100 square miles.)

MONTH	DISCHARGE IN SECONDS				RESULTS	
	Maximum	Minimum	Mean	Percentage Mile	Discharge Cubic Feet Per Second	Total in Acres Feet
Jan.	1,250	145	73	1.97	1,105	12,250
Feb.	1,225	275	90	1.78	1,135	13,350
Mar.	975	115	45	0.87	830	9,220
Apr.	915	91	51	0.99	819	9,011
May	915	75	45	0.87	819	9,213
June	855	75	45	0.87	819	9,500
July	855	75	45	0.87	819	9,290

## CRISS CREEK (2007).

*Loc.* Section 32, township 22, range 22 west of 10th meridian, half a mile from mouth.

*Records Available.* June 11 to September 11, 1912; April 22 to November 21, 1913; April 1 to December 9, 1914; March 22 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.* One hundred and fifty square miles.

*Gauge.* Standard vertical staff gauge, read daily.

*Channel.* Gravel and boulders, velocity high, control unchanged.

*Discharge Measurements.* Four meter measurements made in 1916 and thirteen in 1912-15 agree very well and cover all stages except very low and very high water.

*Accuracy.* Results should be very accurate except for extreme high and low stages.

## Discharge Measurements of Criss Creek near Mouth, for 1916.

Date.	Engineer	Meas. No.	Width Feet	Area of Section Sq. Ft.	Mean Velocity Feet per Sec.	Gauge Height Feet	Discharge Sec. Ft.
May 12	A. L. McNaughton	1974	47	684	2.75	1.17	163
June 13	A. L. McNaughton	1973	39	603	1.53	2.91	350
Aug. 18	A. L. McNaughton	1972	41	645	0.94	0.11	21
Oct. 13	F. L. Archibald	1971	41	645	0.34	0.11	7

Daily Gauge Height and Discharge of Criss Creek 1/2 Mile from Mouth, for 1916.

(Drainage area, 150 square miles.)

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 50	28	1 70	225	2 30	460
2							0 50	28	2 00	335	2 20	415
3							0 50	28	2 20	415	2 40	510
4							0 60	36	2 40	510	2 80	730
5							0 70	44	2 20	415	2 60	620
6							0 70	44	2 20	415	2 30	460
7							0 70	44	2 00	335	2 20	415
8							0 80	53	2 00	335	2 10	375
9							0 95	68	1 90	295	2 00	335
10							1 00	74	1 60	195	2 00	335
11							1 00	74	1 50	165	2 00	335
12							0 95	68	1 50	165	1 90	295
13							0 85	58	1 40	140	1 90	295
14							0 80	53	1 40	140	2 00	335
15							0 80	53	1 30	120	2 00	335
16							0 80	53	1 30	120	1 90	295
17							0 85	58	1 40	140	1 90	295
18							0 80	53	1 40	140	1 90	295
19							0 80	53	1 90	295	1 90	295
20							0 80	53	2 00	335	1 60	195
21							0 80	53	2 00	335	1 60	195
22							0 75	49	2 00	335	1 60	195
23							0 70	44	2 00	335	1 60	195
24							0 80	53	1 80	260	1 50	165
25							0 90	63	1 70	225	1 40	140
26							1 05	80	1 80	260	1 40	140
27							1 70	225	2 00	335	1 90	295
28							1 70	225	2 00	335	1 90	295
29							1 55	180	2 00	335	2 00	335
30							1 40	140	2 20	415	1 80	260
31									2 30	460		

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	1 80	260	0 70	44			2	0 10	6			
2	1 80	260	0 70	44			2	0 10	6			
3	2 00	335	0 70	44			2	0 10	6			
4	2 10	375	0 80	53	0 10	6	6	0 10	6			
5	1 90	295	0 80	53	0 10	6	6	0 10	6			
6	1 70	225	0 80	53	0 10	6	6	0 10	6			
7	0 60	195	0 80	53	0 10	6	6	0 00	3			
8	1 40	140	0 70	44	0 20	10	10	0 00	3			
9	1 30	120	0 60	36	0 20	10	10	0 00	3			
10	1 20	100	0 60	36	0 20	10	10	0 10	6			
11	1 20	100	0 50	28	0 20	10	10	0 10	6			
12	1 20	100	0 50	28	0 20	10	10	0 10	6			
13	1 00	74	0 45	24	0 10	6	6	0 10	6			
14	1 00	74	0 40	21	0 10	6	6	0 10	6			
15	0 90	63	0 40	21	0 00	3	3	0 15	8			
16	0 90	63	0 40	21	0 00	3	3	0 15	8			
17	0 20	100	0 40	21	0 00	3	3	0 15	8			
18	1 40	140	0 40	21	0 00	3	3	0 15	8			
19	1 30	120	0 40	21	0 00	3	3	0 15	8			
20	1 20	100	0 40	21	0 00	3	3	0 15	8			
21	1 10	87	0 30	15	0 00	3	3	0 15	8			
22	1 00	74	0 30	15	0 00	3	3	0 15	8			
23	0 00	74	0 30	15	0 10	6	6	0 10	6			
24	1 00	74	0 20	10	0 10	6	6	0 10	6			
25	0 90	63	0 10	6	0 00	3	3	0 05	4			
26	0 90	63	0 15	8	0 00	3	3	0 05	4			
27	0 80	53	0 10	6	0 00	3	3	0 00	3			
28	0 80	53	0 00	0	0 10	6	6	0 00	3			
29	0 70	44	0 00	0	0 20	10	10	0 00	3			
30	0 70	44	0 00	0	0 10	6	6	0 05	4			
31	0 70	44	0 00	0	0 10	6	6	0 50	4			

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*Monthly Discharge of Criss Creek ½ Mile from Mouth, for 1916.*

(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.
April .....	225	28	71	0.47	0.52	4,220
May .....	510	120	285	1.90	2.19	17,500
June .....	730	140	330	2.20	2.45	19,600
July .....	375	44	125	0.83	0.96	7,090
August .....	53	3	25	0.16	0.18	1,840
September .....	10	2	5	0.04	0.04	315
October .....	8	3	6	0.04	0.05	350
The period .....	730	2	121	0.81	6.39	51,215

## DEADMAN RIVER (2008).

*Location.*—Section 15, township 22, range 22, west of 6th meridian; above mouth of Criss creek.

*Records Available.*—April 22 to November 21, 1913; April 1 to December 9, 1914; March 22 to December 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Three hundred square miles.

*Gauge.*—Standard vertical staff gauge; daily readings.

*Channel.*—Gravel and silt. The control seems to have changed during the 1915 freshet, but has apparently remained unchanged ever since.

*Discharge Measurements.*—Five meter measurements made during 1916 and the fall of 1915 agree very well and cover practically all stages.

*Accuracy.*—Results for 1916 should be quite reliable at all stages.

*Discharge Measurements of Deadman River 1 Mile above Criss Creek, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 11	A. L. McNaughton	1923	31.5	92	3.38	3.49	312
June 15	A. L. McNaughton	1923	31.0	67	2.83	2.86	190
Aug. 18	A. L. McNaughton	1923	27.5	22	2.60	1.74	56
Oct. 13	F. R. Archibald	1913	10.0	8	2.28	1.00	18





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*Monthly Discharge of Deadman River 1 Mile above Criss Creek, for 1916.*

Drainage area, 300 square miles.

MONTH	FLOW IN SECOND FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area	Total in Acre-feet
April	225	24	85	0.28	31	5,000
May	369	25	27	0.09	1.4	16,660
June	369	120	27	0.09	0.84	13,100
July	215	88	15	0.05	0.77	9,220
August	88	45	0.4	0.01	0.4	1,930
September	78	22	0.4	0.01	0.73	1,810
October	56	14	21	0.07	0.69	1,480
The period	396	14	126	0.42	1.62	57,440

## HAT CREEK (2016).

*Location.*— Section 18, township 19, range 26, west 6th meridian; just above the Hammond diversion to Oregon Jack creek.

*Records Available.*— April 22 to December 31, 1911; January 1 to November 18, 1912; April 30 to December 31, 1913; April 1 to November 30, 1914; March 13 to September 30, 1915; April 4 to October 31, 1916.

*Drainage Area.*— Forty-seven square miles.

*Gauge.*— Standard vertical staff gauge, read daily by Thos. King; rather difficult to read accurately at the higher stages on account of the roughness of the water.

*Channel.*— Rocks and gravel; permanent control.

*Discharge Measurements.*— Three meter measurements in 1916 and eighteen in 1911-15 agree fairly well and cover the whole range of stage.

*Accuracy.*— Results should be quite reliable at all stages.

*Discharge Measurements of Hat Creek above Hammond's Diversion to Oregon Jack Creek, for 1916.*

Date	Gauger	Meter No.	Width Feet	Area of Section	Mean Velocity	Gauge Height	Discharge
				Sq. ft.	ft. per sec.	Feet.	Sec-ft.
May 17	A. I. McNaughton	1921	16	17.4	3.20	0.98	55.5
Aug 24	A. I. McNaughton	1921	15	7.3	1.15	0.27	8.4
Oct 16	E. R. Archibald	1911	14	5.6	0.66	0.16	3.7

## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1918

## Daily Gauge Height and Discharge of Hat Creek above Hammond's Diversion to Oregon Jack Creek, for 1916.

(Drainage area, 47 square miles.)

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	0 62	26	1 2	69
2								2	1 02	55	1 1	61
3								2	1 50	93	1 4	85
4							0 10	2	1 50	93	1 3	77
5							0 10	2	1 00	53	1 2	69
6							0 10	2	0 90	45	1 1	61
7							0 15	4	0 80	38	1 2	69
8							0 15	4	0 60	25	1 2	69
9							0 10	2	0 65	28	1 2	69
10							0 10	2	0 55	22	1 1	61
11							0 10	2	0 55	22	1 1	61
12							0 10	2	0 50	19	1 2	69
13							0 15	4	0 55	22	1 2	69
14							0 10	2	0 55	22	1 6	102
15							0 15	4	0 65	28	1 4	85
16							0 10	2	1 10	61	1 5	93
17							0 15	4	1 00	55	1 4	85
18							0 10	2	1 05	57	1 3	77
19							0 10	2	1 00	55	1 3	77
20							0 12	3	1 00	55	1 1	61
21							0 10	2	0 90	45	1 1	61
22							0 12	3	0 90	45	1 2	69
23							0 10	2	0 90	45	1 1	61
24							0 15	4	0 90	45	1 1	61
25							0 15	4	1 10	61	1 0	53
26							0 30	10	1 20	69	1 2	69
27							0 30	10	1 20	69	1 1	61
28							0 50	19	1 20	69	1 2	69
29							0 50	19	1 20	69	1 1	61
30							0 45	16	1 20	69	1 0	53
31									1 25	73		
	July.		August.		September.		October.		November.		December.	
1	0 90	45	0 50	19	0 22	7	0 17	5				
2	0 90	45	0 60	25	0 22	7	0 17	5				
3	0 85	42	0 60	25	0 22	7	0 17	5				
4	0 80	38	0 55	22	0 22	7	0 15	4				
5	0 80	38	0 50	19	0 22	7	0 15	4				
6	0 75	35	0 50	19	0 22	7	0 15	4				
7	0 70	31	0 50	19	0 22	7	0 15	4				
8	0 70	31	0 45	16	0 27	9	0 15	4				
9	0 70	31	0 45	16	0 27	9	0 15	4				
10	0 65	28	0 45	16	0 25	8	0 15	4				
11	0 60	25	0 40	14	0 22	7	0 15	4				
12	0 60	25	0 40	14	0 22	7	0 15	4				
13	0 60	25	0 40	14	0 22	7	0 17	5				
14	0 55	22	0 35	12	0 22	7	0 17	5				
15	0 55	22	0 35	12	0 22	7	0 17	5				
16	0 50	19	0 40	14	0 22	7	0 17	5				
17	0 90	45	0 38	15	0 20	6	0 17	5				
18	0 85	42	0 38	13	0 20	6	0 17	5				
19	0 80	38	0 38	13	0 17	5	0 17	5				
20	0 60	25	0 35	12	0 17	5	0 17	5				
21	0 55	22	0 35	12	0 17	5	0 17	5				
22	0 50	19	0 28	9	0 17	5	0 17	5				
23	0 50	19	0 28	9	0 17	5	0 17	5				
24	0 50	19	0 28	9	0 17	5	0 17	5				
25	0 50	19	0 28	9	0 17	5	0 17	5				
26	0 55	22	0 28	9	0 17	5	0 17	5				
27	0 55	22	0 28	9	0 17	5	0 15	4				
28	0 60	25	0 28	9	0 17	5	0 15	4				
29	0 55	22	0 28	9	0 17	5	0 15	4				
30	0 50	19	0 25	8	0 17	5	0 15	4				
31	0 50	19	0 22	7			0 15	4				

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*Monthly Discharge of Hat Creek above Diversion to Oregon Jack Creek, for 1916.*

(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	2	5 0	0 11	0 12	300
May	93	19	49 0	1 04	1 20	3,000
June	102	53	70 0	1 49	1 66	4,160
July	45	19	28 0	0 60	0 69	1,720
August	25	7	14 0	0 30	0 35	860
September	9	5	6 0	0 13	0 14	360
October	5	4	4 5	0 10	0 11	275
The period	102	2	25 2	0 54	4 27	10,675

## NAHATLATCH RIVER SEVEN MILES FROM MOUTH (2027).

*Location.*—Section 7, township 12, range 26, west of 6th meridian; below mouths of Douglas and Log creeks.

*Records Available.*—Continuous weekly records from February 27, 1912, to April 27, 1916; daily records from April 27 to December 31, 1916.

*Drainage Area.*—Four hundred square miles.

*Gauge.*—Vertical staff, in two sections, readings weekly; also auxiliary gauge with daily readings which are transferred to the main gauge. Auxiliary gauge installed April 27, 1916.

*Channel.*—Rocks and boulders; permanent control.

*Discharge Measurements.*—Four meter measurements in 1916 and a low-water measurement in the winter of 1917 agree very well with seven measurements made in 1912, 1913 and 1915. These together define the rating curve very well up to a discharge of 9,000 cubic feet per second.

*Winter Flow.*—Partial ice conditions prevailed during part of January and February 1916.

*Accuracy.*—The results obtained should be quite reliable, though the value of the records for the first four months is somewhat impaired by the fact that gauge readings were only taken weekly.

*Discharge Measurements of Nahatlatch River 7 Miles from Mouth, for 1916.*

Date.	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet	Sq. ft.	Ft. per sec.	Feet	Sq. ft.
1916							
April 19	C. G. Cline	1 055	80	414	3 60	3 10	1,490
June 26	C. G. Cline	1 055	80	810	9 80	8 50	8,100
Nov. 4	C. G. Cline	1 023	66	272	2 00	1 33	550
1917							
Jan. 11	C. G. Cline	1 023	50	220	1 36	0 41	299



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*Monthly Discharge of Nahallatch River 7 Miles from Mouth, for 1916.*

(Drainage area, 400 square miles.)

MONTH	DISCHARGE IN SECONDS-FEET.				RUN-OFF.	
	Maximum	Minimum	Mean	Per square Mile	Depth in inches on Drainage Area.	Total in Acre-feet
April	2,350	1,080	1,550	3.87	4.32	92,000
May	5,300	1,860	4,330	8.32	9.59	205,000
June	11,700	3,650	6,240	15.60	17.40	371,000
July	6,150	2,900	4,550	11.37	13.20	280,000
August	3,750	1,620	2,800	7.00	8.07	172,000
September	2,200	700	1,470	2.92	3.26	69,000
October	700	410	540	1.35	1.55	33,000
November	370	380	450	1.12	1.25	27,000
December	440	270	340	0.85	0.98	21,000
The period	11,700	270	2,330	5.82	59.62	1,270,000

## NAHALLATCH RIVER AT OUELLE OF NAHALLATCH LAKE (2028).

*Location.*— Section 14, township 12, range 27, west of 6th meridian.*Records Available.*— February 26 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914; January 1 to December 31, 1915; January 1 to December 31, 1916.*Gauge.*— Vertical staff gauge in two sections, installed April 18, 1916, to replace chain gauge previously in use.*Channel.*— Rocks and boulders.*Discharge Measurements.*— Eleven meter measurements, made in 1912-17, agree fairly well and cover practically all stages except for the peak of the 1916 freshet.*Winter.*— Open-water conditions prevail all winter.*Accuracy.*— Results should be quite reliable at all stages.

**Daily Gauge Height and Discharge of Nahatlatch River at Outlet of Nahatlatch Lake, for 1915.**

(Drainage area, 300 square miles.)

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	3.7	420										
3												
4							8.3	2,700	5.7	1,400		
5												
6												
7			3.2	270	3.4	320					8.4	3,800
8												
9									8.7	4,200		
10	3.6	380										
11							5.9	1,530				
12												
13											7.0	2,400
14					3.6	380						
15			3.3	290								
16												
17	3.5	350					7.5	2,900	6.4	1,900		
18												
19												
20											6.5	1,950
21			3.3	290	4.6	780						
22												
23	3.3	290							7.0	2,400		
24												
25							6.6	2,050				
26												
27											6.2	1,750
28			3.3	290	5.0	1,000						
29												
30	3.3	290							6.7	2,100		
31												
	July		August		September		October		November		December	
1			6.5	1,950								
2												
3							4.4	700				
4	5.0	3,400										
5					5.2	1,100					3.6	380
6												
7									4.6	780		
8			5.6	1,330								
9												
10							3.4	320				
11	5.8	1,460										
12					4.1	570					3.5	350
13												
14									2.9	200		
15			6.8	2,200								
16												
17												
18	5.6	1,310					3.1	320				
19					4.1	570					3.4	320
20												
21												
22			6.3	1,800					1.4	320		
23												
24												
25	6.1	1,800					5.8	1,460				
26												
27					3.9	490					3.5	350
28												
29			5.5	1,260					3.3	290		
30												
31							6.2	1,750				

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*Discharge Measurements of Nahatlatch River at Outlet of Nahatlatch Lake, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
1916							
April 18	C. G. Cline	1,055	90	431	2.93	5.50	1,265
June 27	C. G. Cline	1,055	125	1,050	6.59	10.60	6,920
Nov. 4	C. G. Cline	1,923	78	300	1.50	3.75	449
1917							
Jan. 10	C. G. Cline	1,923	65	238	0.97	3.00	230





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## NICOLA RIVER AT MOUTH (2030).

*Location*.—Section 12, township 17, range 25, west of the 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; April 1 to September 30, 1915; April 1 to December 31, 1916.

*Drainage Area*.—Two thousand six hundred square miles.

*Gauge*.—Inclined staff gauge read three times a week by Miss Violet Curnow.

*Channel*.—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 the bridge at all but very low stage, then by wading. Thirteen measurements made during 1912, 1913, 1914, and 1916 agree fairly well and cover all but very high stage. Ice conditions exist usually from December to March.

*Accuracy*.—Results should be fairly reliable at all but very high stage.

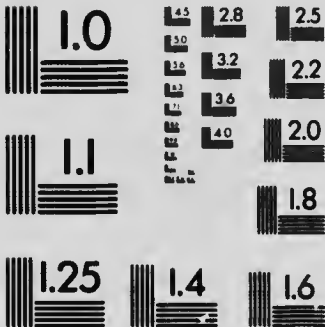
*Discharge Measurements of Nicola River at Mouth, for 1916.*

Date	Engineer	Water No.	Width Feet	Area of	Mean	Gauge Height Feet	Dis-
				Section Sq. ft.	Velocity Feet per Sec.		charge Sec.-ft.
July 11	A. I. McNaughton	1-13	141	612	1.70	1.53	1085
Sept 2	A. I. McNaughton	1-21	152	192	1.97	2.30	118
Nov 14	A. I. McNaughton	1-15	140	140	1.47	1.78	164



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## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1916

## Daily Gauge Height and Discharge of Nicola River at Mouth, for 1916.

(Drainage area, 2,600 square miles.)

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								1,000		3,730		4,280	
2								1,070	6.80	4,400	7.40	5,420	
3							4.00	1,130		5,550		5,680	
4								1,170	8.10	6,690	7.70	5,940	
5								1,220		6,380		5,820	
6							4.20	1,270		6,070		5,700	
7								1,350	7.60	5,760	7.50	5,590	
8								1,440		5,080		5,340	
9								1,530	6.80	4,400	7.20	5,080	
10							4.60	1,610		4,190		4,910	
11								1,620		3,970	7.00	4,740	
12								1,640	6.40	3,760		4,400	
13							4.65	1,650		3,480	8.80	4,060	
14								1,670	6.00	3,200		3,660	
15							4.70	1,700		3,640	8.40	3,260	
16								1,660	6.60	4,070		3,200	
17							4.60	1,610		4,150		3,130	
18								1,570	6.70	4,230	8.30	3,070	
19							4.50	1,520		4,660		2,810	
20								1,480	7.20	5,080		2,740	
21								4.40	1,440		5,060	7.20	2,580
22								1,350	7.20	5,080		2,580	
23								1,270		5,080	7.20	2,580	
24							4.60	1,440	7.20	5,080		2,580	
25								1,610		5,170	7.20	2,580	
26								2,020				4,910	
27							5.40	2,430	7.30	5,250		4,740	
28							5.80	2,930	7.40	5,340	7.00	4,740	
29								2,990		5,420		4,650	
30							5.90	3,060	7.00	5,080	6.90	4,570	
31										4,510		4,630	

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		4,680		1,200		380		270		175		140
2	7.00	4,740	4.00	1,130	2.50	365	2.25	290	1.65	175		140
3		4,410		1,110		350		300		175		140
4		4,090		1,080	2.40	335	2.30	305	1.70	180		140
5	6.40	3,760	3.90	1,060		320		305		180		140
6		3,410	3.90	1,060	2.30	305		305	1.70	180		140
7	5.90	3,060		1,010		306	2.30	305		190		140
8		2,850		960		305		315	1.80	195		140
9		2,640		910	2.30	305		325		195		130
10	5.40	2,430	3.60	860		290	2.40	335		200		130
11	5.95	3,130		830		275		320	1.85	200		130
12		2,600	3.50	809	2.10	256	2.30	305		190		130
13		2,100		750		255		290		175		130
14	4.60	1,610		700	2.10	255	2.20	280	1.58	165		130
15		1,960	3.20	640		255		270		160		130
16	5.30	2,320		630	2.10	255	2.10	255		160		120
17		2,350	3.15	620		255		250		160		120
18		2,390		530	2.10	266	2.05	240		160		120
19	5.40	2,430	2.70	435		260		235		160		120
20		2,260		435		265		230		160		120
21	5.10	2,100	2.70	435	2.15	270	2.00	230		150		120
22		1,950		435		260		220		150		120
23	4.60	1,800		435	2.10	255		220		150		120
24		1,770	2.70	435		265	1.90	210		150		120
25		1,736		420	2.10	255		195		150		110
26	4.70	1,700	2.60	400		265	1.70	180		150		110
27		1,640		400	2.10	256		175		160		110
28		1,580		400		250	1.60	170		150		110
29	4.50	1,520	2.60	400	2.05	240		170		150		110
30		1,400		400		230	1.60	170		150		110
31	4.20	1,270	2.60	400				170		150		110

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*Monthly Discharge of Nicola River at Mouth, for 1916.*

(Drainage area, 2,600 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.
April .....	3,060	1,000	1,650	0.63	0.70	98,000
May .....	6,690	3,200	4,500	1.85	2.13	295,000
June .....	8,060	4,570	5,680	2.18	2.43	338,000
July .....	4,740	1,270	2,500	0.96	1.11	154,000
August .....	1,200	400	700	0.27	0.31	43,000
September .....	380	240	280	0.11	0.12	16,600
October .....	335	170	250	0.10	0.11	15,400
November .....	200	150	170	0.06	0.07	10,000
December .....	140	110	125	0.05	0.06	7,700
The period .....	8,060	110	1,673	0.60	7.04	977,700

## NICOLA RIVER AT NICOLA (2075).

*Location.*—At Nicola; Water District No. 2.*Records Available.*—April 14 to August 31, 1913; February 22 to December 31, 1915; February 1 to December 31, 1916.*Drainage Area.*—One thousand three hundred square miles.*Gauge.*—Standard vertical staff; read daily.*Channel.*—Rocky; permanent control.*Discharge Measurements.*—Ten measurements made by the Provincial Water Rights Branch in 1913, four made by the B.C. Hydrometric Survey in 1915, three during 1916 and one in 1917 agree very well and cover all stages.*Accuracy.*—Results considered very reliable except at highest stages.*Discharge Measurements of Nicola River at Nicola, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
1916							
June 2	A. L. McNaughton.	1,923	135	719	1.09	3.00	785
June 21	C. G. Cline	1,055	91	514	1.89	3.30	970
Sept. 23	F. R. Archibald	1,913	54	71	0.67	0.46	46
1917							
Jan. 25	A. L. McNaughton.	1,915	20	15	0.98	0.10	15

Daily Gauge Height and Discharge of Nicola River at Nicola, for 1916.

(Drainage area, 1,300 square miles.)

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 25		0 42	41	0 38	115	1 15	175	1 28	205	2 89	760
2	0 24		0 40	39	0 87	110	1 18	180	1 32	215	2 91	770
3	0 26		0 39	38	0 86	110	1 14	170	1 46	250	2 92	770
4	0 27		0 39	38	0 86	110	1 10	160	1 65	305	3 06	830
5	0 30		0 40	39	0 85	105	1 05	150	1 86	370	3 18	850
6	0 31	Ice	0 41	40	0 84	105	1 11	160	1 90	385	3 22	890
7	0 33		0 41	40	0 84	105	1 09	160	1 96	405	3 30	900
8	0 35		0 44	43	0 82	100	1 08	155	2 04	430	3 35	960
9	0 35		0 47	47	0 81	120	1 05	150	2 10	450	3 38	970
10	0 35		0 45	45	1 15	175	1 03	145	2 16	475	3 40	980
11	0 35		0 43	42	1 27	200	1 02	140	2 50	600	3 44	1,000
12	0 35	about	0 40	39	1 30	210	1 02	140	2 57	630	3 45	1,000
13	0 35		0 40	39	1 32	215	1 00	140	2 63	650	3 48	1,020
14	0 35		0 39	38	1 38	230	0 99	135	2 60	640	3 45	1,000
15	0 36		0 40	39	1 38	230	1 05	150	2 62	650	3 45	1,000
16	0 36	15	0 52	52	1 38	230	1 10	160	2 64	660	3 45	1,000
17	0 36		0 55	56	1 39	230	1 11	160	2 63	650	3 40	980
18	0 37		0 60	63	1 38	230	1 10	160	2 65	660	3 37	970
19	0 38		0 78	93	1 38	230	1 10	160	2 64	660	3 35	960
20	0 42	to	0 80	97	1 36	225	1 09	160	2 65	660	3 33	950
21	0 44		0 82	101	1 32	215	1 10	160	2 68	670	3 31	940
22	0 47		0 82	101	1 32	215	1 09	160	2 67	670	3 30	940
23	0 49		0 83	103	1 30	210	1 09	160	2 69	680	3 29	940
24	0 50	20	0 85	107	1 29	205	1 15	175	2 73	690	3 26	920
25	0 49		0 87	110	1 28	205	1 12	165	2 75	700	3 26	920
26	0 48		0 87	110	1 28	205	1 12	165	2 76	700	3 25	920
27	0 48		0 87	110	1 25	200	1 15	175	2 76	700	3 25	920
28	0 47		0 87	110	1 22	190	1 20	185	2 78	710	3 25	920
29	0 45	c.f.s.	0 88	115	1 20	185	1 22	190	2 80	720	3 25	920
30	0 46				1 18	180	1 23	190	2 85	740	3 25	920
31	0 44				1 15	175			2 90	760		

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 25	920	1 84	365	0 84	105	0 42	41	0 18	21	0 08	15
2	3 23	900	1 82	360	0 79	95	0 36	35	0 10	22	0 08	15
3	3 16	880	1 79	350	0 80	97	0 33	33	0 21	23	0 09	15
4	3 19	890	1 72	330	0 79	95	0 36	35	0 24	25	0 09	15
5	3 19	890	1 70	320	0 75	88	0 40	39	0 15	19	0 09	15
6	3 16	880	1 69	320	0 71	80						
7	3 15	870	1 75	340	0 69	77	0 40	39	0 13	18	0 08	15
8	3 08	849	1 72	330	0 69	77	0 40	39	0 12	17	0 08	15
9	3 00	810	1 65	305	0 71	80	0 35	35	0 11	17	0 07	14
10	2 91	770	1 61	295	0 64	69	0 38	37	0 11	17	0 05	13
11	2 85	740	1 55	280	0 64	69	0 33	33	0 14	18	0 05	13
12	2 80	720	1 52	270	0 63	67	0 31	31	0 19	22	0 05	13
13	2 76	700	1 50	260	0 62	66	0 28	28	0 17	20	0 05	13
14	2 71	680	1 40	235	0 62	66	0 26	27	0 17	20	0 05	13
15	2 67	670	1 30	210	0 62	66	0 25	26	0 15	19	0 04	13
16	2 63	650	1 25	200	0 62	66	0 24	25	0 14	18	0 04	13
17	2 53	610	1 20	185	0 62	66	0 22	24	0 12	17	0 04	13
18	2 45	580	1 10	160	0 61	64	0 22	24	0 10	16	0 04	13
19	2 37	550	1 10	160	0 59	62	0 22	24	0 10	16	0 04	13
20	2 33	510	1 15	175	0 58	60	0 22	24	0 10	16	0 04	13
21	2 30	520	1 10	160	0 58	60	0 22	24	0 10	16	0 04	13
22	2 27	510	1 05	150	0 51	55	0 21	23	0 10	16	0 04	13
23	2 22	495	1 00	140	0 49	49	0 21	23	0 10	16	0 04	13
24	2 20	485	1 00	140	0 47	47	0 21	23	0 10	16	0 04	13
25	2 17	480	1 00	140	0 44	43	0 22	24	0 10	16	0 04	13
26	2 15	470	1 05	150	0 39	38	0 24	25	0 10	16		
27	2 12	460	1 01	140	0 46	46	0 27	28	0 10	16		
28	2 06	440	0 95	125	0 51	51	0 24	25	0 10	16	River	13
29	2 01	420	0 91	120	0 47	47	0 22	24	0 09	15		
30	1 94	400	0 92	120	0 43	42	0 22	24	0 09	15	Frozen	13
31	1 90	385	0 90	115			0 21	23	0 09	15		

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## Monthly Discharge of Nicola River at Nicola for 1916.

(Drainage area, 1,360 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.
February	115	28	67	0 65	0 65	3,850
March	236	190	180	0 14	0 16	11,000
April	190	135	160	0 12	0 13	9,500
May	760	265	570	0 44	0 51	35,000
June	1,620	760	730	0 35	0 63	43,000
July	129	385	630	0 30	0 58	40,000
August	365	115	225	0 17	0 20	13,800
September	165	38	65	0 05	0 06	3,900
October	41	23	29	0 02	0 03	1,800
November	25	15	18	0 01	0 01	1,070
December	15	13	13	0 01	0 01	830
The period	1,126	13	246	0 19	2 36	163,750

## NICOLA RIVER ABOVE NICOLA LAKE (2086).

*Location.*—At highway bridge, 6 miles above Nicola lake; Provincial Water District No. 3.

*Records Available.*—May 12 to September 16, 1915; April 1 to September 30, 1916.

*Drainage Area.*—Two hundred and eighty square miles.

*Gauge.*—Vertical staff readings five or six times a week.

*Channel.*—Rocks and gravel.

*Discharge Measurements.*—Three meter measurements in 1915 and three in 1916 agree very well and cover the whole range of stage.

*Accuracy.*—The results for both 1915 and 1916 should be quite reliable at all stages.

*Daily Gauge Height and Discharge of Nicola River 6 Miles above Nicola Lake,  
for 1915.*

(Drainage area, 280 square miles.)

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			2.6	495	1.8	240	1.2	115	0.4	25		
2				480	1.8	260	1.2	115	0.4	25		
3			2.5	460	1.8	260	1.2	115	0.4	25		
4				430	1.8	260	1.2	115	0.4	25		
5				400		250	1.2	115	0.3	21		
6			2.2	370	1.7							
7			2.1	345	1.7	235	1.1	100	0.3	21		
8			2.0	315		235	1.1	100	0.3	21		
9			2.0	315		220	1.1	100	0.3	21		
10				300	1.5	180	1.1	100	0.3	21		
11				290	1.4	160	1.0	80	0.3	21		
12	2.1	345		280	1.6	210	1.0	80	0.2	17		
13	2.1	345		270	1.6	210	1.0	80	0.2	17		
14	2.2	370	1.8	260		210	1.0	80	0.2	17		
15	2.2	370		260		210	1.0	80	0.2	17		
16	2.2	370	1.8	260		210	0.9	68	0.2	17		
17	2.2	370	1.8	260		210	0.9	68	0.1	13		
18	2.4	430	1.7	235	1.6	210	0.8	56		13		
19	2.9	595		210	1.6	210	0.7	46	0.1	13		
20	2.9	595	1.5	180	1.5	180	0.7	46	0.1	13		
21	3.1	665	1.5	180	1.4	160	0.7	46	0.1	13		
22	2.9	595	1.4	160	1.4	160	0.7	46	0.2	17		
23	3.0	630		160	1.4	160	0.7	46		17		
24	3.1	665	1.4	160	1.4	160	0.7	46		17		
25	3.0	630		170	1.4	160	0.6	38	0.2	17		
26	2.9	595	1.5	180	1.4	160	0.6	38		17		
27		580	1.7	235	1.3	135	0.6	38	0.2	17		
28	2.8	560	1.8	260	1.3	135	0.5	30		17		
29		560	1.8	260	1.3	135	0.5	30		17		
30	2.8	560	1.8	260	1.2	115	0.5	30	0.2	17		
31	2.7	530			1.2	115	0.5	33				

*Monthly Discharge of Nicola River above Nicola Lake, for 1915.*

(Drainage area, 280 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..	495	160	281	1.00	1.12	16,700
July..	260	115	193	0.69	1.79	11,900
August..	115	30	70	0.25	0.29	4,300
September..	25	13	18	0.06	0.07	1,070
The period	495	13	140	0.50	2.27	33,070

*Discharge Measurements of Nicola River 6 miles above Nicola lake, 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 27	A. L. McNaughton	1,923	37.5	124.0	4.30	2.76	532
June 22	C. G. Cline	1,065	37.5	135.0	5.20	3.16	702
Sept. 23	F. R. Archibald	1,913	38.0	32.7	0.70	0.36	23



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Daily Gauge Height and Discharge of Nicola River 6 Miles above Nicola Lake, for 1916.

(Drainage area, 280 square miles.)

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		38	1.80	260	3.20	700	3.10	660	1.70	235	0.50	30
2		38	2.40	430	3.20	700	3.00	630	1.70	235	0.50	30
3	0.60	38		495		750	3.10	660	1.60	205	0.50	30
4		38	2.80	580	3.50	800	2.90	600	1.60	205		30
5	0.60	38	2.90	600	3.40	770	2.90	600	1.50	180		30
6		38		660	3.40	770		600	1.50	180		30
7		38	3.30	730	3.40	770	2.90	600	1.50	180	0.50	30
8	0.60	38		720		790	2.90	600	1.50	180	0.50	30
9		38		710	3.50	800	2.90	600	1.40	160		27
10	0.60	38	3.20	700	3.40	770		550	1.30	135	0.40	25
11		42		650	3.40	770	2.60	495	1.30	135		25
12	0.70	46	2.90	600	3.40	770	2.50	465	1.20	115	0.40	25
13		42		600	3.40	770	2.40	430	1.20	115		25
14	0.60	38	2.90	600		770	2.30	400	1.10	100	0.40	25
15	0.70	46	2.1	600	3.40	770		400	1.10	100	0.40	25
16	0.70	46	2.90	600	3.40	770	2.30	400		91	0.40	25
17	0.70	46		600		750		400	1.00	82	0.40	25
18		49		600	3.30	730	2.30	400	1.00	82	0.40	25
19		53	2.90	600	3.30	730		380		75	0.40	25
20	0.80	56	2.90	600	3.30	730		335	0.90	68	0.40	25
21		55	2.90	600	3.20	700		335	0.90	68		24
22	0.80	56		660		680	2.00	315	0.90	68		23
23	0.90	68		700	3.10	660	2.00	315	0.80	56	0.35	23
24	0.93	68		700		640		315	0.80	56	0.50	30
25	1.00	82		700	3.00	630	2.00	315	0.80	56	0.50	30
26	1.00	82		700	3.00	630	2.00	315	0.80	56		29
27		170		660	3.00	630		300	0.70	46		27
28	1.80	260	3.00	630	3.10	660	1.90	285	0.70	46		26
29	2.00	315	3.00	630	3.10	660	1.90	285	0.70	46	0.40	25
30	1.70	235	3.10	660		660	1.80	260		46	0.40	25
31			3.20	700			1.80	260	0.70	46		

Monthly Discharge of Nicola River 6 Miles above Nicola Lake, for 1916.

(Drainage area, 280 square miles.)

MONTH.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre-ft.
April	315	38	75	0.27	0.30	4,460
May	730	260	620	2.21	2.55	38,100
June	800	630	720	2.57	2.87	42,800
July	660	260	435	1.55	1.79	26,700
August	235	46	110	0.40	0.46	6,760
September	30	25	27	0.09	0.10	1,600
The period	800	25	331	1.18	8.07	120,420

SCOTTIE CREEK (2036).

Location.—Section 16, township 23, range 25, west 6th meridian; above diversions near mouth.

Records Available.—June 1 to October 31, 1911; April 1 to September 8, 1912; May 1 to November 28, 1913; April 18 to October 31, 1916.

*Drainage Area.*—Seventy-three square miles.

*Gauge.*—Standard vertical staff gauge installed above diversions and read daily.

*Channel.*—Width about fifteen feet; bed of rocks and gravel.

*Discharge Measurements.*—Five measurements in 1916 and one in 1915 agree fairly well and cover low water stage.

*Accuracy.*—Results should be quite reliable up to discharges of 60 cubic feet per second.

*Daily Gauge Height and Discharge of Scottie Creek above Diversions near Mouth, for 1915.*

(Drainage area, 73 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												
2					0.75	8.6						
3					0.75	8.6						
4					0.75	8.6						
5					0.75	8.6						
6					0.75	8.6						
7					0.75	8.6						
8					0.75	8.6						
9					0.75	8.6						
10					0.75	8.6						
11												
12					0.77	9.6						
13					0.77	9.6						
14					0.75	8.6						
15					0.75	8.6						
16					0.75	8.6						
17					0.75	8.6						
18					0.75	8.6						
19					0.75	8.6						
20					0.75	8.6						
21												
22					0.80	10.7						
23					0.80	10.7						
24					0.80	10.7						
25			0.80	10.7	0.77	9.6						
26					0.77	9.6						
27			0.80	10.7	0.77	9.6						
28			0.80	10.7	0.80	10.7						
29			0.80	10.7	0.80	10.7						
30			0.77	9.6	0.77	9.6						
31			0.75	8.6	0.77	9.6						

*Discharge Measurements of Scottie Creek above Diversions near Mouth, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 10	A. L. McNaughton						
June 12	A. L. McNaughton	1923	16.0	15.6	3.14	1.20	48.9
Aug. 26	A. L. McNaughton	1923	16.2	12.5	2.60	1.05	31.4
Oct. 14	F. R. Archibald	1913	15.5	7.2	1.12	0.66	8.0
Dec. 5	F. R. Archibald	1913	16.0	7.1	0.75	0.66	5.3
		1055	16.0	5.9	0.60	0.60	3.5

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Daily Gauge Height and Discharge of Scottie Creek above Diversions near Mouth,  
for 1916.

(Drainage area 73 square miles.)

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 80	10 7	1 65	115	2 30	210 0
2							0 80	10 7	1 65	115	1 70	120 0
3							0 80	10 7	1 70	120	1 65	115 0
4							0 80	10 7	1 72	125	1 60	105 0
5							0 80	10 7	1 75	130	1 50	90 0
6							0 82	12 3	1 80	155	1 45	83 0
7							0 82	12 3	1 80	135	1 40	75 0
8							0 82	12 3	1 85	145	1 35	69 0
9							0 90	17 2	1 90	150	1 25	55 0
10							0 90	17 2	1 20	49	1 20	19 0
11							0 90	17 2	1 20	49	1 20	49 0
12							0 90	17 2	1 20	49	1 10	37 0
13							0 90	17 2	1 20	49	1 00	26 0
14							0 90	17 2	1 20	49	1 00	26 0
15							0 90	17 2	1 20	49	0 97	24 0
16							0 90	17 2	1 20	49	0 97	24 0
17							0 90	17 2	1 20	49	0 97	21 0
18							0 90	17 2	1 22	52	0 95	22 0
19							0 99	17 2	1 25	55	0 95	22 0
20							0 90	17 2	1 27	59	0 95	22 0
21							0 90	17 2	1 30	62	0 92	19 4
22							0 90	17 2	1 30	62	0 95	22 0
23							0 92	19 4	1 30	62	0 92	19 4
24							0 95	22 0	1 30	62	0 90	17 2
25							1 00	26 0	1 35	69	0 87	15 6
26							1 15	43 0	1 35	69	0 95	22 0
27							1 46	75 0	1 35	69	1 00	26 0
28							1 45	85 0	1 40	75	1 10	37 0
29							1 60	105 0	1 60	105	1 00	26 0
30							1 62	110 0	1 70	120	0 95	22 0
31									2 20	195		

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	0 92	19 4	0 85	14 0	0 65	5 0	0 65	5 0				
2	0 90	17 2	0 90	17 2	0 67	5 6	0 65	5 0				
3	0 90	17 2	1 10	27 0	0 67	5 6	0 65	5 0				
4	0 90	17 2	1 00	26 0	0 65	5 0	0 67	5 6				
5	0 90	17 2	0 90	17 2	0 65	5 0	0 67	5 6				
6	0 87	15 6	0 85	14 0	0 65	5 0	0 70	6 5				
7	0 85	14 0	0 85	14 0	0 90	17 2	0 70	6 5				
8	0 85	14 0	0 82	12 3	0 85	14 0	0 67	5 6				
9	0 80	10 7	0 80	10 7	0 70	6 5	0 65	5 0				
10	0 80	10 7	0 80	10 7	0 67	5 6	0 65	5 0				
11	0 80	10 7	0 77	9 6	0 65	5 0	0 65	5 0				
12	0 80	10 7	0 77	9 6	0 65	5 0	0 65	5 0				
13	0 77	9 6	0 75	8 6	0 65	5 0	0 65	5 0				
14	0 75	8 6	0 75	8 6	0 65	5 0	0 65	5 0				
15	0 75	8 6	0 72	7 3	0 62	4 1	0 65	5 0				
16	0 75	8 6	0 72	7 3	0 62	4 1	0 65	5 0				
17	1 00	26 0	0 80	10 7	0 62	4 1	0 65	5 0				
18	0 95	22 0	0 77	9 6	0 62	4 1	0 65	5 0				
19	0 90	17 2	0 75	8 6	0 62	4 1	0 65	5 0				
20	0 85	14 0	0 72	7 3	0 62	4 1	0 65	5 0				
21	0 82	12 3	0 72	7 3	0 62	4 1	0 65	5 0				
22	0 82	12 3	0 70	6 5	0 62	4 1	0 65	5 0				
23	0 80	10 7	0 70	6 5	0 63	4 1	0 65	5 0				
24	0 80	10 7	0 70	6 5	0 62	4 1	0 65	5 0				
25	0 80	10 7	0 67	5 6	0 73	8 6	0 65	5 0				
26	0 90	17 2	0 65	5 0	0 72	7 3	0 65	5 0				
27	0 90	17 2	0 65	5 0	0 70	6 5	0 65	5 0				
28	0 85	14 0	0 62	4 1	0 70	6 5	0 65	5 0				
29	0 85	14 0	0 62	4 1	0 67	5 6	0 70	6 5				
30	0 80	10 7	0 62	4 1	0 65	5 0	0 70	6 5				
31	0 80	10 7	0 62	4 1			0 70	6 5				

*Monthly Discharge of Scottie Creek above Diversions near Mouth, for 1916.*

(Drainage area, 73 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.....	110.0	10.7	27.1	0.37	0.41	1,600
May.....	195.0	49.0	86.4	1.19	1.37	5,200
June.....	210.0	15.6	49.1	0.67	0.75	2,900
July.....	26.0	8.6	13.8	0.19	0.22	850
August.....	37.0	4.1	10.3	0.14	0.16	630
September.....	17.2	4.1	5.8	0.08	0.09	345
October.....	6.5	3.0	5.3	0.07	0.08	325
The period.....	210.0	4.1	28.3	0.39	3.08	11,950

**THOMPSON RIVER AT SPENCES 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; January 1 to December 31, 1915; March 1 to December 31, 1916.

*Drainage Area.*—Twenty-one thousand square miles.

*Gauge.*—Standard chain gauge, situated on traffic bridge, read daily.

*Channel.*—The channel varies in width from 400 feet to 500 feet. Depth of section at high water is greater by 16 feet than at low water. Velocities range from 2 to 11 feet per second.

*Discharge Measurements.*—Two measurements taken during 1911, five in 1912, four in 1913, one in 1915 and three in 1916 agree very well and cover all stages.

*Winter Flow.*—The river is generally open all year, but this winter, owing to the unusually cold weather, the river was frozen during February.

*Discharge Measurements of Thompson River at Spences Bridge, 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1916							
July 10	A. L. McNaughton.....	1,915	482	8,550	9.80	18.5	84,200
July 31	A. L. McNaughton.....	1,923	474	7,360	9.10	14.1	66,800
Nov. 14	C. G. Cline.....	1,913	347	2,660	3.40	2.8	9,080
1917							
Jan. 12	C. G. Cline.....	1,923	326	2,000	2.65	1.2	5,320
March 21	A. L. McNaughton.....	1,915	324	1,800	2.45	0.7	4,420

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Daily Gauge Height and Discharge of Thompson River at Spences Bridge, for 1916.

(Drainage area, 21,000 square miles.)

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		7,000		Frozen		6,200		8,700	8 9	23,000	13 0	57,900
2	2 0	6,800				6,300		8,800	7 2	24,200	13 2	59,300
3	1 9	6,600				6,400	2 90	8,900	7 9	27,500	12 4	60,900
4	1 8	6,400			1 80	6,400	3 00	9,200	9 2	34,000	13 6	62,400
5	1 7	6,200			1 80	6,400	3 10	9,500	10 2	39,100	13 7	63,100
6	1 7	6,200			1 80	6,400	3 10	9,500	11 0	43,900	13 6	62,800
7	1 7	6,200			1 90	6,600	3 20	9,800	11 2	45,300	13 9	64,700
8	1 7	6,200			1 90	6,600	3 40	10,400	11 6	48,100	12 9	64,700
9		6,200			2 00	6,800	3 50	10,700	12 0	50,900	13 9	64,700
10	1 7	6,200			2 10	7,000	3 70	11,300	11 9	50,200	13 7	63,100
11		6,400			2 30	7,400		11,750	11 6	48,100	13 7	63,100
12	1 9	6,600			2 70	8,300	4 00	12,200	11 4	46,700	13 7	63,100
13		6,600			2 70	8,300	4 30	13,100	11 3	46,000	14 0	65,500
14	1 9	6,600			2 65	8,200	4 30	13,100	10 8	42,700	14 2	67,000
15		6,700			2 65	8,200	4 65	14,150	10 6	41,500	14 7	70,900
16		6,800			2 60	8,100		14,800	10 4	40,300	15 3	75,600
17		6,800			2 60	8,100	5 00	15,400		41,200	15 3	75,600
18		6,900			2 60	8,100	4 82	14,700	10 7	42,100	15 3	75,600
19	2 1	7,000			2 60	8,100	4 65	14,150	11 2	45,300	15 9	80,400
20		6,600			2 65	8,200	4 70	14,300	11 7	48,800	16 6	86,000
21	1 7	6,200			2 70	8,300	4 80	14,600	11 8	49,500	17 4	92,400
22	1 5	5,800			2 70	8,300	4 90	15,000	11 9	50,200	18 2	99,000
23		5,800			2 70	8,300	5 00	15,400	12 0	50,900	18 8	104,300
24	1 5	5,800			2 70	8,300	5 00	15,400	12 0	50,900	19 0	106,000
25		5,800			2 75	8,450	5 10	15,800	12 1	51,600	19 0	106,000
26	Ice	5,800			2 80	8,600	5 20	16,200	12 1	51,600	18 7	103,400
27		5,800			2 80	8,600	5 30	17,800	12 2	52,300	18 7	103,400
28		5,800			2 80	8,600	5 30	18,600	12 4	53,700	18 8	104,300
29		5,800			2 80	8,600	6 10	19,800	12 4	53,700	18 9	104,200
30		5,800			2 80	8,600	6 60	21,800	12 7	55,800	18 9	105,200
31		5,800			2 80	8,600			13 0	57,900		

	July.		August.		September.		October.		November.		December.	
1	18 6	102,500	13 9	64,700	9 2	34,000	5 60	17,800	3 70	11,300	2 10	7,000
2	18 3	99,800	13 6	62,400	9 3	34,500	5 45	17,200	3 65	11,100	2 10	7,000
3	18 2	99,000	13 5	61,700	9 2	34,000	5 30	16,600	3 60	11,000	2 10	7,000
4	17 9	96,600	13 4	60,900	9 2	34,000	5 20	16,200	3 50	10,700	2 00	6,800
5	17 6	94,200	13 4	60,900	9 2	34,000	5 10	15,800	3 40	10,400	2 00	6,800
6	17 6	94,200	13 3	60,100	9 2	34,000	4 80	14,600	3 30	10,100	1 90	6,600
7	17 3	91,600	13 1	58,600	9 0	33,000	4 60	14,000	3 20	9,800	1 80	6,400
8	16 9	88,400	12 9	57,200	8 9	32,500	4 35	13,200	3 10	9,500	1 75	6,300
9	16 6	86,000	12 6	55,100	8 5	30,500	4 10	12,500	3 00	9,200	1 70	6,200
10	16 5	85,200	12 4	53,700	8 3	29,500	4 10	12,500	2 90	8,900	1 60	6,000
11	16 4	84,400	12 3	53,000	8 2	29,000	4 05	12,300	2 80	8,600	1 50	5,800
12	16 4	84,400	12 1	51,600	8 0	28,000	4 00	12,200	2 80	8,600	1 40	5,600
13		84,000	11 9	50,200	7 7	26,500	4 00	12,200	2 70	8,300	1 40	5,600
14	16 5	85,200	11 5	47,400	7 5	25,500	4 00	12,200	2 60	8,100	1 35	5,500
15	16 5	85,200	11 3	46,000	7 3	24,600	4 00	12,200	2 55	8,000	1 30	5,400
16	16 4	84,400	11 2	45,300	8 0	28,000	4 10	12,500	2 30	7,400	1 30	5,400
17	16 3	83,600	11 1	44,600	6 8	22,600	4 15	12,600	2 20	7,200	1 20	5,200
18	15 9	80,400	11 0	43,900	6 7	22,200	4 20	12,800	2 20	7,200	1 30	5,400
19	16 0	81,200	10 8	42,700	6 6	21,800	4 40	13,400	2 20	7,200	1 20	5,200
20	15 9	80,400	10 6	41,500	6 5	21,400	4 45	13,500	2 20	7,200	1 20	5,200
21	15 7	78,800	10 2	39,100	6 3	20,600	4 50	13,700	2 30	7,400	1 20	5,200
22	15 7	78,800	9 9	37,500	6 2	20,200	4 60	14,000	2 30	7,400	1 20	5,200
23	15 7	78,800	9 5	35,500	6 1	19,800	4 50	13,700	2 25	7,300	1 20	5,200
24	15 6	78,000	9 3	34,500	6 0	19,400	4 40	13,400	2 20	7,200	1 10	5,000
25	15 4	76,400	9 3	34,500	6 0	19,400	4 30	13,100	2 20	7,200	1 00	4,800
26	15 2	74,800	9 3	34,500	5 9	19,000	4 20	12,800	2 00	6,800	0 90	4,600
27	15 0	73,300	9 3	34,500	5 8	18,600	4 10	12,500	2 00	6,800	0 80	4,450
28	14 8	71,700	9 3	34,500	5 8	18,600	4 00	12,200	2 05	6,900	0 80	4,450
29	14 7	70,900	9 3	34,500	5 8	18,600	3 90	11,900	2 10	7,000	0 75	4,350
30	14 5	69,400	9 3	34,500	5 7	18,200	3 90	11,900	2 10	7,000	0 70	4,300
31	14 3	67,900	9 3	34,500			3 80	11,600			0 60	4,150



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*Mean Daily Gauge Height (in Feet) of Shuswap Lake at Sicamous, for 1916.*

DAY.	JAN.	FEB.	MAR.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.
1												
2								8.6				
3					4.4							
4												
5	1.6			2.00			12.0					
6												
7						8.0						
8												
9								7.6				
10					6.1							
11												
12							11.9					
13				2.65								
14												
15			1.0			8.6						
16								6.5				
17					6.4							
18												
19				3.00			10.5					
20												
21						10.4						
22			1.4									
23								5.1				
24					6.8							
25												
26				3.40			10.1					
27												
28						11.7						
29			1.6									
30								4.5				
31					7.4							

*Mean Daily Gauge Height (in Feet) of Thompson River at Kamloops, for 1916.*

DAY.	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.
1				0.3	3.4	7.5	13.4	8.7	5.3			
2				0.3	3.5	7.6	12.7	8.6	5.1			
3				0.4	3.9	7.5	12.3	8.5	5.1			
4				0.4	4.5	7.8	12.4	8.5	5.2			
5				0.5	5.4	8.2	12.6	8.7	5.1			
6				0.7	6.1	8.4	12.3	8.4	5.0			
7				0.6	6.5	8.1	11.9	8.0	4.7			
8				0.7	6.8	8.0	11.4	7.9	4.6			
9				0.8	6.6	8.2	11.2	7.7	4.3			
10				1.0	6.3	8.2	11.2	7.8	4.2			
11				1.1	6.0	8.1	11.5	7.6	4.1			
12				0.9	5.8	8.1	11.5	7.3	3.7			
13				1.3	5.6	8.0	11.5	7.0	3.5			
14				1.2	5.4	8.2	11.5	6.7	3.5			
15				1.3	5.2	8.8	11.6	6.7	3.2			
16				1.3	5.2	9.7	11.1	6.6	3.1			
17				1.4	5.3	10.5	10.6	6.6	3.0			
18				1.5	5.5	11.2	10.9	6.5	2.9			
19				1.5	6.0	12.1	11.0	6.2	2.8			
20				1.5	6.5	12.8	10.8	5.8	2.8			
21				1.6	6.8	13.4	10.6	5.5	2.5			
22				1.6	7.0	13.6	10.9	5.2	2.6			
23				1.6	6.8	13.7	10.8	5.0	2.5			
24				1.6	6.6	13.9	10.7	5.0	2.3			
25				1.6	6.5	13.8	10.3	5.1	2.5			
26				1.6	6.5	13.7	10.1	5.4	2.5			
27				1.7	6.7	13.6	10.0	5.4	2.6			
28				1.2	7.1	13.7	9.7	5.3	2.4			
29				2.7	7.4	13.9	9.5	5.3	2.5			
30				3.2	7.5	13.8	9.2	5.2	2.3			
31					7.5		9.0	5.2				

## KAMLOOPS DIVISION.

## MISCELLANEOUS METER MEASUREMENTS.

## KAMLOOPS DISTRICT.

Date	Stream.	Tributary to	Locality.	Engineer.	Gauge Height.	Discharge.
1918						
May 17	Boulder	N. Thompson	1 mile from mouth.	C. G. Cline	1.7	91.8
June 2	Campbell	S. Thompson	Barnhart Vale	A. L. McNaughton	1.2	23.2
July 21	Campbell	S. Thompson	Barnhart Vale	C. G. Cline	1.1	14.3
July 21	Campbell	S. Thompson	2 miles above Barnhart Vale	C. G. Cline		17.7
May 14	Canyon	Heffley Lake	$\frac{1}{2}$ mile from mouth.	C. G. Cline		6.0
May 16	Fadear	Louis Creek	Above diversions near mouth	C. G. Cline		51.1
July 22	Fadear	Louis Creek	Above diversions near mouth	C. G. Cline		51.1
Aug. 31	Fadear	Louis Creek	Above diversions near mouth	F. R. Archibald		51.2
July 21	Anderson's	Diversion from Heffley creek	near mouth	F. R. Archibald		9.4
July 21	Crawshaw's	Diversion from Heffley creek	near mouth	F. R. Archibald		1.7
July 24	Lane	N. Thompson	Above B.C. Fruitland's Flume	F. R. Archibald		0.6
Feb. 15	Peterson	S. Thompson	C.P.R. culvert	F. R. Archibald		1.6
July 21	Scuittoe	Campbell	$\frac{1}{2}$ mile from mouth.	C. G. Cline and A. L. McNaughton		130.0
				C. G. Cline		18.3

## OKANAGAN DISTRICT.

Aug. 10	East Canoe	Canoe Creek	Above Salmon Arm Intake	C. G. Cline		2.5
Mar. 11	North Fork	Kettle River	Grand Forks	A. L. McNaughton	2.27	154.0
Mar. 6	Otter	Tulameen	Below road crossing	A. L. McNaughton	2.20	20.0
Mar. 9	Twentymile	Similkameen	Above Intake	A. L. McNaughton		11.0



EAST CANOE CREEK. Waterworks Intake for City of Salmon Arm.

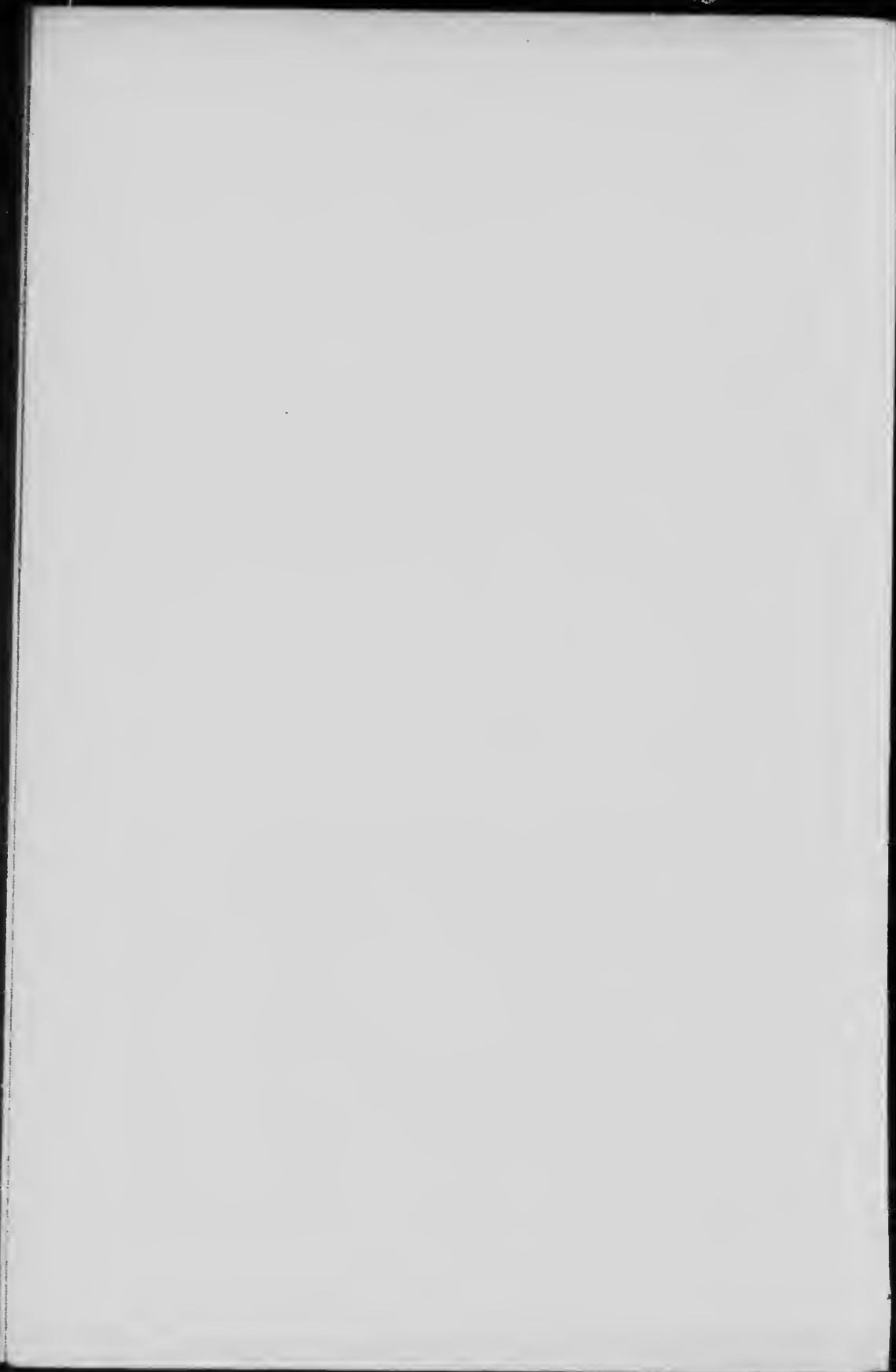


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KAMLOOPS DIVISION  
MISCELLANEOUS METER MEASUREMENTS.

ASHCROFT DISTRICT.

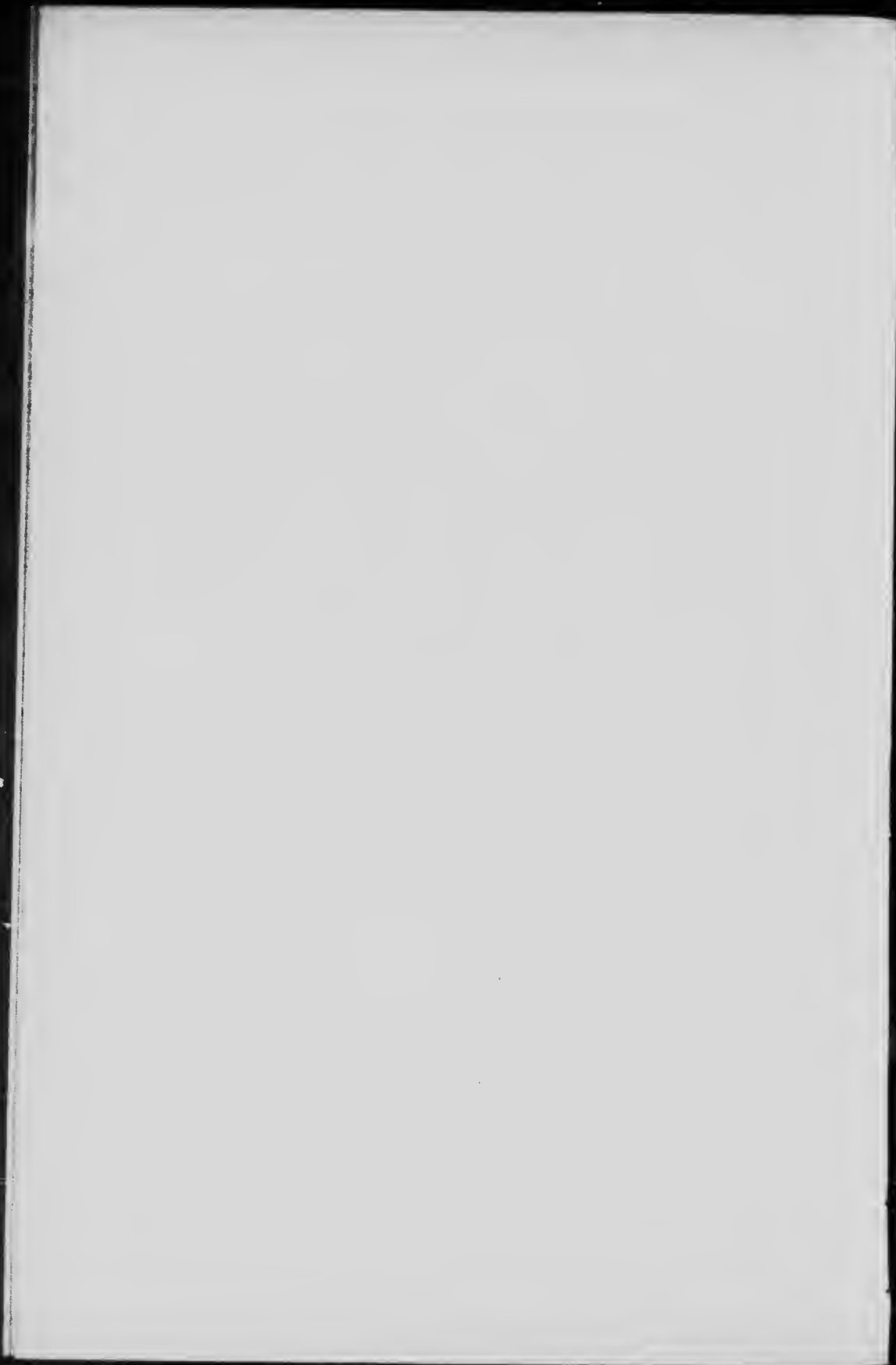
Date.	Stream.	Tributary to	Locality.	Engineer.	Gauge Height	Discharge.
1916						
May 6	Oregon Jack	Thompson	Three miles from mouth	F. R. Archibald		14.8
Aug. 23	Oregon Jack	Thompson	Three miles from mouth	F. R. Archibald		7.4
Oct. 16	Oregon Jack	Thompson	Three miles from mouth	A. L. McNaughton		3.0
Sept. 1	Spius	Nicola River	1 mile above mill dam	A. L. McNaughton		100.0
Sept. 21	Spius	Nicola River	1 mile above mill dam	A. L. McNaughton		49.0
Nov. 15	Spius	Nicola River	1 mile above mill dam	A. L. McNaughton		52.0



REPORT  
OF THE  
BRITISH COLUMBIA HYDROMETRIC  
SURVEY FOR 1916.

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CHAPTER IV.  
NELSON DIVISION.



CHAPTER IV.  
NELSON DIVISION.

Classified list of streams, giving object of maintenance of gauging stations and number of previous Water Resources Papers where description of stream and flow data may be found.

NELSON DISTRICT.

Stream.	Object of Maintenance.	Water Resources Papers.
Carpenter.....	Power and Mining.....	14, 18
Columbia—Trail.....	Power and Navigation.....	8, 14, 18
Duncan.....	Reclamation.....	18
Enterprise.....	Mining.....	18
Fry.....	Power.....	18
Goat.....	Power and Reclamation.....	14, 18
Gold (Silverton).....	Mining.....	18
Inonoaklin.....	Power, Municipal Supply.....	18
Kaslo.....	Power.....	14, 18
Kootenay—Glade.....	Power and Reclamation.....	8, 14, 18
Lardeau.....	Reclamation.....	18
L. H.....	Power and Mining.....	14, 18
Silverton.....	Power and Mining.....	14, 18
Slocan.....	Power and Lumbering.....	18
Spring.....	Municipal Supply.....	18
Vevey.....	Mining.....	18
Wilson.....	Power and Lumbering.....	18

REVELSTOKE DISTRICT.

Akolkolex.....	Power.....	8, 14, 18
Bugaboo.....	Power, Reclamation.....	8, 14, 18
Columbia (Golden).....	Reclamation.....	1, 8, 14, 18
Columbia (Revelstoke).....	River Control and Navigation.....	1, 8, 14, 18
Hospital.....	Municipal Supply.....	14, 18
Illecillewaet.....	Power.....	1, 8, 14, 18
Incomappleux (Beaton).....	Power.....	14, 18
Incomappleux (Camborne).....	Power, Mining.....	1, 8, 14, 18
Kicking Horse (Field).....	Power.....	1, 8, 14, 18
Kicking Horse (Golden).....	Power, Reclamation.....	1, 8, 14, 18
Kicking Horse (No. 2 Tunnel).....	Power.....	1, 8, 14, 18
No. 2 (Forster).....	Power, Reclamation.....	8, 14, 18
Spillimacheen.....	Power, Mining, Reclamation.....	8, 14, 18

CRANBROOK DISTRICT.

Big Sand.....	Irrigation.....	14, 18
Bull.....	Power, Lumbering.....	14, 18
Cherry.....	Irrigation.....	14, 18
Elk.....	Power.....	14, 18
Gold (Newgate).....	Irrigation.....	14, 18
Kootenay (Wardner).....	Lumbering.....	14, 18
Linklater.....	Irrigation.....	14, 18
Little Sand.....	Irrigation.....	14, 18
Mark.....	Power.....	14, 18
Moyie.....	International Stream.....	14, 18
Phillips.....	Irrigation.....	14, 18
Rock.....	Irrigation.....	14, 18
St. Marys.....	Power and Lumbering.....	14, 18

## METEOROLOGICAL DATA.

*Mean Monthly Temperatures (Degrees Fahr.)—Nelson District—1916.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Nakusp .....	4	8	22	34	44	49	56	59	60	50	41	29	20	39
Nelson .....	14		27	36	46	50	59	64	65	55	44	31	20	..
Waneta .....	3	10	26	38	45	49	58	62	64	54	42	28	17	41

*Mean Monthly Temperatures (Degrees Fahr.)—Revelstoke District—1916.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Golden .....	14	-9	15	32	44	47	52	59	60	51	40	21	4	35
Wilmer .....	7	-4	19	32	43	47	56	60	61	51	39	23	7	36
Glacier .....	14	-3	7	26	34	40	50	53	55	46	36	20	12	32
Revelstoke .....	15	1	22	34	44	49	58	61	62	53	43	28	15	39

*Mean Monthly Temperatures (Degrees Fahr.)—Cranbrook District—1916.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cranbrook .....	7	-2	20	34	44	48	62	62	60	51	40	25	10	38
Elko .....	20	2	24	35	46	50								
Fernie .....	3	-2	19	32	37	45	54	60	58	49	38	24	10	35

*Difference from Average Temperatures (Degrees Fahr.)—Nelson District—1916.**Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Nelson .....	14		1	-1	0	-4	-2	-2	2	-1	-1	5	-9	-2 0

Note:—All quantities are plus unless otherwise designated.

*Difference from Average Temperatures (Degrees Fahr.)—Revelstoke District—1916.**Difference of Average for Month from Monthly Average for Previous 10 Years or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Golden .....	14	-19	1	3	2	-4	-5	-2	2	1	-1	-8	14	-3.8
Glacier .....	14	18	1	1	2	5	1	-3	0	0	-2	5	6	3.5
Revelstoke .....	15	-19	-1	1	2	-3	-1	-3	1	0	0	-6	-12	-3 4

Note:—All quantities are plus unless otherwise designated.

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*Difference from Average Temperatures (Degrees Fahr.)—Cranbrook District—1916.  
Difference of Average for Month from Monthly Average for Previous 10 Years  
or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cranbrook	18	...	1	...	...	-3	-5	-2	-1	...	-2	-4	-11	...
Elko	20	-20	-2	1	1	-3	...	...	...	...	...	...	...	...

Note:—All quantities are plus unless otherwise designated.

*Total Monthly Precipitation (Inches)—Nelson District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Nakusp	1.95	3.69	4.36	1.68	2.55	1.84	2.09	2.26	1.80	0.58	2.18	2.33	27.31
Nelson	2.95	4.55	0.79	3.08	2.23	1.99	0.81	1.33	0.92	3.49	1.90	...	...
Waneta	7.08	2.65	1.99	1.08	3.58	4.01	2.10	1.12	0.97	0.76	3.97	4.55	33.86

*Total Monthly Precipitation (Inches)—Revelstoke District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Golden	1.20	...	1.38	0.56	0.67	2.21	1.26	1.24	1.59	0.77	1.40	0.70	...
Wilmer	0.73	1.31	0.79	0.45	2.76	1.65	1.87	1.75	0.79	0.65	1.16	0.69	11.60
Glacier	3.60	3.40	9.96	3.04	3.28	2.36	5.80	2.78	5.34	3.92	11.00	6.60	61.17
Revelstoke	2.25	2.58	6.31	1.75	2.53	2.12	5.49	1.58	3.53	1.37	4.68	4.00	38.59

*Total Monthly Precipitation (Inches)—Cranbrook District—1916.*

Locality.	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cranbrook	3.60	3.10	2.90	0.71	1.26	4.80	0.71	1.50	1.45	0.64	0.90	1.16	22.73
Elko	1.19	2.05	2.14	2.16	0.37	...	...	...	...	...	...	...	...
Fernie	3.50	4.08	6.66	2.18	2.60	3.57	1.89	1.97	1.94	1.19	3.60	2.36	35.54

*Difference from Average Precipitation (Inches)—Nelson District—1916.  
Difference of Total for Month from Monthly Average for Previous 10 Years  
or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Nelson	12	...	0.61	2.91	-0.50	0.41	-0.56	-0.01	-1.13	-0.46	-1.35	-0.25	-0.71	...

Note:—All quantities are plus unless otherwise designated.

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*Difference from Average Precipitation (Inches)—Revelstoke District—1916.*  
*Difference of Total for Month from Monthly Average for Previous 10 Years*  
*or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Golden.....	14	-1.33	.....	0.33	-0.12	-0.28	0.60	-0.26	-0.39	-0.26	-0.58	-1.27	-0.78	.....
Glacier.....	14	-4.04	-2.89	4.81	0.41	1.88	-0.63	3.55	0.18	1.20	0.38	1.95	-0.97	5.33
Revelstoke.....	15	-2.96	-1.96	3.48	-0.21	0.71	-0.85	2.99	-1.08	0.14	-2.64	-0.55	-0.42	-3.35

Note:—All quantities are plus unless otherwise designated.

*Difference from Average Precipitation (Inches)—Cranbrook District—1916.*  
*Difference of Total for Month from Monthly Average for Previous 10 Years*  
*or More.*

Locality.	No. of Years Records	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Cranbrook.....	13	.....	1.62	.....	.....	-0.21	3.09	-0.69	1.18	.....	.....	.....	.....	.....
Elko.....	20	-0.41	0.77	1.32	1.28	-1.76	.....	.....	.....	.....	-0.06	-0.76	-0.41	.....

Note:—All quantities are plus unless otherwise designated.



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## HYDROMETRIC DATA.

## NELSON DISTRICT.

## CARPENTER CREEK AT SANDON (3025).

*Location.*—The station is located in the town of Sandon, in a timber flume which confines the creek. The gauge is located back of the C.P.R. depot.

*Records Available.*—April 25, 1914 to December 31, 1916.

*Drainage Area.*—The drainage area of Carpenter creek above Sandon is 12 square miles.

*Gauge.*—Enamel staff gauge, 0 to 3 feet, nailed to side of flume. Daily readings are made by Mrs. E. A. Cameron.

*Channel.*—Stream is confined to a flume for several hundred feet through the townsite of Sandon. The flume is of timber; it is 11.50 feet wide and has a slope of 6 per cent; Kutter's formula for flow in open channels is used to determine discharges.

*Winter Flow.*—Owing to the high velocities in the flume, the station is not affected by ice conditions.

*Accuracy.*—During high water the results are probably within 10 per cent, but at low stages, due to the gauge being read only to tenths, the degree of accuracy is materially lessened.

## Daily Gauge Height and Discharge of Carpenter Creek at Sandon, for 1916.

(Drainage area, 12 square miles.)

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	29	0 05	16	0 10	29	0 10	20	0 30	82	0 40	117
2	0 10	29	0 05	16	0 10	29	0 10	29	0 32	89	0 40	117
3	0 10	29	0 05	16	0 10	29	0 12	34	0 40	117	0 42	124
4	0 10	29	0 05	16	0 10	29	0 12	34	0 50	152	0 52	159
5	0 10	29	0 05	16	0 10	29	0 12	34	0 60	180	0 60	189
6	0 10	29	0 05	16	0 10	29	0 12	34	0 82	303	0 55	170
7	0 10	29	0 05	16	0 10	29	0 12	34	0 65	216	0 58	182
8	0 10	29	0 05	16	0 10	29	0 18	49	0 45	134	0 70	243
9	0 10	29	0 05	16	0 10	29	0 20	54	0 40	117	0 92	352
10	0 10	29	0 05	16	0 10	29	0 15	41	0 32	89	0 95	370
11	0 05	16	0 05	16	0 10	29	0 15	41	0 30	82	0 95	370
12	0 05	16	0 05	16	0 10	29	0 15	41	0 25	68	0 98	370
13	0 05	16	0 05	16	0 10	29	0 15	41	0 25	68	0 96	375
14	0 05	16	0 05	16	0 10	29	0 15	41	0 25	68	1 15	486
15	0 05	16	0 05	16	0 10	29	0 15	41	0 25	68	1 70	816
16	0 05	16	0 10	29	0 10	29	0 15	41	0 28	76	2 25	1,140
17	0 05	16	0 10	29	0 10	29	0 15	41	0 30	82	2 50	1,280
18	0 05	16	0 10	29	0 10	29	0 15	41	0 30	82	2 50	1,280
19	0 05	16	0 10	29	0 10	29	0 15	41	0 35	99	2 40	1,220
20	0 05	16	0 10	29	0 10	29	0 15	41	0 42	124	1 40	636
21	0 05	16	0 10	29	0 10	29	0 15	41	0 40	117	1 20	516
22	0 05	16	0 10	29	0 10	29	0 15	41	0 40	117	1 10	456
23	0 05	16	0 10	29	0 10	29	0 15	41	0 35	99	1 15	486
24	0 05	16	0 10	29	0 10	29	0 15	41	0 35	99	1 25	546
25	0 05	16	0 10	29	0 10	29	0 18	49	0 35	99	1 30	576
26	0 05	16	0 10	29	0 10	29	0 22	59	0 38	110	1 30	576
27	0 05	16	0 10	29	0 10	29	0 32	89	0 42	124	1 45	667
28	0 05	16	0 10	29	0 10	29	0 32	89	0 58	182	1 45	667
29	0 05	16	0 10	29	0 10	29	0 30	82	0 50	152	1 35	606
30	0 05	16	0 10	29	0 10	29	0 28	76	0 50	152	1 10	456
31	0 05	16	0 10	29	0 10	29	0 28	76	0 45	134	1 10	456
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	341	0 52	159	0 20	54	0 15	41	0 05	16	0 05	16
2	1 10	456	0 52	159	0 20	54	0 10	29	0 05	16	0 05	16
3	1 30	572	0 50	152	0 20	54	0 10	29	0 05	16	0 05	16
4	1 20	516	0 50	152	0 30	82	0 10	29	0 05	16	0 05	16
5	1 00	398	0 45	134	0 35	99	0 10	29	0 05	16	0 05	16
6	0 90	341	0 45	134	0 30	82	0 10	29	0 05	16	0 05	16
7	0 95	370	0 45	134	0 25	68	0 10	29	0 05	16	0 05	16
8	0 95	370	0 50	152	0 32	89	0 10	29	0 05	16	0 05	16
9	1 20	516	0 50	152	0 30	82	0 10	29	0 05	16	0 05	16
10	1 10	456	0 45	134	0 30	82	0 10	29	0 05	16	0 05	16
11	1 00	398	0 45	134	0 25	68	0 10	29	0 05	16	0 05	16
12	0 90	341	0 45	134	0 25	68	0 10	29	0 05	16	0 05	16
13	0 85	318	0 40	117	0 25	68	0 10	29	0 05	16	0 05	16
14	0 80	294	0 40	117	0 25	68	0 10	29	0 05	16	0 05	16
15	0 80	294	0 40	117	0 20	54	0 10	29	0 05	16	0 05	16
16	0 90	341	0 35	99	0 20	54	0 10	29	0 05	16	0 05	16
17	0 90	341	0 35	99	0 20	54	0 10	29	0 05	16	0 05	16
18	0 80	294	0 38	110	0 20	54	0 10	29	0 05	16	0 05	16
19	0 80	294	0 30	82	0 20	54	0 05	16	0 05	16	0 05	16
20	0 70	243	0 30	82	0 20	54	0 05	16	0 05	16	0 05	16
21	0 70	243	0 30	82	0 20	54	0 05	16	0 05	16	0 05	16
22	0 80	294	0 32	89	0 18	49	0 05	16	0 05	16	0 05	16
23	0 60	189	0 35	99	0 15	41	0 05	16	0 05	16	0 05	16
24	0 55	170	0 55	99	0 15	41	0 05	16	0 05	16	0 05	16
25	0 50	152	0 30	82	0 20	54	0 05	16	0 05	16	0 05	16
26	0 50	152	0 30	82	0 15	41	0 05	16	0 05	16	0 05	16
27	0 52	159	0 30	82	0 15	41	0 05	16	0 05	16	0 05	16
28	0 45	134	0 30	82	0 15	41	0 05	16	0 05	16	0 05	16
29	0 48	145	0 25	68	0 15	41	0 05	16	0 05	16	0 05	16
30	0 52	159	0 20	54	0 18	49	0 05	16	0 05	16	0 05	16
31	0 58	182	0 20	54	0 18	49	0 05	16	0 05	16	0 05	16

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*Monthly Discharge of Carpenter Creek near Sandon, for 1916.*

(Drainage area, 13 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	29	16	20.2	1.68	1.94	1,240
February	29	16	22.3	1.86	2.01	1,280
March	29	29	29.0	2.42	2.79	1,780
April	49	29	46.0	3.83	4.27	2,740
May	303	68	119.0	9.92	11.40	7,320
June	1,280	117	318.0	43.20	48.20	30,800
July	376	134	306.0	25.50	29.40	18,800
August	159	54	110.0	9.17	10.60	6,760
September	99	41	60.0	5.00	5.58	3,570
October	41	16	23.9	1.99	2.29	1,470
November	16	16	16.0	1.33	1.48	952
December	16	16	16.0	1.33	1.53	984
The year	1,280	16	107.0	8.93	121.49	77,696

## COLUMBIA RIVER AT TRAIL (3008).

*Location.*—The station is at the highway bridge near Trail, 17 miles above the international boundary and mouth of Pend d'Oreille river.

*Records Available.*—April 15, 1913 to December 31, 1916.

*Drainage Area.*—The drainage area of Columbia river above Trail is 34,000 square miles.

*Gauge.*—Chain gauge; read twice daily by Mr. C. A. Broderick, B.C.L.S.

*Channel.*—The river has a bend about 400 yards above the bridge; below the bridge the river is straight for 400 yards. Control appears to be permanent and has a pronounced riffle 400 yards below section.

*Discharge Measurements.*—The rating curve is based on 28 discharge measurements made during 1913-16. Nine measurements were made during 1916.

*Winter Flow.*—The winter flow is very regular; the station is not affected by ice conditions.

*Accuracy.*—Reliable gauge readings are obtained. The rating curve is well defined. Between 12,000 and 100,000 cubic feet per second—accuracy "B"; between 100,000 and 300,000 cubic feet per second—accuracy "C."

*Co-operation.*—The station is maintained in co-operation with the Water Resources Branch of the United States Geological Survey. They have supplied a standard chain gauge and a special type of sounding device for use in high water.



**COLUMBIA RIVER at TRAIL**

Meter measurements made from Highway Bridge. Maximum Discharge 1916—30,000 c.f.s.

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*Discharge Measurements of Columbia River at Trail, for 1910.*

Date.	Engineer.	Meter No.	Width.		Area of Section.		Mean Velocity.		Gauge Height.		Discharge.	
			Feet.	Sq. ft.	Ft per sec.	Feet.	Sec.-ft.					
Feb. 9	Dempster and Beeson	1,927	480	5,810	2 29	6 30	13,300					
June 6	Elliott and Patterson	1,521	580	14,100	8 89	24 78	128,500					
June 25	T. R. Patterson	1,929	888	32,400	12 96	36 13	219,700					
July 30	T. R. Patterson	1,926	660	32,000	11 90	37 65	362,000					
Aug. 8	T. R. Patterson	1,929	609	18,000	10 00	27 67	160,000					
Sept. 6	T. R. Patterson	1,087	364	12,000	8 34	33 63	106,000					
Sept. 28	Elliott and Patterson	1,057	334	6,990	6 31	16 60	63,100					
Oct. 26	Webb and Parker	1,523	304	8,110	4 23	12 40	24,500					
Nov. 26	Swan and Elliott	1,909	460	7,040	3 23	10 30	33,500					

DEPARTMENT OF THE INTERIOR

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Daily Gauge Height and Discharge of Columbia River at Trail, for 1916.

(Drainage area, 34,000 square miles.)

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	20,500	8.1	13,000	8.9	16,500	12.3	34,000	16.3	59,800	23.8	119,000
2	9.6	20,009	8.1	13,000	8.8	16,000	12.2	34,000	16.7	62,700	23.9	120,000
3	9.5	19,500	8.1	12,500	8.8	16,000	12.3	34,500	17.2	66,200	24.1	122,000
4	9.4	19,000	8.1	12,500	8.8	16,000	12.4	35,100	17.8	70,600	24.2	123,000
5	9.4	19,000	8.1	12,500	8.9	16,500	12.5	35,700	18.4	75,200	24.5	125,000
6	9.3	18,500	8.1	12,500	8.9	16,500	12.55	36,000	19.4	83,200	24.7	127,000
7	9.3	18,500	8.1	12,500	9.0	17,000	12.65	36,600	20.3	90,400	24.9	129,000
8	9.3	18,500	8.1	12,500	9.0	17,000	12.8	37,400	20.7	94,000	25.1	131,000
9	9.2	18,000	8.1	12,500	9.0	17,000	12.8	37,400	20.7	94,000	25.1	131,000
10	9.2	18,000	8.0	12,000	9.2	18,000	13.0	38,600	21.4	99,200	25.4	134,000
11	9.1	17,500	8.0	12,000	9.2	18,000	13.2	39,800	21.9	104,000	25.7	137,000
12	9.1	17,500	8.1	12,500	9.3	18,500	13.4	41,000	22.2	105,000	25.9	139,000
13	9.0	17,000	8.2	13,000	9.4	19,000	13.6	42,200	22.4	107,000	26.1	141,000
14	9.0	17,000	8.2	13,000	9.4	19,000	13.8	43,400	22.5	108,000	26.3	143,000
15	8.9	16,500	8.2	13,000	9.6	20,000	14.0	44,600	22.5	108,000	26.7	147,000
16	8.9	16,500	8.2	13,000	9.8	21,000	14.2	45,900	22.3	106,000	27.3	153,000
17	8.9	16,500	8.2	13,000	9.9	21,500	14.5	47,800	22.2	105,000	28.2	162,000
18	8.9	16,500	8.3	13,500	10.0	22,000	14.6	48,400	22.1	104,000	29.3	173,000
19	8.9	16,500	8.4	14,000	10.2	23,100	14.7	49,100	22.0	104,000	30.7	188,000
20	8.9	16,500	8.4	14,000	10.4	24,100	14.7	49,100	22.1	104,000	32.6	209,000
21	8.9	16,500	8.5	14,500	10.6	25,200	14.8	49,700	22.1	104,000	34.9	234,000
22	8.9	16,500	8.5	14,500	10.8	26,300	14.8	49,700	22.3	106,000	35.4	240,000
23	8.9	16,500	8.6	15,000	11.0	27,400	14.9	50,400	22.4	107,000	36.8	255,000
24	8.9	16,500	8.6	15,000	11.2	28,500	14.9	50,400	22.5	108,000	37.8	267,000
25	8.9	16,500	8.7	15,500	11.3	29,500	15.0	51,000	22.7	109,000	38.3	273,000
26	8.9	16,500	8.7	15,500	11.5	30,100	15.1	51,700	22.7	109,000	39.0	282,000
27	8.8	16,000	8.8	16,000	11.6	30,600	15.2	52,400	22.8	110,000	39.4	286,000
28	8.8	16,000	8.8	16,000	11.7	31,200	15.3	53,000	22.9	111,000	39.8	290,000
29	8.8	16,000	8.9	16,500	11.8	31,700	15.5	54,300	22.9	113,000	40.2	298,000
30	8.8	16,000	8.8	16,000	11.9	32,300	15.7	55,700	23.3	115,000	40.5	304,000
31	8.8	16,000	8.8	16,000	12.0	32,800	16.0	57,700	23.5	116,000	40.6	306,000
					12.1	33,400			23.7	118,000		

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	40.5	304,000	30.4	185,000	22.0	101,000	16.0	57,700	12.26	34,300	10.20	23,100
2	40.2	298,000	30.0	181,000	22.1	104,000	15.8	56,400	12.20	34,000	10.20	23,100
3	40.1	296,000	29.6	176,000	22.2	105,000	15.6	55,000	12.10	33,800	10.20	23,100
4	40.0	291,000	29.3	173,000	22.3	106,000	15.3	53,000	12.14	33,600	10.16	22,900
5	39.8	290,000	28.9	169,000	22.4	107,000	15.1	51,700	12.14	33,600	10.12	22,600
6	39.5	287,000	28.5	165,000	22.5	108,000	14.9	50,400	12.12	33,500	10.10	22,500
7	39.1	283,000	28.1	161,000	22.5	108,000	14.7	49,100	12.10	33,400	10.04	22,200
8	38.8	278,000	27.7	157,000	22.4	107,000	14.5	47,800	12.00	33,200	9.95	21,700
9	38.6	276,000	27.4	154,000	22.3	106,000	14.3	46,500	11.98	32,700	9.90	21,500
10	38.6	276,000	27.2	152,000	22.2	105,000	14.1	45,200	11.88	32,200	9.85	21,200
11	38.6	276,000	26.9	149,000	21.9	104,000	14.0	44,600	11.80	31,700	9.80	21,000
12	38.7	277,000	26.6	146,000	21.6	101,000	13.8	43,400	11.72	31,300	9.75	20,700
13	38.6	276,000	26.3	143,000	21.3	98,400	13.6	42,200	11.62	30,700	9.68	20,400
14	38.7	277,000	26.0	140,000	21.0	96,000	13.4	41,000	11.52	30,200	9.60	20,000
15	38.7	277,000	25.6	136,000	20.5	92,000	13.3	40,400	11.38	29,400	9.54	19,700
16	38.5	275,000	25.5	135,000	20.0	88,000	13.2	39,800	11.28	28,900	9.45	19,200
17	38.2	272,000	25.2	132,000	19.4	83,200	13.0	38,600	11.14	28,100	9.40	19,000
18	38.0	270,000	25.0	130,000	18.9	79,200	12.9	38,000	11.06	27,700	9.36	18,800
19	37.9	268,000	24.6	126,000	18.5	76,000	12.9	38,000	10.96	27,200	9.32	18,600
20	37.7	266,000	24.3	124,000	18.1	72,800	12.8	37,400	10.88	26,800	9.30	18,500
21	37.4	263,000	21.0	121,000	17.8	70,600	12.7	36,700	10.78	26,200	9.28	18,400
22	36.9	257,000	21.6	117,000	17.6	69,100	12.7	36,900	10.70	25,800	9.25	18,200
23	36.2	249,000	21.1	113,000	17.3	66,900	12.6	36,300	10.64	25,400	9.21	18,000
24	35.7	243,000	22.6	104,000	17.2	66,200	12.4	35,100	10.58	25,100	9.18	17,900
25	34.9	234,000	22.4	107,000	17.1	65,500	12.6	36,300	10.50	24,700	9.15	17,800
26	34.1	229,000	22.2	105,000	17.1	65,500	12.60	36,300	10.44	24,300	9.08	17,400
27	33.6	220,000	22.6	104,000	16.0	64,100	12.60	36,300	10.38	24,000	9.00	17,000
28	33.0	214,000	22.0	101,000	16.7	62,500	12.60	36,300	10.30	23,600	8.94	16,700
29	32.4	207,000	22.0	104,000	16.5	61,200	12.48	35,900	10.24	23,300	8.86	16,300
30	31.6	198,000	22.0	104,000	16.2	59,100	12.40	35,100	10.20	23,100	8.78	15,900
31	31.0	192,000	22.0	101,000			12.34	34,700			8.72	15,800

SESSIONAL PAPER No. 25d

## Monthly Discharge of Columbia River at Trail, for 1916.

(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.....	20,500	13,000	16,300	0.48	0.55	1,902,000
February.....	16,500	12,000	13,700	0.40	0.43	788,000
March.....	33,400	16,000	23,000	0.68	0.78	1,414,000
April.....	57,700	34,000	45,000	1.32	1.47	2,678,000
May.....	118,000	59,800	99,400	2.92	3.37	6,112,000
June.....	306,000	119,000	192,000	5.65	6.30	11,430,000
July.....	304,000	192,000	262,000	7.70	8.88	16,110,000
August.....	185,000	104,000	136,000	4.00	4.61	8,362,000
September.....	108,000	59,100	86,700	2.55	2.84	5,159,000
October.....	57,700	34,700	42,300	1.24	1.43	2,601,000
November.....	34,300	23,100	29,100	0.85	0.95	1,732,000
December.....	23,100	15,600	19,600	0.58	0.67	1,205,000
The year.....	306,000	12,000	80,400	2.36	32.28	58,593,000

## DUNCAN RIVER (3066).

*Location.*—About 10 miles above the mouth, at the highway bridge, 1 mile below Howser lake.

*Records Available.*—December 1914 to December 1915; April to December 1916.

*Drainage Area.*—Eight hundred and twenty square miles.

*Gauge.*—A vertical staff gauge, nailed to the wharf at Howser lake, about 1 mile above the measuring section. Daily readings made by Mr. Wm. Simpson.

*Channel.*—The channel is straight for about 750 yards above and below the metering section.

*Discharge Measurements.*—The rating curve is based on one discharge measurement made in November 1914, four measurements made in 1915 and three in 1916.

*Winter Flow.*—The section does not seem to be affected by ice conditions. The winter flow is very regular.

*Accuracy.*—The readings are reliable and the section is good. Accuracy "A" to discharge of 5,000 cubic feet per second; accuracy "C" above 5,000 cubic feet per second.

## Discharge Measurements of Duncan River near Howser, for 1916.

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 22	G. K. Boston	1,929	272	1,570	0.55	1.30	862
Aug. 24	T. R. Patterson	1,929	315	2,510	1.86	4.51	4,670
Sept. 20	Elliott and Patterson	1,057	298	2,070	1.30	3.23	2,660

## Daily Gauge Height and Discharge of Duncan River near Howser, for 1916.

(Drainage area, 820 square miles.)

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	540										
2	0.85	540	0.70	460	0.72	470	1.30	830	2.95	2,390	4.60	4,650
3	0.85	540	0.70	460	0.70	460	1.30	830	3.00	2,450	4.60	4,650
4	0.80	510	0.70	460	0.70	460	1.32	844	3.40	2,940	4.60	4,650
5	0.80	510	0.70	460	0.70	460	1.32	844	3.70	3,340	4.70	4,800
6	0.75	485	0.70	460	0.70	460	1.35	865	3.85	3,550	5.10	5,120
7	0.70	460	0.70	460	0.70	460	1.40	900	4.50	4,500	5.20	5,580
8	0.70	460	0.70	460	0.70	460	1.45	940	4.80	4,950	5.10	5,420
9	0.70	460	0.68	450	0.70	460	1.50	980	4.75	4,880	4.5	5,180
10	0.70	460	0.68	450	0.72	470	1.60	1,060	4.60	4,650	5.10	5,420
11	0.70	460	0.65	435	0.75	485	1.70	1,140	4.30	4,200	5.20	5,580
12	0.70	460	0.65	435	0.80	510	1.80	1,220	4.00	3,760	5.20	5,580
13	0.70	460	0.62	420	0.90	576	1.85	1,260	3.80	3,480	5.20	5,580
14	0.70	460	0.60	410	1.10	690	1.90	1,310	3.35	2,880	5.20	5,580
15	0.68	450	0.60	410	1.20	760	1.90	1,310	3.30	2,810	5.60	6,220
16	0.68	450	0.70	460	1.20	760	2.00	1,400	3.20	2,690	6.15	2,140
17	0.68	450	0.80	510	1.20	760	2.00	1,400	3.15	2,630	7.15	8,870
18	0.65	435	0.80	510	1.22	774	2.02	1,420	3.20	2,690	8.30	10,900
19	0.65	435	0.80	510	1.22	774	2.05	1,440	3.30	2,810	9.10	12,400
20	0.65	435	0.80	510	1.22	774	2.02	1,420	3.50	3,070	10.90	15,700
21	0.65	435	0.80	510	1.22	774	2.02	1,420	3.80	3,480	11.90	17,600
22	0.65	435	0.75	485	1.30	830	2.00	1,400	4.20	4,050	11.52	16,800
23	0.70	460	0.75	485	1.30	830	1.98	1,380	4.20	4,050	10.70	15,300
24	0.75	485	0.75	485	1.32	844	1.95	1,360	4.15	3,980	9.95	13,900
25	0.72	470	0.75	485	1.30	830	1.92	1,330	4.10	3,900	9.30	12,700
26	0.70	460	0.75	475	1.30	830	1.90	1,310	4.00	3,670	8.80	11,800
27	0.70	460	0.75	485	1.30	830	2.20	1,580	3.90	3,620	8.70	11,700
28	0.70	460	0.75	485	1.32	844	2.20	1,580	4.00	3,760	8.85	11,900
29	0.70	460	0.75	485	1.35	865	2.50	1,880	4.46	4,350	9.25	12,600
30	0.70	460	.....	.....	1.35	865	2.75	2,160	4.60	4,650	9.40	12,900
31	0.70	460	.....	.....	1.32	844	2.85	2,270	4.70	4,800	9.00	12,200
									4.65	4,720		

	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	8.45	11,200	6.40	7,560	6.00	6,880						
2	8.30	10,900	6.70	8,070	6.20	7,220	2.50	1,880	1.60	1,060	1.10	690
3	8.50	11,300	6.85	7,330	6.20	7,220	2.45	1,830	1.60	1,060	1.10	690
4	8.80	11,800	6.70	8,070	6.20	7,220	2.30	1,680	1.60	1,060	1.10	690
5	8.65	11,600	6.40	7,560	6.00	6,880	2.20	1,580	1.60	1,060	1.10	690
6	8.20	10,800	6.05	6,960	6.10	7,050	2.10	1,490	1.60	1,060	1.10	690
7	7.80	10,000	6.00	6,880	5.80	6,540	2.00	1,400	1.60	1,060	1.10	690
8	8.20	10,800	6.00	6,880	5.60	6,220	2.00	1,400	1.60	1,060	1.00	630
9	8.80	11,800	6.20	7,220	5.30	6,740	1.90	1,310	1.60	1,060	1.00	630
10	9.70	13,500	6.20	7,220	5.10	5,420	1.85	1,260	1.60	1,060	0.95	600
11	10.15	14,300	6.30	7,390	4.80	4,950	1.80	1,220	1.60	1,060	0.95	600
12	10.05	14,100	6.10	7,050	4.40	4,350	1.75	1,180	1.60	1,060	0.90	570
13	10.10	14,200	6.00	6,880	4.05	3,830	1.70	1,140	1.50	980	0.90	570
14	10.22	14,400	6.00	6,880	4.10	3,900	1.70	1,140	1.40	900	0.88	558
15	9.65	13,400	6.05	6,960	3.90	3,620	1.70	1,140	1.20	760	0.82	558
16	9.00	12,200	6.15	7,140	3.60	3,200	1.75	1,180	1.20	760	0.82	558
17	9.25	12,700	6.20	7,220	3.30	2,810	1.80	1,220	1.20	760	0.80	510
18	9.60	13,300	5.90	6,710	3.10	2,570	1.88	1,290	1.20	760	0.80	510
19	9.30	12,700	5.60	6,220	3.10	2,570	2.00	1,440	1.15	725	0.80	510
20	9.00	12,200	5.30	5,740	3.15	2,630	2.10	1,490	1.15	725	0.80	510
21	8.50	11,300	4.90	5,100	3.20	2,690	2.10	1,490	1.10	690	0.80	510
22	8.00	10,400	4.60	4,650	3.20	2,690	2.00	1,400	1.10	690	0.80	510
23	7.60	9,680	4.30	4,200	3.20	2,690	2.00	1,400	1.10	690	0.78	500
24	7.30	9,140	4.20	4,050	3.22	2,710	1.90	1,310	1.15	725	0.75	485
25	7.00	8,600	4.50	4,500	3.30	2,810	1.8.	1,260	1.20	760	0.72	470
26	6.70	8,070	4.90	5,100	3.50	2,810	1.55	1,200	1.20	760	0.70	460
27	6.60	7,730	5.10	5,420	3.28	2,790	1.80	1,220	1.20	760	0.70	460
28	6.40	7,330	5.30	5,740	3.15	2,630	1.70	1,140	1.15	725	0.70	460
29	6.20	7,220	5.40	5,900	3.00	2,450	1.68	1,120	1.10	690	0.68	450
30	6.00	6,880	5.50	6,060	2.80	2,210	1.62	1,080	1.10	690	0.65	435
31	6.10	7,050	5.70	6,380	2.65	2,040	1.60	1,060	1.10	690	0.60	410
			5.80	6,540	.....	.....	1.60	1,060	.....	.....	0.60	410



SESSIONAL PAPER No. 25d

## Monthly Discharge of Duncan River near Howser, for 1916.

(Drainage area, 820 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	540	435	468	0.57	0.66	28,760
February	510	410	468	0.57	0.61	26,920
March	865	460	668	0.81	0.93	41,070
April	2,270	830	1,290	1.57	1.75	76,760
May	4,950	2,390	3,670	4.47	5.15	225,700
June	17,600	4,650	9,290	11.30	12.60	552,800
July	14,400	6,880	11,000	13.40	15.40	676,400
August	8,070	4,050	6,400	7.80	8.99	393,500
September	7,220	2,040	4,070	4.96	5.53	242,200
October	1,880	1,060	1,320	1.61	1.86	81,160
November	1,060	690	863	1.05	1.17	51,350
December	690	410	549	0.67	0.77	33,760
The year	17,600	410	3,338	4.06	55.42	2,430,400

## INONOAKLIN CREEK (3084).

*Location.*—At second highway bridge about two miles above the mouth, and half a mile above the falls; near the town of Edgewood.

*Records Available.*—Daily gauge readings have been obtained from June 1 to December 8, 1915; March to December 1916.

*Drainage Area.*—One hundred and thirty square miles.

*Gauge.*—Vertical staff gauge, attached to cribbing above the bridge; read daily by Mr. W. R. Colegrave; the datum for 1916 is one foot lower than that of 1915.

*Channel.*—At the section the water has an even flow with a control about 100 yards below, which appears permanent.

*Discharge Measurements.*—The rating curve is based on eight discharge measurements made during 1915-16.

*Winter Flow.*—The station is subject to ice conditions. The minimum discharge noted was 22 cubic feet per second.

*Accuracy.*—The lower portion of the rating curve is well defined, and daily readings being obtained the following accuracies may be accorded: 20 to 800 cubic feet per second—"A"; 800 to 1,600 cubic feet per second—"C."

## Discharge Measurements of Inonoaklin Creek near Edgewood, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 9	J. A. Elliott and T. R. Patterson	1,521	52	200.0	3.35	3.50	630
July 21	T. R. Patterson	1,929	53	110.0	1.90	2.08	209
Aug. 9	T. R. Patterson	1,929	45	88.4	1.35	1.65	120
Sept. 29	J. A. Elliott and T. R. Patterson	1,057	42	59.8	0.60	1.01	36

Daily Gauge Height and Discharge of Inonoaklin Creek near Edgewood, for 19 16

(Drainage area, 130 square miles.)

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 70	128	3 20	485	4 80	967		
2							2 60	189	3 65	611	4 75	950		
3							2 60	189	4 15	761	5 05	1,050		
4							2 00	189	1 80	967	5 40	1,170		
5							2 00	189	5 05	1,050	5 05	1,050		
6							2 00	189	5 20	1,130	4 60	902		
7							2 00	189	5 30	1,130	4 20	776		
8							2 00	189	4 40	838	3 80	656		
9							2 25	244	3 55	582	3 60	596		
10							2 30	255	3 33	526	3 60	596		
11														
12							1 90	167	2 16	279	3 20	485		
13							1 90	167	2 36	255	3 10	458		
14							1 80	146	2 39	255	3 05	444		
15							1 80	146	2 30	255	3 60	536		
16							1 80	146	2 65	310	3 10	458		
17							1 70	128	2 50	302	3 20	485		
18							1 70	128	2 40	279	3 20	485		
19							1 80	146	2 46	279	3 80	656		
20							1 90	167	2 30	255	3 70	626		
21							2 25	244	2 20	233	5 20	1,100		
22							2 00	189	2 10	189	5 10	1,070		
23							2 10	167	2 00	180	4 55	886		
24							1 70	128	2 09	180	4 20	776		
25							1 70	110	2 10	211	4 00	716		
26										3 90	686	3 10	458	
27							1 70	128	2 40	279	4 00	716		
28							1 70	128	2 00	404	4 50	876		
29							1 70	128	3 10	458	4 70	934		
30							1 70	128	3 40	540	4 30	807		
31							1 90	110	3 00	431	4 60	902		
							1 70	128			1 50	876		

	July		August.		September.		October.		November.		December.	
1	3 35	526	1 75	101	1 15	48	1 00	36				
2	3 15	472	1 45	84	1 15	48	1 00	36				
3	3 40	512	1 45	84	1 15	48	1 00	36				
4	3 20	485	1 65	119	1 25	58	1 00	36				
5	2 80	377	1 55	101	1 15	48	0 90	28				
6	2 65	346	1 45	84	1 15	48	0 90	28				
7	2 55	315	1 45	84	1 15	48	0 90	28				
8	2 60	327	1 55	101	1 25	58	0 90	28				
9	2 60	327	1 55	101	1 45	81	0 90	28				
10	2 55	315	1 45	84	1 35	70	0 90	28				
11	2 50	303	1 45	84	1 35	70	0 90	28				
12	2 40	279	1 45	84	1 25	58	0 90	28				
13	2 30	255	1 35	70	1 25	58	0 90	28				
14	2 20	233	1 35	70	1 15	48	0 90	28				
15	2 30	255	1 35	70	1 15	48	0 90	28				
16	2 20	233	1 25	58	1 15	48	0 90	28				
17	2 10	211	1 25	58	1 15	48	0 90	28				
18	2 10	211	1 35	70	1 15	48	0 90	28				
19	2 10	211	1 75	137	1 15	48	0 90	28				
20	2 10	211	1 50	92	1 05	40	0 90	28				
21	2 00	189	1 45	84	1 05	40	0 90	28				
22	1 90	167	1 45	84	1 05	40	0 90	28				
23	1 85	156	1 35	70	1 05	40	0 90	28				
24	1 85	156	1 25	58	1 05	40	0 80	28				
25	1 85	156	1 25	58	1 35	70	0 80	28				
26	1 85	156	1 25	58	1 05	40	0 80	28				
27	1 75	137	1 15	48	1 05	40	0 80	28				
28	1 75	137	1 15	48	1 05	40	0 80	28				
29	1 75	137	1 25	58	1 01	37	0 80	28				
30	1 65	119	1 15	48	1 00	36	0 90	28				
31	1 55	101	1 15	48			0 90	28				

SESSIONAL PAPER No. 25d

*Monthly Discharge of Inonoklin Creek near Edgewood, for 1916.*

(Drainage area, 130 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	540	128	269	2.00	2.23	15,470
May	1,130	431	740	5.69	6.56	45,500
June	1,170	458	710	5.46	6.09	42,250
July	526	101	258	1.98	2.28	15,860
August	137	48	77	0.59	0.68	4,730
September	81	36	49	0.38	0.42	2,920
October	56	32	28	0.21	0.24	1,720
November			26	0.20	0.22	1,550
December			26	0.20	0.23	1,600
The period	1,170	22	211	1.86	18.95	131,600

NOTE:—Gauge height-discharge relation affected by ice from November 1. Monthly mean discharge estimated from discharge measurements and climatic conditions.

## KASLO CREEK (3029).

*Location.*—The section is at the second highway bridge above the mouth, in Kaslo.

*Records Available.*—May 23, 1914 to December 31, 1915; March 1 to December 31, 1916.

*Drainage Area.*—Kaslo creek has a drainage area of about 170 square miles.

*Gauge.*—A chain gauge suspended from the highway bridge is read daily by Mr. W. F. Hurst, of Kaslo.

*Channel.*—The bed of the stream is rough and broken, with boulders and shifts slightly. The water flows swiftly and at a slight angle to the section.

*Discharge Measurements.*—Seventeen discharge measurements, eight of which were made during 1916, were used to prepare the rating curve.

*Winter Flow.*—The creek is frozen over during the colder periods of the winter. Frazil ice is often present.

*Accuracy.*—Accuracy "A" may be accorded to discharges between 40 and 3,000 cubic feet per second; above 3,000 cubic feet per second "C."

*Discharge Measurements of Kaslo Creek near Kaslo, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 21	G. K. Beeston	1,929	62	117	2.15	0.94	252
June 13	J. A. E. and T. R. P.	1,521	75	270	7.25	3.00	1,960
June 30	J. A. E. and T. R. P.	1,521	75	260	7.42	3.05	1,930
Aug. 1	T. R. Patterson	1,929	65	202	4.75	2.28	955
Aug. 25	T. R. Patterson	1,929	64	157	2.83	1.52	444
Sept. 3	T. R. Patterson	1,929	64	154	2.50	1.52	428
Sept. 22	J. A. E. and T. R. P.	1,057	63	119	2.02	1.10	241
Dec. 1	R. G. S. and J. A. E.	1,900	50	103	1.37	0.56	141

## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1916

## Daily Gauge Height and Discharge of Kaslo Creek near Kaslo, for 1916.

(Drainage area, 170 square miles.)

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					0.42	104	0.90	210				
2					0.48	116	1.02	246	1.92	716	2.40	1,150
3					0.50	120	1.10	270	2.12	878	2.40	1,150
4					0.50	120	1.15	290	2.35	1,100	2.42	1,170
5					0.48	116	1.15	290	2.72	1,548	2.70	1,520
6									2.60	1,660	2.70	1,520
7					0.55	130	1.15	290	2.98	1,930		
8					0.50	120	1.25	330	2.88	1,780	2.60	1,390
9					0.40	100	1.28	342	2.62	1,420	2.60	1,390
10					0.60	140	1.40	390	2.42	1,170	2.72	1,550
11					0.68	156	1.50	440	2.28	1,030	3.00	1,960
12					0.85	195	1.45	415			3.05	2,040
13					0.90	210	1.48	430	2.10	860	2.90	1,810
14					0.82	186	1.50	440	2.05	820	2.98	1,930
15					0.75	170	1.55	470	2.02	796	3.05	2,040
16									1.90	700	3.45	2,710
17					0.65	150	1.52	452	2.00	780	4.30	4,370
18					0.70	160	1.52	452	2.10	860		
19					0.78	176	1.50	440	2.25	1,000	5.00	5,870
20					0.72	164	1.48	430	2.45	1,200	4.80	5,430
21					0.88	204	1.40	390	2.45	1,200	4.60	5,000
22									2.55	1,320	5.40	6,790
23					0.96	228	1.35	370	2.42	1,170	4.70	5,210
24					0.82	186	1.32	358	2.32	1,070		
25					0.88	204	1.30	350	2.22	970	4.10	3,960
26					0.82	186	1.38	382	2.20	950	3.70	3,180
27					0.80	180	1.40	390	2.20	950	3.60	2,990
28					0.80	180	1.68	548	2.22	970	3.45	2,710
29					0.82	186	2.15	905	2.40	1,150	3.30	2,450
30					0.85	195	2.12	878	2.70	1,520	3.60	2,990
31					0.85	195	1.98	764	2.60	1,390	4.20	4,160
					0.88	204	1.92	716	2.60	1,390	3.82	3,410
					0.88	204			2.55	1,320	3.20	2,280
									2.45	1,200		

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	3.05	2,040	2.20	950	1.52	452	0.95	225	0.72	164	0.58	136
2	3.35	2,540	2.10	860	1.52	452	0.90	210	0.75	170	0.60	140
3	3.85	3,460	2.12	878	1.50	440	0.88	204	0.75	170	0.60	140
4	3.40	2,620	1.98	764	1.70	560	0.82	186	0.82	186	0.60	140
5	3.12	2,140	1.95	740	1.52	452	0.82	186	0.92	216	0.60	140
6	3.10	2,110	1.82	636	1.35	370	0.82	186	0.80	180	0.60	140
7	3.25	2,360	1.80	620	1.28	342	0.82	186	0.75	170	0.50	120
8	3.70	3,180	2.10	860	1.48	430	0.82	186	0.75	170	0.50	120
9	4.00	3,760	2.08	844	1.50	440	0.82	186	0.88	204	0.50	120
10	3.90	3,560	1.80	620	1.30	350	0.82	186	0.78	176	0.58	136
11	3.40	2,620	1.78	608	1.20	310	0.80	180	0.68	156	0.58	136
12	3.25	2,360	1.75	590	1.20	310	0.78	176	0.58	136	0.60	140
13	4.35	2,540	1.72	572	1.12	278	0.78	176	0.58	136	0.60	146
14	3.10	2,110	1.75	590	1.08	264	0.78	176	0.58	136	0.50	120
15	2.75	1,590	1.80	620	1.08	264	0.78	176	0.58	136	0.50	120
16	3.55	2,900	1.72	572	1.08	264	0.78	176	0.58	136	0.50	120
17	3.45	2,710	1.75	590	1.08	264	0.80	180	0.58	136	0.50	120
18	3.10	2,110	1.70	560	1.05	255	0.82	186	0.58	136	0.45	110
19	2.75	1,590	1.62	512	1.05	255	0.80	180	0.58	136	0.35	90
20	2.62	1,420	1.50	440	1.02	246	0.78	176	0.57	134	0.30	80
21	2.62	1,420	1.38	382	0.95	225	0.75	170	0.57	134	0.30	80
22	2.55	1,320	1.38	382	1.00	240	0.78	176	0.55	130	0.30	80
23	2.48	1,240	1.48	430	1.00	240	0.70	160	0.52	124	0.30	80
24	2.42	1,170	1.50	440	1.00	240	0.70	160	0.52	124	0.30	80
25	2.35	1,100	1.48	430	1.08	264	0.72	164	0.60	140	0.30	80
26	2.25	1,000	1.48	430	1.15	290	0.85	195	0.60	140	0.30	80
27	2.20	950	1.55	470	1.12	278	0.80	180	0.60	140	0.30	80
28	2.05	820	1.48	430	1.00	240	0.72	164	0.60	140	0.30	80
29	2.10	860	1.52	452	0.98	234	0.75	170	0.52	124	0.30	80
30	2.08	844	1.52	452	0.95	225	0.68	156	0.55	130	0.30	80
31	2.10	860	1.52	452			0.72	164			0.30	80

SESSIONAL PAPER No. 25d

*Monthly Discharge of Kaslo Creek near Kaslo, for 1916.*

(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.
March .....	288	104	166	0.98	1.13	10,200
April .....	905	210	437	2.57	2.87	26,000
May .....	1,930	700	1,120	6.59	7.60	68,870
June .....	6,790	1,150	2,940	17.30	19.30	174,900
July .....	3,760	820	1,980	11.60	13.40	121,800
August .....	950	382	586	3.44	3.97	36,030
September .....	560	225	316	1.86	2.07	18,800
October .....	225	156	180	1.06	1.22	11,070
November .....	216	124	150	0.88	0.98	8,930
December .....	140	50	109	0.64	0.74	6,700
The period .....	6,790	80	798	4.69	53.28	483,300

## KOOTENAY RIVER NEAR GLADE (3014).

*Location.*—The metering and gauging station is located at the ferry cable installed by the Doukhobour colony near Glade, about 10 miles above the mouth.

*Records Available.*—Daily discharges have been compiled from May 14, 1913 to December 31, 1916.

*Drainage Area.*—The drainage area of Kootenay river above Glade is 19,100 square miles.

*Gauge.*—Vertical staff gauges in 5 sections are used. The daily stage is observed by Mr. John R. Premorookoff, of the Doukhobour colony.

*Channel.*—Straight and uniform above and below section. There are pronounced riffles 1,000 yards above and below the station.

*Discharge Measurements.*—The rating curve is compiled from 23 discharge measurements made during 1913-16.

*Winter Flow.*—The river is open all year.

*Accuracy.*—The section is ideal for metering purposes; the curve appears to be well defined. Accuracy between 6,000 and 100,000 cubic feet per second—"A"; above 100,000 cubic feet per second—"B."

*Discharge Measurements of Kootenay River near Glade, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 10	H. O. Dempster	1,927	512	3,870	2.25	1.65	8,720
June 3	J. A. Elliott and T. R. Patterson	1,929	663	9,980	6.89	11.30	68,800
June 26	T. R. Patterson	1,929	723	16,300	10.17	20.05	165,800
July 19	T. R. Patterson	1,929	728	14,100	9.60	17.10	135,200
Aug. 11	T. R. Patterson	1,929	645	9,620	6.54	10.55	62,900
Aug. 28	T. R. Patterson	1,929	625	7,690	5.64	7.75	43,400
Oct. 2	J. A. Elliott and T. R. Patterson	1,057	533	5,270	3.68	4.64	19,400
Dec. 6	J. A. Elliott	1,909	505	3,950	2.33	1.88	9,220

DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1918

Daily Gauge Height and Discharge of Kootenay River near Glade, for 1918.

(Drainage area, 19,100 square miles.)

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	10,900	1 00	7,830	1 70	9,940	4 60	22,000	7 00	39,800	11 43	70,500
2	2 00	10,900	1 00	7,830	1 70	9,940	4 75	22,800	7 90	41,900	11 43	70,500
3	2 00	10,900	1 00	7,830	1 70	9,940	4 80	23,000	8 25	44,500	11 43	70,500
4	1 60	9,610	1 00	7,830	1 60	9,610	4 80	23,000	8 55	46,800	11 53	71,400
5	1 40	8,990	1 00	7,830	1 60	9,610	4 80	23,000	8 05	49,800	11 68	72,700
6	1 40	8,990	1 00	7,830	1 50	9,290	4 95	23,800	9 63	55,200	11 78	73,600
7	1 46	8,990	1 00	7,830	1 55	9,450	5 00	24,000	9 68	55,600	11 98	75,400
8	1 40	8,990	1 00	7,830	1 70	9,940	5 00	24,000	10 13	59,300	12 08	76,300
9	1 35	8,840	1 00	7,830	1 60	10,300	5 20	25,000	10 33	61,000	12 43	79,700
10	1 30	8,690	1 00	7,830	1 65	9,780	5 35	25,800	10 43	61,800	12 58	81,000
11	1 20	8,400	1 05	7,970	1 70	9,940	5 50	26,700	10 68	63,000	12 73	82,500
12	1 20	8,400	1 10	8,110	1 90	10,600	5 55	27,000	10 98	66,400	12 93	84,400
13	1 26	8,400	1 10	8,110	2 05	11,000	5 75	28,100	11 13	67,800	13 23	87,300
14	1 26	8,400	1 10	8,110	2 25	11,800	5 95	29,200	11 13	67,800	13 53	90,300
15	1 20	8,400	1 10	8,110	2 35	12,200	6 15	30,400	10 93	66,000	14 03	95,300
16	1 16	8,110	1 20	8,400	2 50	12,600	6 20	30,700	10 88	65,800	14 53	100,000
17	1 09	7,830	1 30	8,690	2 75	13,700	6 20	30,700	10 83	65,200	14 98	105,000
18	1 00	7,830	1 30	8,690	2 90	14,300	6 20	30,700	10 73	64,300	16 80	124,000
19	1 00	7,830	1 30	8,690	3 05	14,900	6 25	31,000	10 93	66,000	16 80	124,000
20	0 95	7,700	1 30	8,690	3 20	15,600	6 30	31,300	10 93	66,000	17 25	128,000
21	0 90	7,580	1 30	8,690	3 40	16,400	6 35	31,600	10 93	66,000	17 70	134,000
22	0 90	7,580	1 35	8,840	3 60	17,300	6 40	31,900	10 93	66,000	18 35	140,000
23	1 00	7,830	1 40	8,990	3 85	18,400	6 50	32,600	10 93	66,000	18 93	148,000
24	1 00	7,830	1 45	9,140	4 00	19,100	6 50	32,600	10 93	66,000	19 55	154,000
25	1 15	8,260	1 50	9,290	4 10	19,500	6 55	32,900	10 93	66,000	19 80	157,000
26	1 20	8,400	1 50	9,290	4 10	19,500	6 70	33,800	10 93	66,000	19 95	158,000
27	1 95	9,970	1 50	9,290	4 20	20,000	6 70	33,800	10 93	66,000	20 20	162,000
28	1 00	7,830	1 60	9,610	4 35	20,800	7 00	35,800	11 43	70,500	20 20	162,000
29	1 00	7,830	1 60	9,610	4 50	21,500	7 20	37,100	11 43	70,500	20 15	161,000
30	1 00	7,830	1 60	9,610	4 55	21,800	7 50	39,100	11 43	70,500	20 00	159,000
31	1 00	7,830	1 60	9,610	4 60	22,000	7 50	39,100	11 43	70,500	20 00	159,000
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	19 75	156,000	12 88	83,900	7 05	36,100	1 75	22,800	2 72	13,600	1 92	10,700
2	19 80	157,000	12 68	82,000	6 95	35,400	4 60	22,000	2 75	13,700	2 00	10,900
3	19 80	157,000	12 38	79,200	6 80	34,500	4 45	21,200	2 80	13,900	1 98	10,800
4	19 70	156,000	21 18	77,300	6 80	34,700	4 40	21,000	2 85	14,100	1 90	10,600
5	19 40	152,000	11 93	75,000	6 95	35,466	4 30	20,500	2 85	14,100	1 92	10,700
6	19 25	150,000	11 63	72,300	6 90	35,100	4 25	20,200	2 82	14,000	1 90	10,600
7	19 10	149,000	11 43	70,500	6 80	34,500	4 10	19,500	2 70	13,500	1 90	10,600
8	19 05	148,000	11 13	67,800	6 80	34,500	4 00	19,100	2 65	13,300	1 90	10,600
9	18 85	146,000	10 93	66,000	6 80	34,500	3 95	18,800	2 68	13,400	1 82	10,400
10	18 70	145,000	10 73	64,300	6 75	34,200	3 85	18,400	2 80	13,900	1 75	10,100
11	18 59	144,000	10 48	62,200	6 70	33,800	3 80	18,200	2 80	13,900	1 70	9,940
12	18 50	143,000	10 33	61,000	6 60	33,200	3 70	17,700	2 72	13,600	1 70	9,940
13	18 40	141,000	10 08	58,800	6 50	32,600	3 60	17,300	2 62	13,200	1 62	9,680
14	18 30	140,000	9 88	57,200	6 45	32,200	3 50	16,900	2 52	12,900	1 60	9,610
15	17 95	136,000	9 73	56,000	6 26	30,700	3 40	16,400	2 50	12,800	1 50	9,290
16	17 75	134,000	9 43	53,600	6 10	30,100	3 40	16,400	2 45	12,600	1 42	9,050
17	17 60	133,000	9 28	52,400	6 00	29,500	3 30	16,000	2 52	12,100	1 40	8,990
18	17 50	132,000	9 15	51,400	5 85	28,600	3 30	16,000	2 30	12,000	1 40	8,990
19	17 15	128,000	9 05	50,600	5 70	27,800	3 20	15,600	2 20	11,700	1 40	8,990
20	16 80	124,000	8 89	48,700	5 60	27,200	3 15	15,300	2 20	11,700	1 42	9,050
21	16 50	121,000	8 65	47,500	5 55	27,000	3 10	15,100	2 15	11,500	1 50	9,290
22	16 20	117,000	8 45	46,000	5 45	26,400	3 10	15,100	2 10	11,300	1 42	9,050
23	15 85	114,000	8 25	44,500	5 30	25,600	3 00	14,700	2 10	11,300	1 40	8,990
24	15 49	109,000	8 05	43,000	5 35	25,800	3 00	14,700	2 05	10,900	1 42	9,050
25	15 05	106,000	7 90	41,900	5 25	25,300	2 90	14,300	2 06	10,900	1 32	8,750
26	14 88	104,000	7 75	40,800	5 20	25,000	2 90	14,300	2 00	10,900	1 25	8,540
27	14 53	109,000	7 90	41,900	5 20	25,000	2 85	14,100	2 00	10,900	1 20	8,400
28	14 28	97,800	7 75	40,800	5 10	24,500	2 80	13,900	1 90	10,600	1 10	8,110
29	13 88	93,800	7 40	38,400	5 00	24,000	2 80	13,900	2 00	10,900	1 00	7,830
30	13 58	96,800	7 25	37,400	4 55	23,200	2 75	13,700	1 90	10,600	1 00	7,830
31	13 23	87,300	7 10	36,400	4 50	23,000	2 70	13,500	1 90	10,600	1 00	7,830

SESSIONAL PAPER No. 25d

*Monthly Discharge of Kootenay River near Glade, for 1916.*

(Drainage area, 19,100 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.
January.....	10,900	7,580	8,520	0.45	0.52	523,900
February.....	9,610	7,830	8,440	0.44	0.48	485,500
March.....	22,000	9,290	14,200	0.74	0.85	873,100
April.....	39,100	22,000	29,100	1.52	1.70	1,732,000
May.....	70,500	39,800	61,900	3.24	3.73	3,806,000
June.....	162,000	70,500	110,000	5.76	6.43	6,545,000
July.....	157,000	87,300	129,000	6.77	7.80	7,932,000
August.....	83,900	36,400	56,400	2.95	3.46	3,468,000
September.....	36,100	23,200	30,200	1.58	1.76	1,797,000
October.....	22,800	13,500	17,000	0.85	1.03	1,045,000
November.....	14,100	10,600	12,500	0.65	0.72	743,800
December.....	10,900	7,830	9,470	0.49	0.56	582,300
The year.....	162,000	7,580	40,560	2.12	28.98	29,533,600

## L.H. CREEK (3087).

*Location.*—The station is located below a small bridge on the Government road between Silvertown and Enterprise.

*Record Available.*—October 31 to December 31, 1916.

*Drainage Area.*—The drainage area of L.H. Creek is 2.40 square miles.

*Gauge.*—The stage of water is observed on a vertical staff gauge about 6 feet back of the weir crest.

*Channel.*—The creek passes into a stilling-box 10 feet long and 5 feet wide and empties over a rectangular weir with 4-foot crest.

*Winter Flow.*—The stream is fed by springs and a small flow continues during the winter months.

*Accuracy.*—The gauge readings are accurate. The data are computed by the use of Hamilton-Smith's formula for weirs with two end contractions.

## DEPARTMENT OF THE INTERIOR

B GEORGE V. A. 1916

## Daily Gauge Height and Discharge of L.H. Creek near Silverton, for 1916.

(Drainage area, 2.40 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												
2									0 13	0 64		0 45
3										0 68		0 45
4									0 14	0 71	0 10	0 45
5									0 17	0 94		0 45
6										0 92	0 10	0 45
7									0 16	0 86		0 42
8										0 86	0 09	0 39
9										0 86		0 39
10									0 16	0 86		0 45
11										0 68	0 10	0 45
12									0 11	0 51		0 42
13										0 51	0 09	0 39
14									0 11	0 51		0 39
15										0 48		0 39
16									0 10	0 45		0 39
17										0 45		0 39
18									0 10	0 45	0 09	0 39
19										0 45		0 39
20									0 10	0 45	0 09	0 39
21										0 45		0 39
22										0 45		0 39
23										0 45		0 39
24									0 10	0 45	0 09	0 39
25										0 45		0 39
26										0 45		0 39
27										0 45		0 39
28									0 10	0 45	0 09	0 39
29										0 45		0 39
30									0 10	0 45		0 39
31							0 12	0 57		0 45	0 09	0 39

## Monthly Discharge of L.H. Creek near Silverton for 1916.

(Drainage area, 2.40 square miles.)

MON. II.	DISCHARGE IN SECOND-FEET.				RUN-OFF.	
	Maximum.	Minimum.	Mean.	Per square Mile.	Depth in inches on Drainage Area.	Total in Acre feet.
November	0 94	0 45	0 57	0 24	0 27	33 9
December	0 45	0 39	0 41	0 17	0 20	25 2



SESSIONAL PAPER No. 25d

## SLOCAN RIVER AT SLOCAN CITY (3080).

*Location.*—The station is located at the outlet of Slocan lake at Slocan city.

*Record Available.*—April 1 to December 31, 1916.

*Drainage Area.*—Seven hundred and ten square miles.

*Gauge.*—A vertical staff, nailed to a pile at the end of the C.P.R. wharf on Slocan lake at Slocan city. The gauge is about 200 yards above the section.

*Channel.*—The channel is uniform and the flow is smooth. The control is good.

*Discharge Measurements.*—The rating curve is based on two discharge measurements made in 1915 and eight in 1916.

*Winter Flow.*—The Slocan river is not subject to severe ice conditions.

*Accuracy.*—Between discharges 0-4,000 cubic feet per second—"A"; 4,000-9,000 cubic feet per second—"B"; 9,000-14,000 cubic feet per second—"D."

## SLOCAN RIVER (3080).

Slocan river and its tributaries rise in the Valhalla and Slocan mountains and it discharges into the Kootenay about ten miles above its mouth. Above the outlet of Slocan lake it has a drainage area of about 710 square miles, draining a district heavily timbered and abundant in mineral wealth. Climatic conditions in Slocan district are moderate. Snowfall is not heavy in the lower altitudes and Slocan lake is open for navigation the year round.

*Discharge Measurements of Slocan River near Slocan City, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
1915							
Mar. 25	C. B. Corbould	1,927	200	508	0 90	0 50	460
July 29	H. O. Dempster	1,927	211	1110	2 64	3 75	2,930
1916							
Mar. 13	H. O. Dempster	1,927	198	526	1 13	0 09	592
May 8	Webb and Beeton	1,929	214	1150	2 69	3 78	3,100
June 24	Elliott and Patterson	1,929	261	2265	4 14	8 10	9,390
July 15	Elliott and Patterson	1,929	279	1820	3 65	6 65	6,630
Aug. 4	T. R. Patterson	1,929	212	1140	2 90	3 92	3,320
Aug. 29	T. R. Patterson	1,929	209	867	2 10	2 35	1,820
Sept. 26	J. A. E. and T. R. P.	1,057	210	678	1 71	1 62	1,160
Nov. 1	Hughes and Webb	1,623	206	577	1 13	0 90	652



SESSIONAL PAPER No. 25d

## Monthly Discharge of Slovan River near Slocan City, for 1916.

(Drainage area, 710 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	1,510	750	1,040	1.46	1.61	61,880
May	3,160	1,690	2,310	3.25	3.75	142,000
June	10,000	3,260	6,610	9.35	10.49	395,100
July	8,800	3,480	6,360	8.82	10.29	384,000
August	3,370	1,090	2,430	3.42	3.94	149,400
September	1,690	1,440	1,600	2.25	2.51	95,210
October			1,100	1.55	1.79	67,600
November	1,040	530	640	0.89	0.99	37,500
December	530	285	464	0.65	0.75	28,510
The period	11,400	385	2,497	3.51	35.96	1,362,120

NOTE.—Owing to change in gauge readers no readings were obtained during October. Mean monthly discharge for October were interpolated from mean daily discharges for months of September and October.

## WILSON CREEK (3023).

Wilson creek is the first large tributary of Slocan river. It rises in the Slocan range and discharges into Slocan lake near Roseberry. It drains about 235 square miles of mountainous country, heavily covered with valuable timber. Wilson creek is a flashy stream, its various sources being glacial fed. Climatic conditions are moderate. The probable uses of Wilson creek are log-driving and small power.

## WILSON CREEK (3023).

*Location.*—At cable station, 1 mile above the mouth and  $1\frac{1}{2}$  mile from Roseberry.

*Records Available.*—April to December 1916.

*Drainage Area.*—The drainage area is 235 square miles.

*Gauge.*—Cable gauge 50 feet below the metering section. Read April to September by J. C. Martin and September to December by J. W. Schultze.

*Channel.*—The channel is rough and broken by boulders. The flow is swift and irregular.

*Discharge Measurements.*—The rating curve is based on seven discharge measurements made during 1916.

*Winter Flow.*—Wilson creek is not subject to severe ice conditions. It does not remain frozen for any great length of time.

*Accuracy.*—Between 0-3,600 cubic feet per second—"B"; above 3,600 cubic feet per second—"C."

## Discharge Measurements of Wilson Creek near Roseberry, for 1916.

Date	Engineer	Meter No.	Width	Area of Section	Mean Velocity	Gauge Height	Discharge
			Feet.				
Mar. 9	Widd and Beeton	1929	67	268	4.80	4.55	1,290
June 27	Elliott and Patterson	1521	75	447	7.90	6.05	3,530
July 14	Elliott and Patterson	1929	65	306	7.53	5.25	2,310
Aug. 1	T. R. Patterson	1929	63	221	4.93	4.35	1,090
Sep. 2	T. R. Patterson	1929	61	156	3.37	3.34	527
Sep. 23	H. A. E. and T. R. P.	1057	62	119	2.44	2.72	290
Oct. 29	C. E. W. and H. C. H.	1521	60	102	1.80	2.39	190

## Daily Gauge Height and Discharge of Wilson Creek near Roseberry, for 1916.

(Drainage area, 235 square miles.)

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								350	3.90	780	4.85	1,700	
2								350	4.00	840	4.84	1,690	
3								350	4.00	840	4.86	1,720	
4								350	4.40	1,140	4.75	1,560	
5								350	4.70	1,480	4.70	1,480	
6													
7								375	4.80	1,630	4.65	1,420	
8								375	4.81	1,640	4.85	1,700	
9								375	4.84	1,690	4.70	1,480	
10								3 00	385	4.86	1,720	4.95	1,860
								3 10	425	4.83	1,680	4.90	1,780
11													
12								3 10	425	4.82	1,660	4.80	1,630
13								3 15	442	4.80	1,630	4.95	1,860
14								3 20	460	4.40	1,140	5.30	2,400
15								3 20	460	3.95	810	5.70	3,000
								3 25	480	4.05	870	5.90	3,300
16													
17								3 25	480	4.40	1,140	6.20	3,760
18								3 20	460	4.45	1,190	6.60	4,360
19								3 25	480	4.25	1,010	6.40	4,060
20								3 20	460	4.40	1,140	7.80	6,200
								3 10	425	4.50	1,240	6.40	4,060
21													
22								3 15	442	4.25	1,010	6.20	3,760
23								3 10	425	4.20	970	6.10	3,600
24								3 10	425	4.25	1,010	6.00	3,450
25								3.00	385	4.25	1,010	5.90	3,300
								3.05	405	4.05	870	5.80	3,160
26													
27								3 20	460	4.00	840	5.76	3,000
28								3 40	540	4.20	970	6.05	3,520
29								3 70	680	4.45	1,190	6.20	3,760
30								3 75	705	4.65	1,420	6.00	3,450
31								3 65	655	4.86	1,720	5.90	3,300
										4 87	1,740		
	July.		August.		September.		October.		November.		December.		
1	5.70	3,000	4.35	1,100	3.35	520	2.60	250	2.35	180	2.20	140	
2	5.60	3,300	4.30	1,050	3.34	516	2.60	250	2.35	180	2.25	152	
3	6.20	3,760	4.10	900	3.35	520	2.60	250	2.40	195	2.25	152	
4	5.70	3,000	4.20	970	3.35	520	2.60	250	2.45	208	2.20	140	
5	5.60	2,840	4.00	940	3.35	520	2.60	250	2.45	208	2.20	140	
6													
7	5.20	2,240	3.90	780	3.30	500	2.50	220	2.40	195	2.20	140	
8	5.40	2,540	3.80	730	3.30	500	2.50	220	2.40	195	2.20	140	
9	5.90	3,300	3.90	780	3.30	500	2.60	250	2.40	195	2.15	128	
10	5.70	3,000	3.80	730	3.30	500	2.50	220	2.45	208	2.20	140	
	5.80	3,160	3.70	680	3.30	500	2.50	220	2.45	208	2.15	128	
11													
12	5.60	2,840	3.70	680	3.30	500	2.45	208	2.30	165	2.15	128	
13	5.50	2,700	3.60	636	3.25	480	2.45	208	2.15	128	2.15	128	
14	5.40	2,400	3.60	630	3.25	480	2.45	208	2.15	128	2.15	128	
15	5.40	2,540	3.70	680	3.25	480	2.45	208	2.15	128	2.15	128	
	5.30	2,400	3.70	680	3.20	460	2.45	208	2.15	128	2.15	128	
16													
17	5.50	2,700	3.60	630	3.20	460	2.45	208	2.10	115	2.15	128	
18	5.40	2,540	3.50	590	3.20	460	2.45	208	2.10	115	2.10	115	
19	5.10	2,080	3.50	590	3.10	425	2.45	208	2.20	140	2.10	115	
20	5.00	1,930	3.50	590	3.10	425	2.45	208	2.30	165	2.15	128	
	4.70	1,480	3.50	590	3.00	385	2.45	208	2.25	152	2.15	128	
21													
22	4.60	1,350	3.45	565	2.90	350	2.45	208	2.20	140	2.10	115	
23	4.50	1,240	3.45	565	2.80	315	2.40	195	2.20	140	2.10	115	
24	4.70	1,480	3.45	565	2.72	287	2.40	195	2.15	128	2.15	128	
25	4.80	1,630	3.40	540	2.60	250	2.40	195	2.20	140	2.15	128	
	4.50	1,240	3.40	540	2.80	315	2.45	208	2.20	140	2.10	115	
26													
27	4.60	1,350	3.40	540	2.70	280	2.50	220	2.25	152	2.10	115	
28	4.50	1,240	3.40	540	2.70	280	2.45	208	2.25	152	2.15	128	
29	4.20	970	3.40	540	2.50	250	2.40	195	2.30	165	2.50	115	
30	4.30	1,050	3.40	540	2.60	250	2.40	195	2.25	152	2.70	115	
31	4.10	800	3.35	520	2.60	250	2.35	180	2.20	140	2.50	115	
	4.30	1,050	3.35	520			2.35	180			2.40	115	

SESSIONAL PAPER No. 25d

*Monthly Discharge of Wilson Creek near Roseberry, for 1916.*

(Drainage area, 235 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	705	350	446	1.47	1.64	26,500
May	1,710	780	1,230	5.32	6.03	75,630
June	6,200	1,420	2,840	12.10	13.50	169,000
July	3,760	900	2,170	9.23	10.60	133,400
August	1,100	520	675	2.87	3.31	41,500
September	520	250	416	1.77	1.97	24,750
October	250	180	214	0.91	1.05	13,160
November	208	115	160	0.68	0.76	9,520
December	152	115	126	0.54	0.62	7,750
The period	6,200	115	919	3.86	39.48	501,210

## REVELSTOKE DISTRICT.

## AKOLKOLEX RIVER (3000).

*Location.*—The gauge is located at the highway bridge above the falls, about two miles from Wigwam station.

*Records Available.*—Daily discharges May 1 to December 31, 1913; January 1 to December 31, 1914; January 1 to December 31, 1915; March 1 to December 31, 1916.

*Drainage Area.*—The drainage area is 105 square miles.

*Gauge.*—A chain gauge on the highway bridge. The gauge is read about three times a week by Mr. J. A. Lewis, of Wigwam, B.C.

*Channel.*—The channel is straight for 100 yards above and below the section, which is in a box canyon. The current is swift, and the control is of rock and appears to be permanent.

*Discharge Measurements.*—The rating curve is based on 17 measurements made during 1913-16. Four measurements were made during 1916.

*Winter Flow.*—Anchor ice seldom forms for more than a day or two at a time. The stream rarely freezes at the section.

*Accuracy.*—The rating curve is well defined, but, as the gauge readings are not daily, the mean monthly discharges cannot be guaranteed closer than "C" for open water.



AKOLKOLEX RIVER  
Upper Falls, 400 feet below Gauging Station.

*Discharge Measurements of Akolkolex River near Wigwam, for 1916.*

Date.	Engineer.	Meter No.	Width Feet.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
				Sq. ft.	Ft. per sec	Feet.	Sec.-ft.
Mar. 18	H. O. Dempster	1,927	35	130	1.44	1.75	188
June 1	H. C. Hughes	1,046	37	248	4.06	4.78	1,010
July 18	H. C. Hughes	1,046	37	312	7.08	7.40	2,420
Aug. 12	H. C. Hughes	1,633	37	240	3.61	4.47	864

SESSIONAL PAPER No. 30

Daily Gauge Height and Discharge of Akolkolex River near Wigwam, for 1916.

(Drainage area, 105 square miles.)

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	115	1 65	211		834	4 75	975
2						117		214		932		1,210
3						118		217	4 90	1,030		1,450
4						119	1 70	220		1,170	6 35	1,690
5						120		243		1,310		1,470
6					1 15	122		266	5 90	1,450		1,250
7						165	2 05	290		1,250	4 90	1,030
8						208	2 15	310		1,045		1,150
9						251		320	4 30	840	5 50	1,270
10						294		330		760		1,330
11						337	2 30	341		680		1,390
12						380		341	3 45	597		1,450
13					2 70	425		341		601	6 00	1,500
14						376	2 30	341		605		2,440
15						326		341	3 50	610		3,380
16						278		341		685	9 10	4,320
17					1 75	230		341		760		5,770
18						228	2 30	341	4 30	840	11 60	7,220
19						226		334		880	11 30	6,860
20						224		327		920		5,230
21						222	2 20	320	4 70	960	8 50	3,600
22					1 70	220		315		930		3,100
23						215	2 15	310		900	7 60	2,600
24						210		490	4 40	870		2,890
25						205		670		970		3,180
26					1 60	202	4 35	855		1,080		3,480
27						202		682	5 30	1,190	8 65	3,780
28						202		609		1,150		3,120
29						202	3 60	636		1,110	7 45	2,460
30					1 60	202		735	5 00	1,070		2,300
31						206				1,020		

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	7.05	2,140		1,370		840	2 15	310		220	1 25	139
2		2,080	5 90	1,450	4 50	900		303	1 75	230		136
3		2,030	6 05	1,520		1,020		296		233		133
4		1,980		1,270	5 20	1,150	2 05	290		236	1 20	130
5	6.75	1,930	4 90	1,030		1,030		286	1 80	240		130
6		2,110		1,070	4 45	885		283		130		130
7	7.25	2,300		1,110		797	2 00	280		208		130
8		2,630	5 20	1,150		710		260	1.55	193	1 20	130
9		2,960		1,060	3.55	623	1 80	240		179		128
10	8.25	3,300		970		586		240		165		125
11		3,480	4 45	885		549		240		152	1 15	122
12		3,660	4 45	885	3.10	512	1 80	240	1 25	139		122
13	8.70	3,840		900		497		243		143		122
14		3,220		915		482		246	1 30	148		122
15	7.60	2,600	4 60	930	2 90	468	1 55	250		176	1 15	122
16		3,160		825		462		327		204		122
17	8.60	3,720	3 90	720	2 85	457	2 60	404		232		122
18	7.40	2,420		662		442		352	1 90	260	1 15	122
19		2,190		604		428		301		231		121
20		1,970	3 25	547	2 65	414	1 85	250		203		119
21	6 45	1,750		654		410		242	1 45	175		117
22		1,680		762		407		234		172	1 10	115
23		1,610	4 40	870	2 60	404		227		169		114
24	6 10	1,550		832		419	1 70	220	1 40	166		112
25		1,450	4 15	795	2 75	435		214		163		110
26		1,350		758		414		208		161	1 05	108
27	5 45	1,250	3 90	720	2 55	393	1 60	202		150		108
28		1,230		735		361		202	1 35	157		108
29		1,220		750	2 25	350		202		151		108
30	5 75	1,210		760		320	1 60	202		145		108
31		1,290	4 19	780				211				108

*Monthly Discharge of Akolkolex River near Wigwam, for 1916.*

(Drainage area, 105 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.....			115	1.09	1.26	7,070
February.....			115	1.09	1.18	6,620
March.....	425	115	224	2.13	2.46	13,770
April.....	855	211	387	3.68	4.11	23,030
May.....	1,450	597	937	8.92	10.30	57,610
June.....	7,220	975	2,760	26.30	29.30	164,200
July.....	3,840	1,210	2,240	21.30	24.60	137,700
August.....	1,520	547	912	8.68	10.00	56,100
September.....	404	320	571	5.44	6.07	33,980
October.....	260	139	254	2.46	2.84	15,860
November.....	139	108	188	1.79	2.00	11,190
December.....			120	1.14	1.31	7,380
The year.....	7,220	108	736	7.00	95.43	534,510

NOTE.—Mean Monthly Discharge for January and February estimated at '15 c.f.s. from gauge heights and climatic conditions.

**BUGABOO CREEK (3003).**

*Location.*—The gauge is located on the highway bridge, downstream side, about 1 mile from the mouth and 3 miles from Spillimacheen.

*Records Available.*—Daily discharges May 20 to December 31, 1913; April to December 15, 1914; March 17 to December 31, 1915; April 1 to December 31, 1916.

Note.—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 190 square miles.

*Gauge.*—A vertical staff gauge, nailed to the central pier and read daily by Mr. Jas. Montgomery.

*Channel.*—The channel is straight for 100 feet above and below the section. The current is very swift. One channel at low water and two at high water. The channel is not permanent.

*Discharge Measurements.*—Five meter measurements, taken during 1916, define the 1916 rating curve.

*Winter Flow.*—The creek usually freezes in November and does not open until April.

*Accuracy.*—"B" for open water.

*Discharge Measurements of Bugaboo Creek near Spillimacheen, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec. ft.
June 13	H. C. Hughes.....	1,046	60	137	3.94	2.25	540
June 15	H. C. Hughes.....	1,046	63	178	6.02	2.95	1,070
July 5	H. C. Hughes.....	1,046	60	169	6.93	3.65	1,170
August 23	H. C. Hughes.....	1,633	34	118	4.67	2.25	551
Nov. 10	Hughes and Webb.....	1,623	34	72	1.08	0.80	78



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Daily Gauge Height and Discharge of Bugaboo Creek near Galena, for 1916.

(Drainage area, 190 square miles.)

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							0.60	55	1.30	171	1.92	379
2							0.60	55	1.40	196	1.92	379
3							0.55	52	1.52	232	1.88	362
4							0.62	57	1.75	310	2.22	586
5							0.68	64	1.90	370	2.22	528
6							0.60	55	1.90	370	2.10	464
7							0.70	66	2.00	415	2.10	464
8							0.75	72	1.72	209	2.30	574
9							0.75	72	1.60	256	2.25	545
10							0.80	77	1.50	226	2.15	490
11							0.80	77	1.40	196	2.20	516
12							0.72	68	1.40	196	2.15	490
13							0.78	75	1.35	184	2.28	562
14							0.80	77	1.35	184	2.65	814
15							0.90	92	1.30	171	3.05	1,160
16							0.85	84	1.35	184	3.75	1,860
17							0.88	89	1.45	211	3.75	1,860
18							0.82	80	1.60	256	4.70	2,810
19							0.80	77	1.88	362	4.95	3,060
20							0.82	80	1.92	379	4.45	2,560
21							0.82	80	1.80	329	3.80	1,910
22							0.80	77	1.82	337	3.40	1,510
23							0.75	72	1.78	322	3.30	1,410
24							0.75	72	1.70	292	3.18	1,290
25							0.85	84	1.70	292	3.25	1,360
26							1.05	117	1.70	292	3.60	1,710
27							1.20	147	1.80	329	3.65	1,760
28							1.32	176	2.00	415	3.55	1,660
29							1.30	171	1.95	392	3.35	1,460
30							1.30	171	1.92	379	3.15	1,260
31									1.92	379		
	July.		August.		September.		October.		November.		December.	
1	3.10	1,210	2.90	1,020	2.45	670	1.20	147	0.88	80		
2	3.25	1,360	2.90	1,020	2.50	704	1.10	126	0.82	80		
3	3.70	1,810	2.85	978	2.40	635	1.10	126	0.82	80		
4	3.40	1,510	2.62	791	2.38	623	1.10	126	0.92	95		
5	3.00	1,110	2.45	690	2.40	635	1.02	112	0.92	95		
6	3.00	1,110	2.40	635	2.10	464	1.02	112	0.80	77		
7	3.15	1,260	2.50	704	2.00	415	1.02	112	0.80	77		
8	3.65	1,760	2.70	852	2.05	440	0.98	105	0.90	92		
9	4.00	2,110	2.72	868	1.95	392	0.98	105	0.90	92		
10	4.10	2,210	2.55	740	1.85	350	0.95	100	0.80	77		
11	3.75	1,860	2.42	649	1.75	310	0.92	95	0.62	57		
12	3.60	1,710	2.45	670	1.65	274	0.92	95	0.50	48		
13	4.00	2,110	2.50	704	1.60	256	0.98	105	0.52	49		
14	3.30	1,410	2.55	740	1.50	226	0.98	105	0.30	40		
15	3.10	1,210	2.60	776	1.40	196	1.02	112	0.30	40		
16	3.60	1,710	2.50	704	1.32	176	1.20	147	Frozen	40		
17	4.05	2,160	2.30	574	1.30	171	1.58	250	over	40		
18	3.60	1,710	2.35	604	1.40	196	1.10	126		40		
19	3.20	1,310	2.05	440	1.45	211	1.05	117		40		
20	3.10	1,210	1.95	392	1.40	196	1.08	123		40		
21	2.95	1,060	1.90	370	1.42	202	1.02	112		40		
22	3.00	1,110	2.00	415	1.42	202	0.95	100		40		
23	2.75	894	2.25	545	1.40	196	0.92	95		40		
24	2.65	814	2.40	635	1.42	196	0.98	105		40		
25	2.70	852	2.42	649	1.55	241	0.98	105		40		
26	2.75	894	2.40	635	1.40	196	1.02	112		40		
27	2.70	852	2.40	635	1.25	159	1.00	108		40		
28	2.62	791	2.40	635	1.10	126	0.85	84		40		
29	2.50	704	2.48	690	1.20	147	0.95	100		40		
30	2.52	718	2.50	704	1.30	171	0.90	92		40		
31	2.90	1,020	2.40	635			0.92	95				

*Monthly Discharge of Bugaboo Creek near Galena, for 1916.*

(Drainage area, 190 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 .....	176	52	86	0 45	0 50	5,120
May.....	415	171	285	1 50	1 73	17,520
June.....	3,060	362	1,140	6 00	6 69	67,830
July.....	2,210	704	1,340	7 05	8 13	82,390
August.....	1,020	370	680	3 58	4 13	41,810
September.....	704	126	312	1 64	1 83	18,560
October.....	200	84	115	0 60	0 69	7,070
November.....	.....	.....	56	0 29	0 32	3,330
December.....	.....	.....	40	0 21	0 24	2,460
The period .....	3,060	.....	450	2 37	24 26	246,090

NOTE:—No records for January, February and March; gauge height-discharge relation affected by ice November 16 to December 31.

Daily discharge estimated from gauge records and climatic conditions:

November 16 to November 30..... 40 c.f.s.  
December 1 to December 31..... 40 c.f.s.

**COLUMBIA RIVER AT REVELSTOKE (3007).**

*Location.*—The gauge is located on the downstream side of the highway bridge at Revelstoke.

*Records Available.*—Daily discharges April 14 to November 30, 1913; May 20 to December 31, 1914; April 1 to December 31, 1915; April 1 to December 31, 1916.

NOTE.—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 9,000 square miles.

*Gauge.*—Chain gauge on downstream side of the highway bridge. Daily gauge readings are taken by Mr. S. Anderson.

*Channel.*—The channel is about 1,000 feet wide and controlled by an apparently permanent gravel bar. The channel is considerably broken up by bridge piers.

*Discharge Measurements.*—The 1916 curve is defined by 14 measurements. Three measurements were taken during 1916.

*Winter Flow.*—The river freezes and the flow is affected by frazil and anchor ice from November to March.

*Accuracy.*—"B" for open water. During winter months the records are less accurate.

*Discharge Measurements of Columbia River at Revelstoke, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
May 31	H. C. Hughes .....	1,046	832	8,050	5 10	10 42	41,000
July 19	H. C. Hughes.....	1,046	1,075	15,150	8 68	18 50	131,500
Nov. 14	Hughes and Webb.....	1,623	705	4,450	1 57	5 20	7,010 <sup>1</sup>

<sup>1</sup> Ice

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Daily Gauge Height and Discharge of Columbia River at Revelstoke, for 1916.

(Drainage area, 9,000 square miles.)

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							5.5	11,700	7.6	23,000	10.5	43,200
2							5.4	11,300	8.1	26,000	10.6	44,000
3							5.3	10,900	8.7	29,000	10.4	42,400
4							5.2	10,500	9.9	38,400	11.6	52,100
5							5.0	9,700	10.4	42,400	11.4	50,400
6								9,700	10.8	45,600	11.0	47,200
7							5.2	10,500	11.0	47,200	10.8	45,600
8							5.3	10,900	10.4	42,400	11.0	47,200
9							5.3	10,900	9.7	36,900	11.2	48,800
10							5.6	12,200	9.1	32,700	11.4	50,400
11							5.6	12,200	8.5	28,500	11.1	48,000
12							5.5	11,700	8.1	26,000	11.1	48,000
13							5.3	10,900	7.9	24,800	11.2	48,800
14							5.4	11,300	7.7	23,600	12.4	59,300
15							5.7	12,700	7.7	23,600	13.8	73,200
16							5.6	12,200	7.8	24,200	15.7	94,700
17							5.5	11,700	8.0	25,400	17.8	122,000
18							5.5	11,700	8.7	29,900	19.3	144,000
19							5.4	11,300	9.4	34,800	20.6	165,000
20							5.4	11,300	10.0	39,200	20.7	165,000
21							5.4	11,300	10.0	39,200	20.2	157,000
22							5.4	11,300	9.7	36,900	19.7	150,000
23							5.4	11,300	9.4	34,800	19.2	142,000
24							5.4	11,300	9.2	33,400	18.9	138,000
25							5.4	11,300	9.3	34,100	18.8	136,000
26							5.7	12,700	9.7	36,900	18.9	138,000
27							6.5	16,700	10.2	40,800	19.4	145,000
28							7.2	20,600	10.8	45,600	19.6	148,000
29							7.2	20,600	10.8	45,600	19.2	142,000
30							7.4	21,800	10.5	43,200	18.3	129,000
31									10.4	42,400		

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	17.3	116,000	14.8	84,100	13.9	74,200	7.1	20,000	5.9	13,700		
2	17.3	116,000	15.0	86,300	14.5	80,800	7.0	19,500	6.0	14,200		
3	17.7	121,000	15.2	88,700	14.7	83,000	6.8	18,300	6.0	14,200		
4	17.7	121,000	14.7	83,000	14.2	77,500	6.6	17,200	6.0	14,200		
5	17.3	116,000	14.0	75,300	13.8	73,200	6.5	16,700	0.0	14,200		
6	16.7	107,000	13.9	74,200	13.2	67,200	6.4	16,200	5.9	13,700		
7	16.3	102,000	14.0	75,300	12.6	61,200	6.3	15,700	5.8	13,200		
8	16.8	109,000	14.4	79,700	12.1	56,600	6.3	15,700	5.8	13,200		
9	18.2	128,000	14.8	84,100	11.8	53,900	6.2	15,200	5.8	13,200		
10	19.0	139,000	14.4	79,700	11.0	47,200	6.0	14,700	5.7	12,700		
11	18.8	136,000	13.9	74,200	10.2	40,800	6.1	14,700	5.4	11,300		
12	18.8	136,000	13.6	71,200	10.2	40,800	6.1	14,700				
13	20.1	156,000	13.6	71,200	8.9	37,600	6.2	15,200				
14	19.6	148,000	14.0	75,300	9.3	34,100	6.2	15,200				
15	18.0	125,000	14.2	77,500	8.9	31,300	6.4	16,200				
16	17.5	118,000	14.4	79,700	8.8	30,600	7.0	19,500				
17	18.8	136,000	13.6	71,200	8.9	31,300	9.4	34,800				
18	19.2	142,000	12.6	61,200	9.0	32,000	9.3	34,100				
19	18.2	128,000	11.7	53,000	9.1	32,700	8.5	28,500				
20	17.5	118,000	11.2	48,800	9.1	32,700	7.8	24,200				
21	17.0	111,000	10.6	44,000	8.7	29,900	7.4	21,800				
22	15.6	106,000	10.8	45,600	8.6	29,200	7.0	19,500				
23	15.7	94,700	11.8	52,100	8.7	29,900	6.8	18,300				
24	15.0	86,300	12.8	63,200	8.8	30,600	6.5	16,700				
25	15.3	89,900	13.2	67,200	8.8	30,600	6.5	16,700				
26	15.2	88,700	13.4	69,200	8.6	29,200	6.4	16,200				
27	14.9	85,200	13.5	70,200	8.2	26,600	6.3	15,700				
28	14.7	83,000	13.5	70,200	7.7	23,600	6.2	15,200				
29	14.3	78,600	13.7	72,200	7.4	21,800	6.2	15,200				
30	14.1	76,400	13.8	73,200	7.3	21,200	6.1	14,700				
31	14.3	78,600	13.7	72,200			5.9	13,700				

*Monthly Discharge of Columbia River at Revelstoke, for 1916.*

(Drainage area, 9,000 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	21,800	9,700	12,500	1 39	1 55	744,000
May	47,200	23,000	34,800	3 87	4 46	2,140,000
June	165,000	42,400	90,800	10 10	11 30	5,400,000
July	158,000	76,400	113,000	12 50	14 40	6,950,000
August	88,700	44,600	69,100	7 68	8 85	4,250,000
September	83,000	21,200	43,000	4 78	5 33	2,580,000
October	34,800	13,700	18,400	2 04	2 35	1,130,000
November	14,200	.....	9,480	1 05	1 17	564,000
December	.....	.....	6,000	0 67	0 77	36,900
The period	165,000	.....	44,100	4 90	50 18	4,107,000

NOTE.—No records for January, February and March. Gauge height-discharge relation affected by ice November 12 to December 31.

Daily discharge estimated from gauge records, meter measurements and climatic conditions:

November 12.....	9,500 c.f.s.
November 13.....	8,000 c.f.s.
November 14 to November 30.....	7,000 c.f.s.
December 1 to December 31.....	6,000 c.f.s.

### HOSPITAL CREEK (3053).

*Location.*—At dam above the intake of the old smelter flume about 3 miles from Golden.

*Records Available.*—Daily discharges October 1 to December 6, 1914; January 1 to December 31, 1915; January 1 to June 14, 1916; August 1 to December 31, 1916.

*Drainage Area.*—The drainage area is 18 square miles.

*Gauge.*—A ten-foot rectangular weir. Daily gauge readings are taken by Mr. D. C. Robertson.

*Channel.*—There is practically no velocity of approach except at highest stage.

*Winter Flow.*—The weir becomes choked with ice from November to March.

*Accuracy.*—"A" for open water. Extreme high water on June 15 washed out weir, which was not replaced until August 3.

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Daily Gauge Height and Discharge of Hospital Creek at Golden, for 1916.

(Drainage area, 18 square miles.)

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 17	2 4		0 8		1 1	0 12	1 5	0 16	10 2	0 88	27 2
2		2 4		0 8		1 1		1 8	0 52	12 2	0 88	27 2
3		2 4		0 7		1 1		2 1	0 54	12 9	0 88	27 2
4		2 2		0 7		1 1		2 4	0 58	14 4	1 01	32 5
5		2 2		0 7		1 1		2 7	0 75	21 6	1 00	32 0
6		2 0		0 6		1 1		3 0	0 88	27 2	0 98	31 2
7		2 0	0 05	0 6		1 2		3 3	0 88	27 2	0 96	30 4
8	0 15	2 0		0 6		1 2	0 23	3 7	0 85	26 0	0 96	30 4
9		1 9		0 7		1 2		3 9	0 83	25 2	0 95	30 0
10		1 8		0 7		1 2	0 25	4 2	0 71	19 8	0 94	29 6
11		1 7		0 7		1 2		4 2	0 60	15 1	0 96	30 4
12		1 6		0 8		1 2		4 2	0 53	12 6	1 02	33 0
13		1 5		0 8		1 2	0 25	4 2	0 50	11 5	1 15	39 5
14		1 4	0 07	0 8		1 2		4 2	0 48	10 9	1 46	56 6
15	0 11	1 3		0 8		1 2	0 25	4 2	0 48	10 9		
16		1 3		0 8		1 2		4 0	0 48	10 9		
17		1 3		0 8		1 2		3 8	0 62	15 9		
18		1 2		0 8	0 11	1 3	0 23	3 7	0 67	18 0		
19		1 2		0 8		1 3		3 7	0 78	23 1		
20		1 1		0 8		1 3		3 6	0 92	28 8		
21		1 1		0 9		1 3		3 5	0 88	27 2		
22		1 0		0 9		1 3	0 22	3 5	0 86	26 4		
23		0 9		0 9		1 3		4 2	0 79	23 5		
24	0 07	0 8		0 9	0 11	1 3		4 9	0 75	21 6		
25		0 8		0 9		1 3		5 6	0 73	20 7		
26		0 8		0 9		1 3		6 3	0 71	19 8		
27		0 8		1 0		1 4		7 0	0 75	21 6		
28		0 8		1 0		1 4		7 8	0 79	23 5		
29		0 8		1 0		1 5	0 41	8 6	0 81	24 4		
30		0 8				1 5		9 4	0 88	27 2		
31	0 07	0 8			0 12	1 5			0 90	28 0		

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				20 0	0 40	8 3	0 38	7 7	0 30	5 3	0 20	3 0
2				20 0	0 39	8 0	0 36	7 1	0 30	5 3	0 19	2 8
3			0 71	18 8	0 38	7 7	0 36	7 1	0 30	5 3	0 19	2 8
4			0 69	18 9	0 38	7 7	0 36	7 1	0 30	5 3	0 18	2 6
5			0 68	18 5	0 50	11 5	0 35	6 8	0 30	5 3	0 18	2 6
6			0 64	16 8	0 46	10 2	0 33	6 1	0 30	5 3	0 18	2 6
7			0 61	15 5	0 43	9 3	0 32	5 9	0 30	5 3	0 17	2 4
8			0 59	14 7	0 79	23 5	0 32	5 9	0 28	4 8	0 17	2 4
9			0 56	13 7	0 54	12 9	0 32	5 9	0 26	4 4	0 17	2 4
10			0 54	12 9	0 53	12 6	0 31	5 6	0 5	4 2	0 16	2 2
11			0 52	12 2	0 52	12 2	0 31	5 6	0 22	3 5	0 16	2 2
12			0 51	11 9	0 51	11 9	0 30	5 3	Ice.	3 7	0 15	2 0
13			0 50	11 5	0 50	11 5	0 30	5 3	0 24	3 9	0 15	2 0
14			0 48	10 9	0 48	10 9	0 30	5 3	0 23	3 7	0 15	2 0
15			0 47	10 5	0 46	10 2	0 30	5 3	0 23	3 7	0 14	1 9
16			0 46	10 2	0 45	9 9	0 29	5 1	0 23	3 7	0 14	1 9
17			0 48	10 9	0 43	9 3	0 38	7 7	0 23	3 7	0 12	1 5
18			0 54	12 9	0 42	8 9	0 38	7 7	0 22	3 5	0 12	1 5
19			0 54	12 9	0 42	8 9	0 36	7 1	0 22	3 5	0 12	1 5
20			0 53	12 6	0 41	8 6	0 35	6 8	0 22	3 5	0 11	1 3
21			0 51	11 9	0 40	8 3	0 34	6 4	0 22	3 5	0 11	1 3
22			0 50	11 5	0 39	8 0	0 33	6 1	0 22	3 5	0 10	1 1
23			0 50	11 5	0 39	8 0	0 31	5 6	0 22	3 5	0 10	1 1
24			0 48	10 9	0 38	7 7	0 30	5 3	0 21	3 2	0 10	1 1
25			0 46	10 2	0 36	7 1	0 31	5 6	0 21	3 2	0 10	1 1
26			0 44	9 6	0 35	6 8	0 30	5 3	0 21	3 2	0 10	1 1
27			0 43	9 3	0 35	6 8	0 29	5 1	0 21	3 2	0 10	1 1
28			0 43	9 3	0 34	6 4	0 29	5 1	0 20	3 0	0 09	1 0
29			0 42	8 9	0 33	6 1	0 30	5 3	0 20	3 0	0 09	1 0
30			0 41	8 6	0 38	7 7	0 30	5 3	0 20	3 0	0 09	1 0
31			0 41	8 6			0 30	5 3			0 09	1 0

*Monthly Discharge of Hospital Creek near Golden, for 1916.*

(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.
January.....	2.4	0.8	1.43	0.08	0.09	87.9
February.....	1.0	0.6	0.80	0.04	0.04	45.0
March.....	1.5	1.1	1.25	0.07	0.08	76.9
April.....	9.4	1.5	4.30	0.24	0.27	256.0
May.....	28.8	10.2	19.90	1.11	1.28	1,220.0
June.....						
July.....						
August.....		8.6	12.80	0.71	0.82	787.0
September.....	23.5	6.1	9.56	0.53	0.59	569.0
October.....	7.7	5.1	6.03	0.33	0.38	371.0
November.....	5.3	3.0	3.97	0.22	0.25	236.0
December.....	3.0	1.0	1.79	0.10	0.12	110.0

NOTE.—Weir destroyed June 14, replaced August 3.

**ILLECILLEWAET RIVER AT REVELSTOKE (3009).**

*Location.*—The gauge is located at the second highway bridge about the mouth, one mile from Revelstoke.

*Records Available.*—Daily discharges October to December, 1911; May to December, 1912; April to November, 1913; March 1 to December 7, 1914; March 1 to December 23, 1915; March 23 to December 31, 1916.

NOTE.—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 480 square miles.

*Gauge.*—A chain gauge on the upstream side of the highway bridge is read daily by Miss S. Moran, of Revelstoke, B.C.

*Channel.*—The current at the gauge is swift in high water. At the metering section, one mile below, there is possibility of backwater from the Columbia river. The channel scoured during the freshet in 1916, changing the rating curve.

*Discharge Measurements.*—Eight meter measurements were taken during 1916. Five of these measurements formed a new curve after June 19, 1916; the previous three fitted the 1915 curve.

*Winter Flow.*—The stream freezes during the winter months. Anchor and frazil ice are to be expected.

*Accuracy.*—"C" for open water.

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*Discharge Measurements of Illecillewaet River at Revelstoke, for 1916.*

Date.	Engineer.	Meter No.	Wldth.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 21	H. O. Dempster.....	1,927	52	250	1.71	Ice	444 <sup>1</sup>
May 7	H. C. Hughes.....	1,046	110	678	3.98	4.00	2,700 <sup>2</sup>
May	H. C. Hughes.....	1,046	130	582	4.97	4.00	2,890 <sup>2</sup>
Above measurements on 1915 curve, used up to June 19, 1916.							
July 17	H. C. Hughes.....	1,046	143	995	6.77	6.50	6,740
Aug. 11	H. C. Hughes.....	1,633	135	763	4.05	3.90	3,090
Aug. 16	H. C. Hughes.....	1,633	135	777	4.16	4.10	3,220
Sep. 4	H. C. Hughes.....	1,633	129	858	4.61	4.50	4,060
Nov. 14	H. C. Hughes and C. E. Webb..	1,633	113	341	1.38	0.64	471 <sup>4</sup>

<sup>1</sup> Ice.<sup>2</sup> Upper highway bridge.<sup>3</sup> Lower highway bridge.<sup>4</sup> Ice—Corrected gauge height—0.40.





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*Monthly Discharge of Illecillewaet River near Revelstoke, for 1916.*

(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
April	2,220	374	891	1.86	2.08	53,600 <sup>a</sup>
May	3,620	1,430	2,240	4.67	5.38	136,000 <sup>b</sup>
June	7,660	2,460	4,370	9.10	10.20	266,000 <sup>b</sup>
July	6,520	3,230	4,830	10.10	11.60	297,000 <sup>b</sup>
August	5,110	1,820	3,330	6.94	8.60	205,000
September	3,780	920	2,040	4.25	4.74	121,000
October	2,270	610	805	1.68	1.94	49,500
November	610		481	1.01	1.13	28,700
December			352	0.73	0.84	21,600
The period	7,660		2,150	4.48	45.91	1,173,800

NOTE:—No records January, February and March. Gauge height-discharge relation affected by ice, November 13 to December 31.

Daily discharge estimated from gauge records, meter measurements and climatic conditions:  
 November 13 to November 28 460 c.f.s.  
 November 29 to December 2 380 c.f.s.  
 December 3 to December 31 350 c.f.s.

## KICKING HORSE RIVER AT GOLDEN (3011).

*Location.*—The gauge is located at the left downstream side of the old highway bridge at Golden.

*Records Available.*—April to October, 1912; April to November, 1913; April 16 to December 31, 1914; April 1 to December 22, 1915; April 1 to December 31, 1916.

NOTE:—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 700 square miles.

*Gauge.*—Vertical staff gauge is read twice daily by Mr. W. Wenman.

*Channel.*—The channel is straight for about 200 yards above and below the section. The control is a gravel bar about 200 yards below the section and is not affected by ice.

*Discharge Measurements.*—Seven meter measurements were made in 1916. The new curve applied to the 1915 curve and the remainder formed the 1916 curve.

*Stream Flow.*—The stream is affected by ice during the winter season.

*Curve.*—“B” for open water.

*Discharge Measurements of Kicking Horse River at Golden, for 1916.*

Date	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July	B. H. Hughes	1,036	220	1,070	7.47	6.49	7,960
Aug.	H. Hughes	1,633	146	690	3.62	4.73	2,500
Aug.	H. C. Hughes	1,633	115	550	2.89	4.12	1,600
Nov.	Hughes and Webb.	1,623	99	408	1.18	2.73	483

## Daily Gauge Height and Discharge of Kicking Horse River at Golden, for 1916.

(Drainage area, 700 square miles.)

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	230	2.00	650	3.35	1,900
2							1.22	256	2.38	934	3.32	1,860
3							1.20	250	2.58	1,100	3.25	1,780
4							1.30	280	2.70	1,210	3.25	1,780
5							1.30	280	3.02	1,530	3.63	2,120
6							1.40	320	3.16	1,680	3.46	2,040
7							1.45	340	3.16	1,680	3.40	1,980
8							1.55	380	2.98	1,490	3.45	2,020
9							1.65	380	2.92	1,430	3.71	2,390
10							1.52	368	2.62	1,140	3.72	2,400
11							1.62	368	2.48	1,010	3.70	2,370
12							1.40	328	2.40	950	3.66	2,300
13							1.40	320	2.38	934	3.78	2,600
14							1.40	320	2.35	910	4.28	3,410
15							1.45	340	2.35	910	4.88	4,940
16							1.42	328	2.30	870	5.78	8,080
17							1.40	320	2.45	990	6.45	10,800
18							1.40	320	2.62	1,140	6.76	12,000
19							1.40	320	2.82	1,330	7.30	14,200
20							1.40	320	3.05	1,560	6.45	7,780
21							1.40	320	3.10	1,610	6.16	6,420
22							1.40	320	3.08	1,590	5.58	4,360
23							1.40	320	2.94	1,450	5.22	3,420
24							1.40	320	2.80	1,310	4.95	2,870
25							1.40	320	2.82	1,330	5.18	3,340
26							1.75	490	2.88	1,390	5.30	3,600
27							2.05	685	3.16	1,680	5.55	4,270
28							2.16	762	3.40	1,960	5.60	4,420
29							2.00	660	3.38	1,940	6.65	4,670
30							2.05	686	3.30	1,840	5.00	2,970
31									3.30	1,840		
	July.		August.		September.		October.		November.		December.	
1	5 00	2,910	5.20	3,380	4.08	2,930	3.20	770	2.85	540		
2	5.45	3,980	5.18	3,340	5.09	2,970	3.20	770	2.85	640		
3	6.10	6,200	5.30	4,600	4.90	2,770	3.10	700	2.86	540		
4	6.30	7,100	5.00	2,970	5.02	3,010	3.00	630	2.85	640		
5	6 04	5,960	4.88	2,740	4.55	2,680	3.00	630	2.80	610		
6	5 75	4,880	4.85	2,680	4.70	2,430	3.00	630	2.80	610		
7	5 95	5,600	4.88	2,740	4.60	2,120	2.90	570	2.76	480		
8	6 45	7,780	6.10	3,170	4.60	2,120	2.90	670	2.76	480		
9	6.54	8,180	5.15	3,280	4.45	2,040	2.90	670	2.76	480		
10	6 48	7,910	5.10	3,170	4.40	1,970	2.90	570	2.70	450		
11	6 25	6,880	5.00	2,970	4.20	1,710	2.90	670	2.70	460		
12	6.08	6,120	4.85	2,680	4.10	1,600	2.90	670	2.70	460		
13	6.50	8,000	4.90	2,770	4.12	1,620	2.90	670	Ice			
14	6.25	6,880	4.90	2,770	4.00	1,490	2.90	570				
15	5 78	4,980	4.80	2,600	3.90	1,380	2.90	670				
16	6 05	6,000	4.84	2,670	3.90	1,380	3.62	1,110				
17	6.25	6,880	4.70	2,430	3.90	1,380	3.70	1,150				
18	6.18	6,560	4.60	2,270	4.00	1,490	3.40	920				
19	6.52	8,090	4.45	2,040	4.00	1,490	4.40	920				
20	5.40	3,850	4.35	1,900	3.96	1,440	3.30	840				
21	5.22	3,420	4.12	1,620	3.90	1,380	3.30	840				
22	4.95	2,870	4.10	1,600	3.90	1,380	3.10	700				
23	4.90	2,770	4.50	2,120	3.90	1,380	3.00	630				
24	4.85	2,680	4.65	2,370	3.90	1,380	3.00	630				
25	4.88	2,740	4.90	2,770	3.81	1,290	3.00	630				
26	4.95	2,870	4.90	2,770	3.70	1,180	3.00	630				
27	5.00	2,970	4.90	2,770	3.66	1,040	2.90	670				
28	6.00	2,970	4.92	2,810	3.38	904	2.90	570				
29	4.90	2,770	4.80	2,600	3.30	840	2.90	670				
30	4.78	2,570	4.82	2,630	3.36	880	2.90	670				
31	5.02	3,010	5.05	3,070			2.86	540				

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Monthly Discharge of Kicking Horse River at Golden, for 1916.

(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.
April.....	762	230	375	0.53	0.59	22,300
May.....	1,969	650	1,330	1.90	2.19	81,800
June.....	14,200	1,780	4,300	6.14	6.85	256,000
July.....	8,180	2,570	5,050	7.21	8.31	311,000
August.....	3,600	1,600	2,680	3.83	4.42	165,000
September.....	3,010	840	1,720	2.46	2.75	102,000
October.....	1,180	540	681	0.97	1.12	41,900
November.....			469	0.67	0.75	27,900
December.....			350	0.50	0.58	21,500
The period.....	14,200		1,880	2.69	27.56	1,029,400

NOTE.—No gauge records January, February and March. Gauge height-discharge relation affected by ice November 13 to December 31.

Daily discharge estimated from gauge records, meter measurements and climatic conditions:

November 13 to November 30..... 450 c.f.s.

December 1 to December 31..... 350 c.f.s.

KICKING HORSE RIVER AT FIELD (3012).

*Location.*—The gauge is on the downstream side of the highway bridge 3½ miles east of Field.

*Records Available.*—Daily discharges June to November 1912; June to December 1913; June 1 to December 31, 1914; April 1 to December 25, 1915; January 1 to December 31, 1916.

NOTE.—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 130 square miles.

*Gauge.*—Chain gauge on the downstream side of the highway bridge. Read daily by Mr. W. Tarr.

*Channel.*—The channel is straight for 50 yards above and below the section. The current is swift. The channel is not permanent.

*Discharge Measurements.*—Six discharge measurements define the 1916 rating curve.

*Winter Flow.*—The stream is affected by ice during the winter season. Frazil ice is to be expected.

*Accuracy.*—“B” for open water.

Discharge Measurements of Kicking Horse River at Field, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
April. 3	H. O. Dempster.....	1,927	33.5	63.1	0.65	2.70	41.1 <sup>1</sup>
June 18	H. C. Hughes.....	1,046	85.0	273.0	3.78	6.45	1,880.0
July 2	H. C. Hughes.....	1,046	90.0	240.0	5.92	5.90	1,420.0
Aug. 10	H. C. Hughes.....	1,633	62.0	158.0	3.65	4.95	582.0
Aug. 30	H. C. Hughes.....	1,633	98.0	271.0	6.16	6.30	1,670.0
Nov. 7	Hughes and Webb.....	1,623	46.5	69.8	1.59	3.36	111.0

<sup>1</sup> Ice.



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*Monthly Discharge of Kicking Horse River near Field, for 1916.*

(Drainage area, 130 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			45	0 35	0 40	2,770
February			40	0 31	0 33	2,300
March			41	0 31	0 36	2,520
April	55	34	43	0 33	0 37	2,560
May	186	55	148	1 14	1 31	9,100
June	2,480	160	1,080	8 31	9 27	64,260
July	1,900	725	1,190	9 15	10 05	73,170
August	1,790	580	913	7 02	8 09	56,140
September	1,380	188	622	4 78	5 33	37,010
October	290	114	165	1 30	1 36	10,390
November			93	0 71	0 79	5,530
December			65	0 50	0 58	4,000
The year	2,480		371	2 85	38 83	269,750

NOTE.—Gauge height discharge relation affected by ice January 1, to March 31, November 1, to December 31. Daily discharge estimated from gauge records, meter measurements and climatic conditions:

January 1 to January 31	45 c.f.s.
February 1 to February 29	40 c.f.s.
March 1 to March 31	41 c.f.s.
November 1 to November 30	93 c.f.s.
December 1 to December 31	65 c.f.s.

**KICKING HORSE RIVER AT NO. 2 TUNNEL (3013).**

*Location.*—At the C.P.R. bridge near No. 2 Tunnel.

*Records Available.*—Daily discharges July to October, 1912; April, 1913, to December, 1914; January to December, 1915; July 1 to December 31, 1916.

NOTE.—Daily discharge estimated during ice conditions.

*Drainage Area.*—The drainage area is 50 square miles.

*Gauge.*—Vertical staff gauge nailed to cribbing on left bank, and is read daily by Mr. R. Hutchison.

*Channel.*—Straight for 25 yards above and below the gauge. The control is of rock and is permanent.

*Discharge Measurements.*—The 1916 discharge curve is defined by five measurements taken in 1915 and four in 1916.

*Winter Flow.*—The stream is affected by ice during the winter months.

*Accuracy.*—"B" for open water.

*Discharge Measurements of Kicking Horse River at No. 2 Tunnel, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 18	H. C. Hughes	1,043	37 0	112 0	7 33	5 55	822 0
July 2	H. C. Hughes	1,046	24 0	85 2	6 28	4 30	535 0
Aug. 30	H. C. Hughes	1,633	27 0	44 1	4 17	2 38	184 0
Nov. 7	Hughes and Webb	1,623	12 0	14 0	2 13	0 56	29 8

Daily Gauge Height and Discharge of Kicking Horse River at No. 2 Tunnel, for 1916.

(Drainage area, 50 square miles.)

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	.....	500	3.30	325	3.20	307	1.20	70	0.80	44	0.40	22
2	4.20	513	3.50	362	3.20	307	1.10	63	0.80	44	0.30	17
3	4.60	603	3.60	382	3.20	307	1.00	56	0.70	38	0.30	17
4	4.90	671	3.30	325	2.90	259	0.90	50	0.70	38	0.30	17
5	4.10	491	3.10	290	3.00	274	0.90	50	0.70	38	0.30	17
6	3.80	423	2.90	259	2.80	244	0.90	50	0.70	38	0.30	17
7	3.80	423	3.00	274	2.40	189	0.90	50	0.60	32	0.30	17
8	4.90	671	3.10	290	2.40	189	0.80	44	0.60	32	0.30	17
9	5.40	787	3.20	307	2.60	215	0.80	44	.....	32	0.30	17
10	5.30	763	3.00	274	2.30	177	0.80	44	.....	32	.....	17
11	5.00	694	2.90	259	2.10	153	0.80	44	.....	30	.....	12
12	4.80	648	2.90	259	2.10	153	0.80	44	.....	30	.....	12
13	5.40	787	2.90	259	2.10	153	0.80	44	.....	30	.....	12
14	4.60	603	2.90	259	2.00	142	0.80	44	.....	30	.....	12
15	4.00	468	3.00	274	1.90	132	0.90	50	0.50	27	.....	12
16	4.00	468	3.00	274	1.90	132	1.20	70	0.50	27	.....	12
17	4.60	603	2.70	229	1.90	132	1.70	113	0.50	27	.....	12
18	5.40	787	2.50	202	1.90	132	1.50	95	0.50	27	.....	12
19	4.00	468	2.40	189	1.80	122	1.30	78	0.50	27	.....	12
20	3.50	362	2.00	142	1.80	122	1.30	78	0.50	27	.....	12
21	3.10	290	1.90	132	1.70	113	1.20	70	0.40	22	.....	12
22	2.90	259	1.90	132	1.70	113	1.10	63	0.40	22	.....	12
23	2.60	215	2.40	189	1.60	104	1.00	56	0.40	22	.....	12
24	2.70	229	2.60	215	1.60	104	1.00	56	0.40	22	.....	12
25	2.80	244	2.70	229	1.60	104	0.90	50	0.40	22	.....	12
26	3.00	274	2.80	244	1.50	95	0.90	50	0.40	22	.....	12
27	3.00	274	2.60	215	1.40	86	0.90	50	0.40	22	.....	12
28	3.10	290	2.50	202	1.30	78	0.80	44	0.40	22	.....	12
29	2.90	259	2.60	215	1.20	70	0.80	44	0.40	22	.....	12
30	2.90	259	2.70	229	1.30	78	0.80	44	0.40	22	.....	12
31	3.10	290	3.30	325	.....	.....	0.80	44	.....	.....	.....	12

Monthly Discharge of Kicking Horse River at No. 2 Tunnel, for 1916.

(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.
July.....	787	215	471	9.42	10.90	28,060
August.....	382	132	250	5.00	5.76	15,370
September.....	307	70	160	3.20	3.57	9,520
October.....	113	44	56	1.12	1.29	3,440
November.....	44	22	29	0.58	0.65	1,730
December.....	.....	.....	14	0.28	0.32	861
The period.....	.....	.....	163	3.27	22.49	59,881

NOTE.—No records January to June—no gauge reader available. Gauge height discharge relation affected by ice from December 11 to December 31.

Daily discharge estimated from gauge records and climatic conditions:

December 11 to December 31..... 12 c.f.s.

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## SPILLIMACHEEN RIVER (3019).

*Location.*—The gauge is located on the downstream side of the highway bridge 4 miles from Spillimacheen.

*Records Available.*—June to October, 1912; June to November, 1913; April to December, 1914; April to December, 1915; April to December, 1916.

*Drainage Area.*—The drainage area is 580 square miles.

*Gauge.*—Vertical staff gauge on downstream side of pier near left bank. Read two or three times a week by Mr. James Montgomery.

*Channel.*—The channel is straight above and below the section for 50 yards. The control is a gravel bar 25 yards below the section and is not permanent.

*Discharge Measurements.*—Five discharge measurements were taken during 1916. Two of these, taken before June 22, apply to the 1915 rating curve; the other three form a new curve for 1916.

*Winter Flow.*—The river is generally affected by ice from November to April.

*Accuracy.*—Before June 22 the accuracy is "C." A landslide occurred on June 22, which required an entirely new rating. Accuracy is low. Curve has not yet been definitely defined.

*Discharge Measurements of Spillimacheen River at Spillimacheen, for 1916.*

Date.	Engineer.	Meter	Width.	Area of	Mean	Gauge	Discharge.
		No.		Section.	Velocity.	Height.	
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 5	H. C. Hughes	1,046	122	636	6.24	2.75	3,960
June 13	H. C. Hughes	1,046	121	565	3.97	2.04	2,240
July 5	H. C. Hughes	1,046	124	620	6.76	3.00	4,190
Aug. 23	H. C. Hughes	1,633	121	538	3.77	2.08	2,030
Nov. 10	Hughes and Webb	1,623	117	329	0.69	0.20	228

## Daily Gauge Height and Discharge of Spillimacheen River at Spillimacheen, for 1916.

(Drainage area, 580 square miles.)

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 60	300		850		1,810
2							0 00	300		1,010		1,810
3								300	1 20	1,170	1 70	1,810
4								300	1 70	1,810	2 20	2,650
5							0 00	300		1,810		2,440
6								300	1 70	1,810		2,230
7								300	1 50	1,530	1 85	2,020
8							0 00	300		1,410		2,160
8							0 00	300		1,290		2,300
10								307	1 20	1,170	2 10	2,450
11								314		1,100	1 90	2,100
12								322		1,030		2,180
13								329	1 00	960	2 00	2,270
14								337	1 00	960	2 40	3,100
15							0 10	345		960		4,340
16								385		960		5,590
17								385	1 00	960	3 70	6,840
18								385		1,030	4 50	9,240
19							0 20	385		1,100	4 80	10,100
20								395	1 20	1,170	5 60	9,540
21								395	1 50	1,530		8,080
22							0 20	395		1,550		6,630
23							0 40	500		1,570	3 35	5,180
24								500	1 55	1,600	3 30	5,030
25								500		1,620	3 30	5,030
26								500		1,640		5,330
27							0 40	510		1,670		5,630
28								520	1 60	1,600	3 60	5,930
29								530		1,670		5,330
30							0 70	700		1,740	3 20	4,740
31									1 70	1,810		

	July.	August.	September.	October.	November.	December.
1		4,740	3,870	2,600	0 80	610
2	3 20	4,740	3,870	2,600		580
3		4,640	3,520	2,400		560
4		4,540	3,170	2,470	0 70	540
5	3 10	4,450	2,820	2,340		510
6		4,940	2,220	2,220		490
7		5,430	2,670	2,010	0 60	470
8	3 60	5,930	3,120	1,810		470
9	3 90	6,830	3,580	1,810	0 60	470
10		6,680	3,250	1,600	1,360	470
11	3 80	6,530	2,930	1,320	0 60	470
12		6,130	2,600	1,280		470
13		5,730	2,670	1,250	0 30	470
14		5,330	2,140	1,180	0 30	280
15	3 30	5,030	2,820	1,110	0 60	470
16	3 60	5,930	3,050	1,040		690
17		5,730	2,640	1,040		910
18		5,530	2,230	1,070	1 40	1,144
19	3 10	5,330	1,820	1,100		1,010
20		4,940	1,750	1,140		880
21		4,550	1,850	1,120	1 00	760
22	3 00	4,160	1,950	1,100	0 40	340
23	2 70	3,300	2,640	1,090		405
24		3,390	2,170	1,300	0 60	470
25		3,480	2,280	940		450
26	2 80	3,580	2,400	850		430
27		3,320	2,600	790		410
28		3,070	2,600	730	0 50	400
29	2 50	2,820	2,600	700	0 55	435
30	2 90	3,870	2,600	680		413
31		3,870	2,600			391



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*Monthly Discharge of Spillimacheen River at Spillimacheen, for 1916.*

(Drainage area, 580 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	700	300	389	0 67	0 75	23,200
May	1,810	850	1,360	2 34	2 70	83,600
June	10,100	1,810	4,400	7 70	8 59	265,000
July	6,830	2 20	4,700	8 26	9 52	295,000
August	3,870	1 0	2,680	4 62	5 33	165,000
September	2,600	4 0	1,410	2 43	2 71	83,900
October	1,140	391	550	0 95	1 10	33,800
November			298	0 51	0 57	17,700
December			230	0 40	0 46	14,100
The period	10,100		1,800	3 10	31 73	981,300

NOTE.—No records January, February and March. Gauge height-discharge relation affected by ice from November 14 to December 31.

Daily discharge estimated from gauge records and climatic conditions:

November 14 to November 30..... 280 c.f.s.

December 1 to December 31..... 230 c.f.s.

## CRANBROOK DISTRICT.

## BIG SAND CREEK (3042).

*Location.*—At an old private bridge about three hundred yards below the highway bridge, two miles from Galloway, near Jaffray.

*Records Available.*—May 1 to September 30, 1914; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Big Sand creek has a drainage area of about 40 square miles above the metering.

*Gauge.*—Vertical staff gauge read daily by Mr. R. Cameron.

*Channel.*—Bed of stream is composed of light gravel. The bed is even and the flow rapid. A shift in control occurred during the freshet in June 1916.

*Discharge Measurements.*—The rating curve used up to June 19, 1916, is similar to that of 1915. It is based on ten discharge measurements made in 1914-1915. The rating curve used after the freshet of June 1916 was prepared from six measurements made during the period June 22 to October 31, 1916.

*Winter Flow.*—Not observed.

*Accuracy.*—The accuracy accorded to the rating between April 1 and June 19 is "A."

The new rating curve June 22 to October 31 may bear the following accuracies:

0-200 cubic feet per second—"A."

200-1500 cubic feet per second—"C."

*Discharge Measurements of Big Sand Creek near Jaffray, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 22	Elliott and Patterson	1,521	38	116.2	7.71	2.58	895
July 11	Elliott and Patterson	1,929	37	95.4	4.97	1.75	474
July 29	T. R. Patterson	1,929	36	50.2	2.23	0.71	112
Aug. 19	T. R. Patterson	1,929	36	49.4	2.08	0.68	103
Sept. 13	T. R. Patterson	1,057	36	38.4	1.56	0.40	60
Oct. 6	J. A. Elliott	1,057	25	24.7	1.04	0.05	26

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Daily Gauge Height and Discharge of Big Sand Creek at Hanbury, for 1916.

(Drainage area, 40 square miles.)

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							0.78	65.4	1.50	212	1.55	332
2							0.78	55.4	1.45	207	1.58	232
3							0.75	55.4	1.75	256	1.95	357
4							0.65	75.5	2.25	454	2.35	525
5							0.85	75.5	2.45	555	2.75	703
6												
7							0.87	75.5	2.55	657	2.55	603
8							0.95	92.5	2.52	556	2.30	492
9							1.02	103.0	2.35	513	2.42	543
10							1.15	127.0	1.55	332	2.60	621
11							1.20	137.0	1.55	255	2.55	512
12							1.25	145.0	1.50	212	2.55	525
13							1.22	142.0	1.35	150	2.40	534
14							1.25	145.0	1.31	162	2.45	558
15							1.25	145.0	1.22	142	2.52	721
16							1.30	150.0	1.20	137	3.45	1,020
17							1.30	160.0	1.25	151	3.52	1,090
18							1.25	145.0	1.50	212	3.58	1,120
19							1.20	137.0	1.75	292	3.50	1,050
20							1.15	127.0	2.05	405	4.36	1,440
21							1.20	137.0	2.10	412	3.50	1,460
22							1.15	127.0	2.10	412	3.32	1,300
23							1.05	108.0	2.00	375	2.51	911
24							1.01	101.0	1.75	298	2.35	785
25							1.00	99.0	1.71	275	2.42	807
26							1.02	103.0	1.60	241	2.40	795
27							1.35	172.0	1.58	234	2.35	786
28							1.85	322.0	1.76	292	2.40	795
29							1.88	332.0	2.05	394	2.35	770
30							1.75	285.0	2.10	412	2.25	715
31							1.58	234.0	2.05	394	2.00	590
									1.92	345		

	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	1.90	541	0.58	104.0	0.20	40.0	0.02	29.2				
2	2.22	702	0.50	88.0	0.20	40.0	0.02	29.2				
3	2.95	1,100	0.58	85.0	0.34	54.0	0.01	28.5				
4	2.95	1,100	0.55	80.5	0.82	140.0	0.00	28.0				
5	2.42	807	0.55	80.5	0.85	148.0	0.00	28.0				
6	2.15	555	0.52	75.0	0.72	113.0	0.05	25.5				
7	2.02	600	0.50	73.0	0.55	98.0	0.05	25.5				
8	2.10	540	0.48	70.4	0.48	70.4	0.08	24.0				
9	2.00	590	0.45	55.5	0.50	73.0	0.10	23.0				
10	1.92	551	0.42	52.5	0.51	74.5	0.10	23.0				
11	1.78	485	0.40	50.0	0.50	73.0	0.10	23.0				
12	1.72	459	0.38	58.0	0.48	70.4	0.12	22.2				
13	1.58	442	0.31	51.0	0.40	60.0	0.15	21.0				
14	1.55	387	0.32	52.0	0.38	58.0	0.18	19.8				
15	1.40	328	0.32	52.0	0.34	54.0	0.19	19.4				
16	1.35	309	0.31	51.0	0.30	50.0	0.20	19.0				
17	1.40	328	0.28	48.0	0.25	46.0	0.20	19.0				
18	1.28	283	0.42	62.5	0.21	41.0	0.20	19.0				
19	1.12	227	0.72	113.0	0.20	40.0	0.20	19.0				
20	1.10	220	0.50	88.0	0.20	40.0	0.20	19.0				
21	1.08	214	0.58	85.0	0.18	38.8	0.20	19.0				
22	1.00	190	0.51	90.0	0.15	37.0	0.22	18.4				
23	0.95	178	0.61	90.0	0.12	35.2	0.24	17.8				
24	0.90	162	0.59	86.5	0.11	34.6	0.25	17.5				
25	0.85	148	0.55	80.5	0.10	34.0	0.25	17.5				
26	0.75	121	0.50	73.0	0.10	34.0	0.28	16.5				
27	0.70	108	0.45	57.5	0.10	34.0	0.02	27.0				
28	0.72	113	0.40	50.0	0.10	34.0	0.18	19.8				
29	0.72	113	0.32	52.0	0.08	31.6	0.21	18.7				
30	0.70	108	0.29	49.0	0.04	30.4	0.22	18.4				
31	0.55	104	0.24	44.0			0.25	17.5				

*Monthly Discharge Measurements of Big Sand Creek at Jaffray, for 1916.*

(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.
April .....	332.0	66.4	141.0	3.62	3.93	8,390
May .....	667.0	137.0	326.0	8.12	9.36	19,980
June .....	1,460.0	332.0	766.0	19.10	21.30	46,620
July .....	1,100.0	104.0	307.0	9.92	11.44	24,410
August .....	112.0	44.0	71.0	1.77	2.04	4,370
September .....	148.0	30.4	57.6	1.44	1.61	3,430
October .....	29.2	16.6	21.7	0.54	0.62	1,330
The period.	1,460.0	16.6	2.53	6.39	20.30	107,430

CHERRY CREEK (3038).

*Location.*—This station is about one mile above the point where Cherry creek flows into Kootenay river and 16 miles from Cranbrook.

*Records Available.*—May 1 to November 30, 1913; April 15 to October 8, 1914; April 11 to September 30, 1915; June 15 to October 1, 1916.

*Drainage Area.*—Cherry creek has a drainage area of 80 square miles.

*Gauge.*—Vertical staff gauge graduated in feet and tenths, read daily by Mr. Roy Myers.

*Channel.*—Channel is regular and affords a good metering section. Shifts are liable to occur during freshet season, owing to silty nature of the bed.

*Discharge Measurements.*—Six measurements were made during 1916. Owing to a shift in control during a freshet in June, measurements of previous years could not be used in compiling 1916 data.

*Winter Flow.*—Not observed.

*Accuracy.*—"B."

*Discharge Measurements of Cherry Creek near Wasa, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 15	Elliott and Patterson	1,502	16.5	74.0	8.26	3.11	610
July 7	Elliott and Patterson	1,920	16.5	35.5	5.90	1.77	227
July 26	T. R. Patterson	1,929	20.5	27.0	4.13	0.86	112
Aug. 16	T. R. Patterson	1,029	16.0	18.3	2.82	0.53	52
Sept. 15	T. R. Patterson	1,057	20.2	13.9	2.41	0.32	336
Oct. 4	Elliott and Patterson	1,057	20.0	15.2	1.96	0.37	30

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Daily Gauge Height and Discharge of Cherry Creek near Wasa, for 1916.

(Drainage area, 80 square miles.)

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 80	500 0	0 68	67 8	0 36	27 2	0 35	34 5		
2			2 97	561 0	0 72	72 2	0 22	21 8	0 35	34 5		
3			2 97	561 0	0 70	70 0	0 35	34 5	0 25	34 5		
4			2 97	561 0	0 70	70 0	0 40	29 0	0 25	34 5		
5			2 59	432 0	0 65	64 5	0 42	41 0	0 20	30 0		
6			2 20	345 0	0 65	64 5	0 40	29 0	0 20	20 0		
7			2 05	286 0	0 65	64 5	0 35	34 5	0 38	37 2		
8			3 05	286 0	0 65	64 5	0 38	37 2	0 40	39 0		
9			2 17	313 0	0 72	72 2	0 45	44 0	0 40	39 0		
10			3 13	304 0	0 78	76 8	0 45	44 0	0 40	39 0		
11			2 03	231 0	0 68	67 6	0 42	41 0	0 28	27 2		
12			1 97	267 0	0 62	61 2	0 40	39 0	0 35	34 5		
13			1 84	240 0	0 60	59 0	0 38	37 2	0 25	34 5		
14			1 51	180 0	0 60	59 0	0 32	31 6	0 35	34 5		
15			1 56	186 0	0 55	54 0	0 30	30 0	0 30	30 0		
16			1 20	147 0	0 52	51 0	0 20	20 0				
17			1 30	147 0	0 50	49 0	0 30	30 0				
18	2 25	670	1 28	144 0	0 68	67 8	0 30	30 0				
19	3 77	900	1 20	133 0	0 60	61 0	0 25	25 8				
20	5 00	1,480	1 18	129 0	0 78	78 8	0 20	21 0				
21	4 25	1,120	1 10	118 0	0 70	70 0	0 20	21 0				
22	3 62	829	1 05	112 0	0 62	61 3	0 20	31 0				
22	4 05	1,040	0 96	103 0	0 50	49 0	0 20	21 0				
24	3 17	638	0 92	95 4	0 50	49 0	0 28	26 2				
25	2 80	500	0 88	90 6	0 50	49 0	0 32	21 8				
26	3 80	500	0 85	67 0	0 50	49 0	0 35	34 5				
27	2 80	500	0 80	61 0	0 45	44 0	0 40	39 0				
28	3 01	576	0 80	61 0	0 45	44 0	0 40	39 0				
29	2 80	500	0 72	73 2	0 40	39 0	0 25	34 5				
30	2 80	500	0 70	70 0	0 40	39 0	0 35	34 5				
31			0 65	64 5	0 45	44 0						

Monthly Discharge of Cherry Creek near Wasa, for 1916.

(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.
July	561 0	64 5	224 0	2 80	3 23	13,770
August	78 8	39 0	59 8	0 75	0 86	3,660
September	44 0	31 0	33 4	0 42	0 47	1,990
The period	561 0	21 0	106 0	1 32	4 56	19,440

NOTE.—Owing to the difficulty in securing a gauge reader no records are available before June 18.

ELK RIVER (3048).

Location.—At cable station, 50 yards above traffic bridge, quarter mile from Elko, in Southeast Kootenay.

Records Available.—April 1, 1914 to December 31, 1916.

Drainage Area.—One thousand six hundred square miles.

Gauge.—A chain gauge was established at the highway bridge and a vertical staff at the cable station. These gauges were read daily by Miss Irene McKee.

*Channel.*—The channel below the bridge is confined in a canyon and there is no possibility of shift. Above and below the station, the channel is straight for about 40 yards.

*Discharge Measurements.*—The rating curve is based on twenty-three discharge measurements made during 1914 to 1916.

*Winter Flow.*—The Elk river is subject to severe ice conditions, very low temperatures causing backwater at the gauge.

*Accuracy.*—Gauge readings are taken twice daily. The lower portion of the rating curve is well defined. Between 800 and 4,500 cubic feet per second—accuracy "A"; between 4,500 and 10,500 cubic feet per second—"B" above 10,500 cubic feet per second—"C."



ELK RIVER

Meter measurements under ice cover.

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*Discharge Measurements of Elk River near Elko Traffic Bridge, for 1916.*

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Mar. 1	Dempster	1,927	70	242	2.26	.....	546 <sup>1</sup>
July 29	Patterson	1,939	211	763	4.35	6.12	3,320
Aug. 21	Patterson	1,939	145	438	4.97	4.44	2,160
Aug. 19	Patterson	1,939	210	674	3.45	4.65	2,227
Sept. 11	Patterson	1,087	210	614	3.31	4.25	1,970
Sept. 14	Patterson	1,087	210	568	3.00	2.92	1,730
Oct. 6	Elliott and Patterson	1,087	208	443	2.30	2.28	1,019

<sup>1</sup> Ice conditions.

## Daily Gauge Height and Discharge of Elk River near Elko, for 1916.

(Drainage area, 1,600 square miles.)

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	2.55	1,055					3.75	1,480	4.90	2,590	5.70	4,200
2	2.65	1,055					3.85	1,560	4.90	2,880	5.75	4,290
3	2.65	1,055					2.85	1,560	5.35	3,600	5.70	4,200
4							3.85	1,560	5.15	5,020	6.35	5,400
5							3.80	1,520	5.95	5,580	7.50	7,580
6							3.85	1,550	7.15	5,980	7.25	7,180
7							3.95	1,540	7.55	7,780	7.00	6,580
8							4.10	1,800	7.75	8,200	7.20	7,080
9							4.25	1,960	5.55	5,760	7.90	8,520
10							4.35	2,080	5.00	4,740	8.25	9,280
11							4.45	2,220	5.70	4,200	8.10	5,950
12							4.35	2,080	5.40	3,570	7.55	8,420
13							4.30	2,020	5.25	3,440	7.90	8,520
14							4.30	2,020	5.10	3,180	8.25	9,280
15							4.30	2,020	5.06	3,020	9.50	12,200
16							4.30	2,020	5.00	3,020	10.05	13,400
17							4.20	2,020	5.00	3,030	11.20	16,200
18							4.20	1,910	5.30	3,520	12.45	19,200
19							4.15	1,850	5.60	4,020	13.50	22,000
20							4.05	1,740	5.55	4,470	12.70	22,600
21							4.00	1,590	5.00	4,740	12.40	19,200
22							3.95	1,540	5.90	4,560	11.00	15,700
23							3.85	1,560	5.60	4,020	10.10	13,500
24							3.90	1,600	5.40	3,570	9.75	12,600
25							3.95	1,640	5.30	2,520	9.50	12,000
26							4.50	2,280	5.20	3,350	9.50	12,000
27							5.00	3,030	5.25	2,440	9.90	13,000
28							5.30	3,520	5.50	3,640	10.20	12,700
29							5.20	3,350	5.80	4,380	10.40	14,200
30							4.90	2,880	5.50	4,250	9.75	12,600
31									5.70	4,200		
	July.		August.		September.		October.		November.		December.	
1	9.20	11,500	4.90	2,580	4.15	1,860	3.40	1,280	3.00	1,140	3.25	1,220
2	9.50	12,200	4.90	2,560	4.15	1,860	2.30	1,230	3.00	1,140	2.25	1,220
3	10.40	14,200	4.90	2,580	4.30	2,020	3.20	1,230	3.00	1,140	3.25	1,220
4	10.40	14,200	4.90	2,680	4.50	2,290	3.30	1,230	3.05	1,150	3.20	1,200
5	9.55	12,100	4.75	2,550	4.55	2,500	3.30	1,220	3.05	1,150	2.20	1,200
6	9.10	11,100	4.65	2,500	4.80	2,730	3.25	1,220	2.00	1,140	3.20	1,200
7	8.60	10,000	4.65	2,500	4.70	2,580	3.25	1,220	3.00	1,140	3.10	1,170
8	8.55	10,200	4.55	2,350	4.55	2,360	3.20	1,200	3.00	1,140	2.00	1,140
9	8.90	10,700	4.55	2,500	4.45	2,220	3.20	1,200	2.90	1,110	2.90	1,110
10	8.90	10,700	4.70	2,580	4.35	2,080	3.20	1,200	2.90	1,110	2.85	1,100
11	8.60	10,000	4.70	2,580	4.25	1,960	3.10	1,170	2.70	1,060	2.80	1,080
12	8.35	9,500	4.55	2,360	4.15	1,860	3.10	1,170	2.50	1,050		
13	7.80	8,310	4.50	2,290	4.00	1,590	3.10	1,170	2.50	1,050		
14	7.45	7,580	4.45	2,220	3.80	1,520	3.10	1,170	2.50	1,040		
15	7.15	6,980	4.40	2,150	2.80	1,520	3.10	1,170	2.60	1,050		
16	7.15	6,980	4.40	2,150	3.70	1,450	2.10	1,170	2.60	1,050		
17	7.10	6,880	4.35	2,080	3.70	1,450	3.10	1,170	2.70	1,050		
18	6.90	6,480	4.50	2,290	3.65	1,420	2.10	1,170	2.80	1,080		
19	6.80	6,280	4.50	2,290	3.60	1,280	3.10	1,170	3.00	1,140		
20	6.60	5,880	4.45	2,220	3.55	1,260	2.10	1,170	3.00	1,140		
21	6.40	5,490	4.35	2,080	2.55	1,360	3.10	1,170	3.10	1,170		
22	6.20	5,110	4.25	1,960	3.55	1,360	3.00	1,140	3.20	1,200		
23	6.10	4,920	4.20	1,910	2.55	1,360	3.00	1,140	3.25	1,220		
24	5.90	4,560	4.20	2,020	3.50	1,330	3.00	1,140	3.30	1,230		
25	5.75	4,290	4.40	2,150	3.50	1,330	3.00	1,140	3.40	1,260		
26	5.55	3,930	4.40	2,150	3.50	1,330	2.00	1,140	3.45	1,300		
27	5.50	3,840	4.35	2,080	3.40	1,330	3.00	1,140	3.45	1,300		
28	5.40	3,570	4.30	2,020	3.40	1,280	3.00	1,140	2.50	1,330		
29	5.15	3,260	4.25	1,960	3.40	1,280	3.00	1,140	3.40	1,280		
30	5.10	3,180	4.20	1,910	3.40	1,280	3.00	1,140	3.35	1,260		
31	4.90	2,880	4.15	1,860			3.00	1,140				



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## Monthly Discharge of Elk River near Elko, for 1916.

(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.....			920	0.57	0.66	56,600
February.....			680	0.42	0.45	39,100
March.....			950	0.59	0.68	58,400
April.....	3,520	1,480	1,990	1.24	1.38	118,000
May.....	8,200	2,880	4,330	2.70	3.11	266,000
June.....	22,600	4,200	11,300	7.19	8.02	684,000
July.....	14,200	2,880	7,640	4.77	5.50	470,000
August.....	2,880	1,860	2,300	1.44	1.66	141,000
September.....	2,730	1,260	1,710	1.07	1.19	102,000
October.....	1,280	1,140	1,180	0.74	0.85	72,600
November.....	1,330	1,040	1,160	0.72	0.80	69,000
December.....			1,080	0.67	0.77	66,400
The year.....			2,950	1.84	25.07	2,143,100

NOTE.—Gauge height-discharge relation affected by ice January 4 to April 1. Monthly mean discharge estimated from discharge measurements and climatic conditions.

## GOLD CREEK (3047).

*Location.*—The station is at a highway bridge half mile from mouth, seven miles from International boundary line near Newgate, in southeast Kootenay.

*Records Available.*—May 1 to September 1, 1914; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—The drainage area of Gold creek is 230 square miles.

*Gauge.*—Vertical staff gauge, 4 feet long, located on downstream side of bridge and read three times a week by Mr. C. Thompson.

*Channel.*—Gravel bed, very liable to shifts. The control shifted noticeably early in 1916, necessitating a new rating for 1916.

*Discharge Measurements.*—The rating curve for 1916 is based on four discharge measurements made during 1916.

*Winter Flow.*—Not observed.

*Accuracy.*—Between 20 and 400 cubic feet per second—accuracy "A."

“ 400 “ 1700 cubic feet per second—accuracy "D.”

## Discharge Measurements of Gold Creek at Newgate, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
July 10	Elliott and Patterson	1,929	50	142	2.86	2.45	402
July 28	T. R. Patterson	1,929	45	122	1.32	1.92	162
Sept. 12	T. R. Patterson	1,957	42	107	0.70	1.52	74
Oct. 7	J. A. Elliott	1,957	35	58	0.68	1.40	39

Daily Gauge Height and Discharge of Gold Creek at Newgate, for 1916.

(Drainage area, 330 square miles).

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							1.3	30	2.30	330	3.50	433
3								20		371		348
4							1.3	20	3.50	422	3.30	274
5								20		481		297
6								20	2.50	480	2.30	320
7							1.3	20		513		400
8								40	3.70	544	2.60	450
9								60		483		435
10							1.3	80	2.50	422	3.40	370
11								80		338	3.30	274
12							1.6	50	2.10	234		297
13								106	2.00	198	3.30	320
14							1.8	132		128		469
15								132	1.50	58	2.80	313
16							1.5	132		39		657
17									1.30	20	3.90	696
18							1.8	132		109		1,300
19								148	2.00	198	3.80	1,700
20							1.9	164	2.10	234		1,570
21								123		302		1,450
22								80	2.40	370	3.50	1,330
23							1.4	39		322		1,100
24								39	3.30	274	3.10	880
25							1.4	39	3.00	198		792
26								102		181		705
27							1.9	164	1.90	134	3.50	518
28								181		181		581
29							3.0	198	3.00	198	2.70	344
30								336		259	2.70	544
31							3.3	274	2.90	330		522
										371		

	July.		August.		September.		October.		November.		December.	
1		501		186		20	1.40	39				
3	2.50	460	3.00	196	1.20	20		39				
4		431		161		20	1.40	39				
4	3.50	422	1.90	184	1.30	20		39				
5		371		148		20	1.40	39				
3	2.30	320	1.80	133	1.30	20		39				
7		277		118		20	1.40	39				
8	2.10	334	1.70	105	1.30	20		39				
9		354		92		20	1.40	39				
10	3.20	274	1.50	60	1.30	20		39				
11		292		80		20	1.40	39				
12	3.30	320	1.60	80		20		39				
12		371		80	1.30	20		39				
14	3.50	422	1.60	80		20	1.40	39				
15		371		106	1.30	20		39				
16	2.30	320	1.80	132		20	1.40	39				
17		391		165	1.30	20		39				
18		363	2.00	198		20	1.40	39				
19	3.10	234		151	1.30	20		39				
20		316	1.70	105		20	1.40	39				
21	3.00	195		92	1.30	20		44				
22		198	1.60	80		39	1.45	49				
23		198		73	1.50	58		44				
24	2.00	195		65		58	1.40	39				
25		181	1.50	58	1.50	58		39				
23	1.90	164		53		53	1.40	39				
27		148		49	1.45	49		39				
28	1.50	132	1.45	44		44	1.40	39				
29		143	1.40	39	1.40	39		39				
30	1.90	164		39		39	1.40	39				
31		175	1.40	39		39		39				

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## Monthly Discharge of Gold Creek at Newgate, for 1916.

(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.
April	274	20	100	0.43	0.48	5,950
May	544	20	280	1.21	1.39	17,200
June	1,700	274	674	2.93	3.27	40,100
July	501	132	277	1.20	1.38	17,030
August	198	39	104	0.45	0.53	6,390
September	58	20	29	0.13	0.14	1,730
October	49	39	40	0.17	0.20	2,460
The period	1,700	20	215	0.93	7.38	90,860

## KOOTENAY RIVER, WARDNER (3041).

*Location.*—This station is at the highway bridge at Wardner. It is about 4 miles below the mouth of Bull river and 15 miles below the mouth of the St. Mary's.

*Records Available.*—January 1 to December 31, 1914; March 1 to December 31, 1915; March 12 to December 31, 1916.

*Drainage Area.*—The drainage area tributary to the Kootenay at Wardner is 5,200 square miles.

*Gauge.*—A vertical staff, 12 feet long, is nailed to one of the bridge piers and is read twice daily by Mrs. C. Barnes.

*Channel.*—The channel is straight and uniform.

*Discharge Measurements.*—The 1916 rating curve is based on seventeen discharge measurements made during 1913 to 1916.

*Winter Flow.*—The winters are severe. The river is generally affected by ice from the end of December to March. Frazil ice occurs.

*Accuracy.*—Between discharges of 2000 and 40,000 cubic feet per second—accuracy "A"; above 40,000 cubic feet per second—"C."

## Discharge Measurements of Kootenay River near Wardner, for 1916.

Date.	Engineer	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Sept. 9	T. R. Patterson	1,057	467	3,000	3.06	4.38	9,170
Oct. 5	J. A. Elliott and T. R. Patterson	1,057	465	2,270	1.85	2.54	4,200

Daily Gauge Height and Discharge of Kootenay River near Wardner, for 1916.

(Drainage area, 5,200 square miles.)

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	1.25	2,040	.....	.....	2.28	.....	1.40	2,300	3.80	7,800	5.55	13,200
2	1.25	2,040	.....	.....	2.13	.....	1.60	2,660	3.80	7,800	5.60	13,400
3	1.22	1,990	.....	.....	1.95	.....	1.50	2,480	4.18	8,940	5.60	13,400
4	1.20	1,960	.....	.....	1.82	.....	1.60	2,660	6.02	11,560	5.86	14,200
5	1.22	1,990	.....	.....	1.75	.....	1.70	2,840	5.78	14,000	6.75	17,600
6	1.40	.....	.....	.....	Frozen	.....	1.70	2,840	6.18	15,500	7.00	18,700
7	1.48	.....	.....	.....	.....	.....	1.80	3,020	6.68	17,300	6.68	17,300
8	1.55	.....	.....	.....	.....	.....	1.92	3,250	6.48	16,500	6.70	17,400
9	2.02	.....	.....	.....	.....	.....	2.10	3,600	5.90	14,400	7.22	19,700
10	2.45	.....	.....	.....	.....	.....	2.25	2,950	5.30	12,300	7.90	22,700
11	2.65	.....	.....	.....	.....	.....	2.40	4,240	4.82	10,900	7.85	22,600
12	3.72	.....	.....	.....	1.82	.....	2.45	4,360	4.45	9,750	7.60	20,900
13	3.95	.....	.....	.....	1.99	.....	2.40	4,240	4.25	9,150	7.62	21,500
14	3.95	.....	.....	.....	1.82	.....	2.42	4,200	4.05	8,560	8.30	24,800
15	3.95	.....	.....	.....	1.75	.....	2.52	4,620	3.85	7,950	9.60	31,500
16	3.90	.....	.....	.....	1.68	.....	2.62	4,750	3.80	7,800	11.05	41,600
17	3.90	.....	.....	.....	1.60	2,660	2.65	4,820	3.88	8,040	11.90	47,800
18	3.90	.....	.....	.....	1.60	2,660	2.60	4,700	4.05	8,550	12.45	52,160
19	3.90	.....	.....	.....	1.60	2,660	2.50	4,470	4.60	10,200	13.25	68,600
20	3.70	.....	.....	.....	1.60	2,660	2.40	4,240	5.10	11,700	14.25	67,000
21	3.70	.....	.....	.....	1.88	3,170	2.30	4,020	5.40	12,600	14.30	67,600
22	3.70	.....	.....	.....	1.88	3,170	2.30	4,020	5.40	12,600	13.05	66,800
23	.....	.....	.....	.....	1.80	3,020	2.20	3,810	5.15	11,800	11.95	48,200
24	.....	.....	.....	.....	1.75	2,930	2.15	3,700	4.92	11,200	11.00	41,200
25	.....	.....	.....	.....	1.62	2,700	2.12	3,640	4.72	10,600	10.65	38,800
26	.....	.....	.....	.....	1.70	2,840	2.50	4,470	4.62	10,300	10.55	38,200
27	.....	.....	.....	.....	1.75	2,930	3.05	5,850	4.70	10,500	10.70	39,200
28	.....	.....	.....	.....	1.70	2,840	3.72	7,560	5.10	11,700	11.25	43,000
29	.....	.....	.....	.....	1.60	2,660	4.50	8,400	5.58	13,300	11.40	44,100
30	.....	.....	.....	.....	1.55	2,570	3.90	8,100	5.70	13,800	11.15	42,200
31	.....	.....	.....	.....	1.62	2,520	.....	.....	6.68	13,700	.....	.....
	July.		August		September.		October.		November.		December.	
1	10.36	36,400	5.70	13,800	4.05	8,550	2.65	4,920	1.95	3,300	1.35	2,220
2	10.05	34,700	5.90	14,400	4.05	8,550	2.68	4,890	1.92	3,250	1.40	2,300
3	10.50	38,500	5.75	14,000	4.08	8,640	2.60	4,790	1.95	3,300	1.40	2,300
4	10.76	39,500	5.58	13,300	4.28	9,240	2.52	4,520	1.98	3,360	1.60	2,480
5	10.52	37,900	5.32	12,400	4.85	11,000	2.45	4,420	2.00	3,400	1.50	2,480
6	10.00	34,400	5.12	11,800	5.08	11,600	2.50	4,470	2.00	3,400	1.30	2,130
7	9.55	31,800	5.00	11,400	4.65	10,400	2.40	4,240	1.92	3,250	1.50	2,480
8	9.85	33,500	4.85	11,000	4.35	9,450	2.40	4,240	1.85	3,120	1.70	2,840
9	10.45	37,400	4.98	11,300	4.38	9,540	2.30	4,020	1.85	3,120	1.70	2,840
10	10.76	38,500	5.18	11,900	4.35	9,450	2.30	4,020	1.82	3,060	1.50	2,490
11	10.70	39,200	5.02	11,500	4.12	8,760	2.30	4,020	1.72	2,880	1.50	2,480
12	10.25	36,000	4.80	10,800	3.92	8,160	2.25	3,920	1.62	2,700	1.30	2,130
13	9.95	34,100	4.72	10,600	3.75	7,650	2.20	3,810	1.50	2,480	1.30	2,130
14	9.75	33,000	4.62	10,300	3.68	7,440	2.20	3,810	1.50	2,480	1.50	2,480
15	9.10	29,200	4.62	10,300	3.56	7,100	2.20	3,810	1.42	2,340	1.50	2,480
16	8.55	26,100	4.58	10,100	3.42	6,760	2.18	3,760	1.20	1,960	1.45	2,390
17	8.48	25,800	4.55	10,000	3.32	6,540	2.15	3,700	1.20	1,960	1.45	2,390
18	8.80	27,400	4.65	10,000	3.30	6,500	2.20	3,810	1.05	1,720	1.45	2,390
19	8.68	26,800	4.72	10,600	3.22	6,340	2.28	3,970	1.10	1,800	1.50	2,480
20	8.18	24,200	4.60	10,200	3.18	6,240	2.20	3,810	1.40	2,300	1.50	2,480
21	7.75	21,100	4.30	9,300	3.10	6,000	2.18	3,760	1.60	2,660	1.30	2,130
22	7.35	20,200	4.20	9,000	3.08	5,940	2.15	3,700	1.70	2,840	1.25	2,040
23	7.15	19,400	4.25	9,150	3.05	5,850	2.08	3,660	1.70	2,840	1.25	2,040
24	6.80	17,800	4.40	9,600	2.95	5,500	2.05	3,500	1.10	1,800	1.25	2,040
25	6.45	16,400	4.50	9,900	3.02	5,700	2.00	3,400	1.30	2,130	1.35	2,040
26	6.30	15,900	4.48	9,800	3.05	5,850	1.98	3,360	1.40	2,300	1.30	2,040
27	6.25	16,800	4.35	9,450	3.02	5,760	2.00	3,400	1.60	2,480	.....	2,040
28	6.08	15,100	4.28	9,240	2.95	5,560	1.98	3,360	1.60	2,480	.....	2,040
29	5.90	14,400	4.20	9,000	2.88	5,380	1.92	3,250	1.40	2,300	.....	2,040
30	5.62	13,500	4.10	8,700	2.80	5,160	1.92	3,250	1.35	2,220	.....	2,040
31	5.60	13,400	4.10	8,700	.....	.....	1.95	3,300	.....	.....	.....	2,040

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## Monthly Discharge of Kootenay River near Wardner, for 1916.

(Drainage area, 5,200 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	8,400	2,300	4,260	0.82	0.92	253,500
May	17,300	7,800	11,300	2.17	2.50	494,800
June	67,500	13,200	33,800	6.50	7.25	2,011,000
July	39,500	13,400	27,400	5.27	6.08	1,685,000
August	14,400	8,700	10,700	2.06	2.38	657,900
September	11,600	5,180	7,490	1.44	1.61	445,700
October	4,890	3,250	3,890	0.75	0.86	239,200
November	3,490	1,720	2,640	0.51	0.57	157,100
December	2,840	2,040	2,290	0.44	0.51	140,800
The period	67,500	1,720	11,530	2.22	22.68	6,285,000

## LITTLE SAND CREEK (3043).

*Location.*—The section is located at the small traffic bridge above Rosen's ranch, near Jaffray.

*Records Available.*—April 26 to September 30, 1914; April 1 to September 30, 1915; April 1 to October 31, 1916.

*Drainage Area.*—Little Sand creek has a drainage area of 33 square miles, above Jaffray.

*Gauge.*—Vertical staff gauge, nailed to bridge abutment, read daily during the irrigation season by Mr. A. Rosen.

This gauge was formerly graduated in feet and inches. In 1916 the gauge was faced with an enamel staff marked in feet and tenths.

*Channel.*—The channel is of light gravel and silt. The control is fair.

*Discharge Measurements.*—The 1916 rating table is based on five measurements made during 1916.

*Winter Flow.*—Not observed.

*Accuracy.*—"B." Daily gauge readings are obtained and the rating curve seems reliable.

## Discharge Measurements of Little Sand Creek near Jaffray, for 1916.

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
June 23	Elliott and Patterson	1,521	24.0	46.8	5.51	1.85	260.0
July 11	Elliott and Patterson	1,929	24.0	32.8	3.89	1.15	128.0
July 29	T. R. Patterson	1,929	24.0	21.7	3.04	0.74	66.0
Aug. 19	T. R. Patterson	1,929	24.0	19.5	2.43	0.60	47.3
Sept. 13	T. R. Patterson	1,957	24.0	15.1	2.00	0.46	30.2

Daily Gauge Height and Discharge of Little Sand Creek near Jaffray, for 1916.

(Drainage area, 33 square miles.)

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							1.12	122	1.22	159	1.22	152
2							1.29	153	1.23	159	1.22	122
3							1.42	175	1.57	187	1.27	127
4							1.45	183	1.46	182	1.27	127
5							1.42	175	1.50	191	1.42	152
6							1.21	128	1.58	205	1.54	199
7							1.45	185	1.62	214	1.42	152
8							1.17	121	1.62	214	1.42	153
9							1.12	122	1.45	122	1.84	192
10							1.08	117	1.45	183	1.80	191
11							1.45	185	1.42	172	1.42	152
12							1.45	182	1.27	167	1.22	152
13							1.27	157	1.42	175	1.27	157
14							1.29	152	1.29	152	1.22	214
15							1.21	128	1.45	183	1.72	248
16												
17							1.17	131	1.42	175	1.22	274
18							1.21	128	1.17	121	2.08	302
19							1.12	122	1.17	131	2.17	225
20							1.04	110	1.25	145	2.22	253
21							1.08	117	1.42	172	2.29	250
22							1.12	122	1.45	152	2.04	225
23							1.08	117	1.45	152	2.00	290
24							1.12	122	1.45	183	1.62	255
25							1.21	128	1.42	175	1.72	240
26							1.21	125	1.22	159	1.62	255
27							1.21	125	1.29	152	1.79	242
28							1.22	159	1.29	152	1.72	240
29							1.42	172	1.22	152	1.22	256
30							1.42	172	1.29	122	1.71	222
31							1.22	152	1.29	152	1.72	240

	July.		August.		September.		October.		November.		December.	
1	1.20	191	0.70	51	0.52	55	0.50	25				
2	1.45	183	0.70	51	0.52	51	0.45	20				
3	1.45	152	0.70	21	0.25	58	0.55	54				
4	1.87	254	1.10	120	0.82	77	0.50	25				
5	1.52	214	0.90	58	0.70	21	0.50	25				
6												
7	1.58	202	0.72	55	0.50	74	0.50	25				
8	1.42	175	0.72	64	1.10	120	0.50	35				
9	1.50	191	0.55	55	0.92	91	0.50	35				
10	1.57	224	0.55	54	0.90	58	0.45	32				
11	1.54	129	1.28	120	0.52	77	0.45	30				
12	1.55	152	1.25	150	0.72	24	0.45	30				
13	1.12	122	1.00	104	0.50	48	0.25	25				
14	1.12	122	0.78	55	0.55	45	0.70	61				
15	1.48	187	0.22	25	0.52	35	0.45	23				
16	1.02	107	0.20	35	0.70	51	0.45	33				
17	0.95	101	0.20	25	0.52	18	0.50	55				
18	1.00	104	0.20	32	0.50	35	0.55	45				
19	1.18	122	0.22	28	0.50	25	0.68	58				
20	0.55	81	0.70	21	0.50	25	0.52	38				
21	0.95	95	0.25	58	0.75	71	0.45	50				
22	0.95	101	0.60	45	0.52	54	0.45	20				
23	0.82	77	0.60	45	0.50	25	0.55	81				
24	0.80	74	0.25	42	0.50	35	0.45	59				
25	0.78	71	0.55	45	0.50	35	0.55	42				
26	0.72	54	0.85	81	0.50	55	0.45	20				
27	0.75	28	0.90	58	0.20	32	0.45	20				
28	0.55	81	0.55	54	0.45	20	0.42	28				
29	0.95	96	0.55	54	0.45	20	0.40	24				
30	1.05	112	0.55	45	0.45	20	0.32	15				
31	0.75	58	0.55	42	0.25	54	0.30	14				
32	0.70	51	0.72	54			0.45	30				

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*Monthly Discharge of Little Sand Creek near Jaffray, for 1916.*

(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.
April.....	183	110	146	4.42	4.93	8,690
May.....	214	131	170	6.16	6.94	10,460
June.....	358	162	230	6.97	7.78	12,680
July.....	264	61	133	4.03	4.66	8,180
August.....	160	35	66	1.97	2.27	4,000
September.....	120	30	64	1.64	1.82	3,210
October.....	61	14	36	1.09	1.26	2,210
The period.....	358	14	119	3.61	28.66	50,420

## MARK CREEK (3037).

*Location.*—Near the mouth of the creek at Marysville, about 14 miles from Cranbrook.

*Records Available.*—April 1 to December 31, 1914; April 1 to December 31, 1915; January 1 to June 19, 1916. Gauge washed out. July 6 to December 31, 1916.

*Drainage Area.*—Mark creek has a drainage area of about 90 square miles.

*Gauge.*—Enamel gauge, read daily by Mr. M. W. Burdette.

*Channel.*—The channel is straight above and below the section. The control was altered during the freshet in June 1916, causing a fill at the metering section, which necessitated a new rating.

*Discharge Measurements.*—The rating table used up to June 19, 1916 is based on thirteen measurements made during 1914–15. The table used subsequent to July 7 was prepared from six measurements made during the period July to December 1916.

*Winter Flow.*—The winters are severe and the creek is usually frozen from November to March. Frazil ice is noticeable.

*Accuracy.*—Owing to a channel shift in June, two rating curves were used for 1916 data. That used from January 1 to June 19 may be accorded an accuracy of "B." For the rating curve used after July 7, accuracy "C."

*Discharge Measurements of Mark Creek near Marysville, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 4	C. E. R. and H. O. D.	1,927	14.0	21.0	0.61	Ice	12.0 <sup>1</sup>
June 17	J. A. E. and T. R. P.	1,521	27.0	88.8	0.10	3.70	806.0 <sup>1</sup>
July 7	J. A. E. and T. R. P.	1,929	26.6	49.6	5.39	1.75	268.0
July 26	T. R. Patterson	1,929	27.0	34.2	2.86	1.06	97.4
Aug. 15	T. R. Patterson	1,929	21.0	16.8	1.97	0.75	23.1
Sept. 16	T. R. Patterson	1,057	16.3	14.9	1.36	0.69	20.2
Oct. 7	J. A. E. and T. R. P.	1,067	18.0	13.9	1.29	0.55	17.0
Dec. 4	R. G. S. and J. A. E.	1,909	16.0	17.1	1.12	0.50	19.3

<sup>1</sup>Measurements of March 4 and June 17 do not apply to new rating curve used after June 1916.

Daily Gauge Height and Discharge of Mark Creek near Marysville, for 1916.

(Drainage area, 90 square miles.)

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	3.40	191	1.20	10	1.25	15	1.40	16	1.98	94	2.43	196
3	2.40	191	1.20	10	1.35	15	1.42	19	2.06	115	2.45	204
3	1.40	18	1.30	10	1.35	15	1.45	21	2.22	149	3.55	232
4	1.30	13	1.30	10	1.35	15	1.46	32	2.45	204	2.56	240
5	1.40	18	1.20	10	1.35	15	1.50	24	2.52	224	2.92	252
6	1.40	18	1.20	10	1.35	15	1.52	25	2.60	246	3.68	270
7	1.40	18	1.20	10	1.35	15	1.56	30	2.58	240	2.65	261
6	1.30	13	1.30	10	1.35	15	1.60	32	3.40	191	2.65	261
9	1.30	13	1.30	10	1.35	15	1.65	39	2.25	153	3.73	282
10	1.20	13	1.20	10	1.40	16	1.75	52	2.10	119	2.65	324
11	1.30	13	1.30	13	1.40	16	1.60	60	2.02	102	2.60	307
12	1.30	13	1.30	13	1.40	16	1.85	69	1.98	94	2.78	301
13	1.30	13	1.30	13	1.40	16	1.80	60	1.98	94	2.85	324
14	1.30	13	1.30	13	1.40	16	1.68	74	1.60	60	3.05	366
15	1.30	13	1.30	13	1.40	16	1.88	74	1.76	57	2.45	555
16	1.30	13	1.25	15	1.40	18	1.95	88	1.60	60	.....	.....
17	1.20	10	1.35	15	1.40	18	2.00	96	1.90	78	.....	.....
16	1.20	10	1.35	15	1.40	18	2.00	98	1.95	88	.....	.....
19	1.20	10	1.35	15	1.25	15	1.90	78	2.10	119	.....	.....
20	1.30	10	1.35	15	1.35	15	1.82	63	2.20	141	.....	.....
21	1.30	10	1.35	15	1.35	15	1.90	90	2.25	152	.....	.....
32	1.20	10	1.35	15	1.35	15	1.78	57	2.20	141	.....	.....
23	1.30	13	1.35	15	1.35	15	1.76	57	2.15	130	.....	.....
24	1.30	13	1.35	15	1.40	16	1.78	57	2.10	119	.....	.....
25	1.30	13	1.35	15	1.40	16	1.80	60	2.10	119	.....	.....
26	1.30	12	1.35	15	1.40	18	1.66	74	2.20	141	.....	.....
27	1.30	13	1.35	15	1.35	15	2.02	102	2.25	153	.....	.....
28	1.30	13	1.35	15	1.35	15	2.05	108	2.36	169	.....	.....
29	1.30	13	1.25	15	1.35	15	2.05	108	2.42	196	.....	.....
30	1.20	13	.....	.....	1.35	15	2.00	98	2.42	196	.....	.....
31	1.20	10	.....	.....	1.35	15	.....	.....	2.40	191	.....	.....

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	.....	.....	0.87	57	0.55	18	0.55	18	0.55	16	0.50	16
2	.....	.....	0.85	53	0.55	18	0.55	18	0.50	16	0.50	16
3	.....	.....	0.85	53	0.50	16	0.52	17	0.49	16	0.50	16
4	.....	.....	0.85	53	0.58	20	0.55	16	0.50	16	0.50	16
5	.....	.....	0.80	44	0.60	31	0.52	17	0.45	14	0.50	16
6	.....	.....	0.75	37	0.60	31	0.52	17	0.40	13	0.50	16
7	.....	.....	0.75	37	0.62	23	0.52	17	0.30	11	0.50	16
8	1.77	274	0.72	34	0.65	36	0.52	17	0.45	14	0.50	16
9	1.90	308	0.75	37	0.65	26	0.50	16	0.60	21	0.50	16
10	1.83	290	0.75	37	0.65	26	0.52	17	0.60	21	0.50	16
11	1.75	269	0.70	30	0.60	21	0.55	18	0.55	18	0.50	16
12	1.70	256	0.70	30	0.60	21	0.55	18	0.55	18	0.50	16
13	1.65	243	0.71	31	0.55	18	0.55	18	0.72	33	0.50	16
14	1.53	212	0.75	37	0.52	17	0.55	18	0.73	33	0.50	16
15	1.45	191	0.75	37	0.55	18	0.52	17	0.70	30	0.50	16
16	1.33	161	0.70	30	0.53	17	0.55	18	0.60	21	0.50	16
17	1.25	142	0.70	30	0.53	17	0.56	20	0.60	21	0.50	16
18	1.27	147	0.75	37	0.52	17	0.55	18	0.50	16	0.50	16
19	1.21	132	0.80	44	0.52	17	0.52	17	0.50	16	0.50	16
20	1.21	132	0.75	37	0.55	18	0.50	16	0.50	16	0.50	16
21	1.20	130	0.75	37	0.52	17	0.50	16	0.50	16	0.40	13
22	1.13	113	0.70	30	0.60	21	0.50	16	0.45	14	0.40	13
23	1.05	94	0.70	30	0.62	33	0.50	16	0.45	14	0.40	13
24	1.05	94	0.70	30	0.52	17	0.50	16	0.42	14	0.40	13
25	1.00	83	0.55	25	0.52	17	0.50	16	0.42	14	0.40	13
26	1.00	83	0.65	26	0.50	16	0.52	17	0.40	13	0.40	13
37	0.95	72	0.65	26	0.52	17	0.50	16	0.40	12	0.40	12
28	0.95	73	0.65	26	0.55	18	0.50	16	0.42	14	0.40	13
29	0.95	72	0.65	26	0.58	20	0.50	16	0.50	16	0.40	13
30	0.95	72	0.65	26	0.55	18	0.55	18	0.50	15	0.40	12
31	0.87	57	0.60	21	.....	.....	0.60	21	.....	.....	0.40	12



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*Monthly Discharge of Mark Creek near Marysville, for 1916.*  
(Drainage area, 90 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.....	191	10	24	0.27	0.31	1,476
February.....	15	10	13	1.14	0.15	748
March.....	18	15	16	0.18	0.21	984
April.....	108	18	61	0.68	0.76	3,630
May.....	246	57	140	1.55	1.79	8,610
June.....						
July.....						
August.....	57	21	35	0.39	0.45	2,150
September.....	26	15	19	0.21	0.23	1,130
October.....	21	16	17	0.19	0.22	1,040
November.....	33	11	17	0.19	0.21	1,010
December.....	16	13	15	0.17	0.20	922
The period.....						

NOTE:—The extreme high water washed out the gauge on June 16, and it was not replaced until July 7.

**MOYIE RIVER (3056).**

*Location.*—The station is located at the highway bridge 25 yards north of the International boundary at Kingsgate.

*Records Available.*—July 1914 to December 31, 1915; March 1916 to December 31, 1916.

*Drainage Area.*—Moyie river, in Canada, has a drainage area of 570 square miles.

*Gauge.*—A vertical staff gauge is attached to the northeast bridge abutment. Daily readings are made by Mr. J. Dunlop.

*Channel.*—The flow at the section is swift, over gravel and small boulders; straight above and below for 200 feet.

*Discharge Measurements.*—The rating curve for 1916 is based on eighteen discharge measurements made during 1914, 1915 and 1916. Eight measurements were made during 1916.

*Winter Flow.*—The Moyie river is subject to ice conditions from November to March.

*Accuracy.*—Between 80 and 4,500 cubic feet per second—"A." Above 4,500 cubic feet per second—"B."

*Discharge Measurements of Moyie River at Kingsgate, B.C., for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge
			Feet.	Sq. ft.	Ft. per sec.	Feet.	
Feb. 21	H. O. Dempster	1,927	44.0	82.0	1.10	Ice	90.3 <sup>1</sup>
June 15	J. A. E. and T. R. P.	1,521	97.5	686.0	10.90	7.00	7,510.0
June 16	J. A. Elliott	1,521	97.5	706.0	11.26	7.20	7,950.0
June 16	T. R. Patterson	1,929	97.5	706.0	11.01	7.20	7,780.0
July 6	J. A. E. and T. R. P.	1,521	97.5	397.0	6.50	3.60	2,580.0
July 24	T. R. Patterson	1,929	98.5	200.0	3.75	1.68	749.0
Aug. 13	T. R. Patterson	1,929	89.5	118.0	2.45	0.90	288.0
Aug. 14	T. R. Patterson	1,929	62.0	65.5	3.33	0.89	285.0 <sup>2</sup>
Sept. 7	T. R. Patterson	1,057	69.0	91.6	1.91	0.63	175.0 <sup>2</sup>
Oct. 9	J. A. Elliott	1,057	62.0	84.0	1.66	0.50	131.0 <sup>2</sup>

<sup>1</sup> Ice measurement.

<sup>2</sup> Wading measurement at different section.

<sup>3</sup> Measurement from downstream side of bridge.

Daily Gauge Height and Discharge of Moyie River at Kingsgate, for 1916.

(Drainage area, 870 square miles.)

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 80	235	.....	.....	.....	.....	2 50	1,400	5 80	2,580	5 30	2,840
2	0 80	235	.....	.....	.....	.....	2 30	1,210	5 70	2,710	2 30	2,970
3	.....	.....	.....	.....	.....	.....	2 30	1,210	3 90	2,570	4 00	3,100
4	.....	.....	.....	.....	.....	.....	2 40	1,300	4 60	3,210	4 10	3,220
5	.....	.....	.....	.....	.....	.....	2 30	1,210	5 00	4,480	4 30	4,200
6	.....	.....	.....	.....	.....	.....	2 30	1,210	5 30	4,770	5 00	4,490
7	.....	.....	.....	.....	.....	.....	2 60	1,500	2 90	2,290	6 10	4,320
8	.....	.....	.....	.....	.....	.....	2 80	1,580	5 30	4,770	4 90	4,240
9	.....	.....	.....	.....	.....	.....	2 90	1,790	4 50	2,880	5 10	4,230
10	.....	.....	.....	.....	.....	.....	2 90	1,740	4 00	2,100	5 50	5,660
11	.....	.....	.....	.....	.....	.....	3 10	2,000	3 70	2,710	5 60	5,210
12	.....	.....	.....	.....	.....	.....	3 10	2,000	3 50	3,440	5 90	4,210
13	.....	.....	.....	.....	.....	.....	3 00	1,390	2 40	2,840	5 50	4,310
14	.....	.....	.....	.....	.....	.....	3 00	1,890	5 55	2,280	2 40	2,040
15	.....	.....	.....	.....	.....	.....	3 30	2,220	5 30	2,110	5 90	5,810
16	.....	.....	.....	.....	.....	.....	3 20	2,110	5 25	2,160	6 30	2,440
17	.....	.....	.....	.....	1 90	880	3 10	2,000	3 20	2,110	2 60	2,760
18	.....	.....	.....	.....	2 60	920	3 00	1,520	5 50	2,220	7 70	8,580
19	.....	.....	.....	.....	2 00	920	2 70	1,240	5 50	2,490	2 30	10,600
20	.....	.....	.....	.....	2 30	1,210	2 70	1,520	5 50	2,540	2 00	2,190
21	.....	.....	.....	.....	2 80	1,290	2 50	1,500	2 50	2,840	7 30	7,590
22	.....	.....	.....	.....	2 60	1,900	2 30	1,400	5 50	2,840	5 30	7,220
23	.....	.....	.....	.....	2 35	1,250	2 40	1,300	5 70	2,710	5 30	2,290
24	.....	.....	.....	.....	2 20	1,120	2 40	1,200	5 60	2,460	5 50	5,590
25	.....	.....	.....	.....	2 60	960	2 50	1,500	5 60	2,550	5 30	4,810
26	.....	.....	.....	.....	2 00	980	3 10	2,000	5 60	2,580	5 50	5,210
27	.....	.....	.....	.....	2 20	1,120	3 80	2,840	5 70	2,710	5 00	4,490
28	.....	.....	.....	.....	2 10	1,040	5 50	2,840	4 30	2,550	5 30	5,210
29	.....	.....	.....	.....	2 00	260	3 50	2,550	4 40	2,840	5 30	4,910
30	.....	.....	.....	.....	2 00	990	3 50	2,460	4 30	2,500	4 60	4,340
31	.....	.....	.....	.....	2 00	220	.....	.....	4 00	2,100	.....	.....
	July.		August.		September.		October.		November.		December.	
1	4 40	3,640	1 25	472	0 25	170	0 50	110	0 55	150	0 50	110
2	4 30	3,500	1 20	445	0 25	170	0 60	110	0 55	150	0 50	110
3	4 20	2,290	1 15	418	0 50	225	0 50	110	0 50	160	0 30	110
4	4 00	5,100	1 10	290	1 00	525	0 20	110	0 70	160	0 90	110
5	3 90	2,970	1 05	552	0 70	190	0 50	110	0 70	190	0 50	110
6	3 60	2,500	1 05	522	0 50	265	0 50	110	0 25	170	0 60	110
7	3 50	2,420	1 00	355	0 72	215	0 90	110	0 22	170	0 50	110
8	3 40	2,740	1 90	325	0 75	215	0 50	110	0 25	170	0 50	110
9	3 20	2,110	1 00	325	0 80	255	0 50	110	0 25	170	0 60	110
10	3 00	1,860	0 95	305	0 75	215	0 50	110	0 55	170	0 60	110
11	2 80	1,590	0 95	305	0 70	190	0 50	110	0 65	170	0 60	110
12	2 70	1,590	0 90	250	0 70	190	0 50	110	0 55	170	0 50	110
13	2 50	1,800	0 90	270	0 70	190	0 50	110	0 25	170	0 90	110
14	2 50	1,400	0 90	240	0 25	170	0 50	110	0 65	170	0 60	110
15	2 40	1,300	0 55	252	0 25	170	0 50	110	0 65	170	0 50	110
16	2 35	1,220	0 55	222	0 55	170	0 50	110	0 60	150	0 50	110
17	2 20	1,120	0 55	222	0 60	160	0 20	110	0 60	190	0 60	110
18	2 15	1,080	1 00	332	0 60	160	0 60	110	0 30	190	0 90	110
19	2 10	1,040	1 00	322	0 60	160	0 50	110	0 50	160	0 60	110
20	2 00	560	0 90	220	0 50	160	0 50	110	0 60	160	0 60	110
21	1 90	580	0 85	252	0 50	150	0 60	110	0 60	160	0 50	110
22	1 80	510	0 80	225	0 50	150	0 50	110	0 60	190	0 60	110
23	1 75	775	0 50	222	0 50	150	0 45	95	0 60	160	0 20	110
24	1 70	740	0 75	215	0 55	130	0 45	92	0 60	150	0 50	110
25	1 50	570	0 75	215	0 55	150	0 45	95	0 60	150	0 60	110
26	1 55	540	0 75	215	0 50	150	0 42	25	0 60	160	0 50	110
27	1 50	510	0 75	212	0 60	160	0 50	110	0 60	150	0 50	110
28	1 45	552	0 70	190	0 60	160	0 50	110	0 60	160	0 20	110
29	1 40	555	0 70	190	0 55	150	0 50	110	0 60	120	0 20	110
30	1 35	528	0 70	190	0 55	150	0 50	110	0 20	150	0 50	110
31	1 50	500	0 55	170	.....	.....	0 55	150	.....	.....	0 50	110

SESSIONAL PAPER No. 25*i**Monthly Discharge of Moyie River at Kingsgate, B.C., for 1916.*

(Drainage area, 970 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 .....	2,340	1,210	1,770	0.10	3.43	100,000
May.....	5,360	2,110	3,030	3.03	3.17	137,600
June.....	10,600	2,840	5,460	5.59	10.70	324,000
July.....	3,040	500	1,530	1.57	0.14	93,010
August.....	472	170	290	0.31	0.09	17,930
September.....	393	130	177	0.19	0.35	10,330
October.....	130	99	103	0.10	0.23	3,700
November.....	130	130	133	0.13	0.31	3,400
December.....	110	110	110	0.11	0.22	3,760
The period .....	10,800	95	1,408	1.47	25.13	704,200

## ST. MARY'S RIVER (3050).

*Location.*—This station is located at the highway bridge near Wycliffe, 10 miles above the mouth and 14 miles from Cranbrook.

*Records Available.*—April 1 to December 31, 1914; April 1 to September 30, 1915; April 1 to September 30, 1916.

*Drainage Area.*—The drainage area of St. Mary's river above Wycliffe is one thousand, one hundred and ten square miles.

*Gauge.*—A vertical staff gauge nailed to the pier of the traffic bridge near Wycliffe is read daily by Mr. E. L. Staples.

*Channel.*—The channel above and below the gauge is smooth, straight and uniform. The control is a very pronounced riffle and seems permanent.

*Discharge Measurements.*—The 1916 rating curve is based on 17 measurements, 4 of which were made during 1916.

*Winter Flow.*—The St. Mary's river is affected by severe ice conditions from November to March.

*Accuracy.*—Between 400 and 16,000 cubic feet per second—"A." Between 16,000 and 38,000 cubic feet per second—"D."

*Discharge Measurements of St. Mary's River near Wycliffe, for 1916.*

Date.	Engineer.	Meter No.	Width.	Area of Section.	Mean Velocity.	Gauge Height.	Discharge.
			Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
March 4	Richardson and Dempster ..	1,327	209	292	2.28	1ce	972 <sup>1</sup>
July 25	T. R. Patterson .....	1,329	169	973	4.21	4.54	4,110
Aug. 16	T. R. Patterson .....	1,923	157	731	2.30	2.70	1,350
Sept. 13	T. R. Patterson .....	1,057	159	323	1.43	2.00	332
Oct. 4	J. A. R. and T. R. P .....	1,057	124	599	1.25	1.35	320

<sup>1</sup>Ice conditions.



SESSIONAL PAPER No. 25d

Monthly Discharge of St. Mary's River at Wycliffe, for 1916.

(Drainage area, 1,110 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.....	2,860	1,000	1,750	1.43	1.59	63,420
May.....	6,640	2,000	3,800	3.33	4.07	226,600
June.....	27,900	4,000	12,000	10.72	12.60	797,400
July.....	14,500	3,000	7,000	6.22	8.04	471,600
August.....	3,010	1,000	1,720	1.55	1.80	108,600
September.....	1,310	1,000	1,080	0.97	1.09	64,260
The period.....	37,900	1,000	4,800	4.31	30.19	1,771,080

NELSON T. WELTON

MISCELLANEOUS METER MEASUREMENTS.

NELSON DISCHARGE

Date.	Stream.	Tributary to	Locality.	Engineer.	Gauge Height.	Discharge.
1916						
March 15	Carpenter.....	Slocan.....	New Denver.....	H. O. Dempster.....	Ice.....	81.80
Feb. 12	Columbia.....	Slocan.....	Castlegar.....	H. O. D. and G. K. B.....	0.80.....	7,010.00
April 12	Enterprise.....	Slocan.....	Silverton.....	G. K. Beeston.....	.....	68.00
Nov. 1	Enterprise.....	Slocan.....	Silverton.....	C. E. W. and H. C. H.....	.....	22.00
Mar. 24	Fry.....	Kootenay.....	Kaslo.....	G. K. Beeston.....	0.18.....	148.00
June 12	Fry.....	Kootenay.....	Kaslo.....	J. A. E. and T. R. P.....	18.00.....	2,600.00
Feb. 28	Goat.....	Kootenay.....	Erickson.....	H. O. Dempster.....	Ice.....	187.00
June 18	Goat.....	Kootenay.....	Erickson.....	J. A. E. and T. R. P.....	7.82.....	5,440.00
July 24	Goat.....	Kootenay.....	Erickson.....	T. R. Patterson.....	3.10.....	922.00
Aug. 12	Goat.....	Kootenay.....	Erickson.....	T. R. Patterson.....	2.24.....	352.00
Sept. 18	Goat.....	Kootenay.....	Erickson.....	T. R. Patterson.....	1.88.....	227.00
Oct. 10	Goat.....	Kootenay.....	Erickson.....	J. A. Elliott.....	1.60.....	184.00
Mar. 18	Gold.....	Slocan.....	Silverton.....	H. O. Dempster.....	.....	3.24
Mar. 22	Lardeau.....	Duncan.....	Lardeau.....	G. K. Beeston.....	1.48.....	808.00
Aug. 22	Lardeau.....	Duncan.....	Lardeau.....	T. R. Patterson.....	2.98.....	2,250.00
Sept. 21	Lardeau.....	Duncan.....	Lardeau.....	J. A. E. and T. R. P.....	2.20.....	1,230.00
May 10	Silverton.....	Slocan.....	Above Hewitt.....	C. E. W. and G. K. B.....	1.25.....	114.00
Aug. 2	Silverton.....	Slocan.....	Above Hewitt.....	T. R. Patterson.....	1.48.....	120.00
Sept. 28	Silverton.....	Slocan.....	Above Hewitt.....	J. A. E. and T. R. P.....	0.89.....	48.10
Oct. 30	Silverton.....	Slocan.....	Above Hewitt.....	C. E. W. and H. C. H.....	0.39.....	22.70
Apr. 11	Silverton.....	Slocan.....	Below Hewitt.....	H. O. Dempster.....	0.40.....	22.90
May 10	Silverton.....	Slocan.....	Below Hewitt.....	G. K. Beeston.....	0.70.....	81.80
Aug. 3	Silverton.....	Slocan.....	Below Hewitt.....	C. E. W. and G. K. B.....	1.23.....	188.00
Aug. 20	Silverton.....	Slocan.....	Below Hewitt.....	T. R. Patterson.....	1.97.....	171.00
Aug. 20	Silverton.....	Slocan.....	Below Hewitt.....	T. R. Patterson.....	1.37.....	88.20
Sept. 1	Silverton.....	Slocan.....	Below Hewitt.....	T. R. Patterson.....	1.30.....	70.40
Sept. 25	Silverton.....	Slocan.....	Below Hewitt.....	T. R. Patterson.....	1.40.....	72.10
Oct. 20	Silverton.....	Slocan.....	Below Hewitt.....	C. E. W. and H. C. H.....	1.29.....	40.80
June 7	Slocan.....	Kootenay.....	Crescent Valley.....	J. A. E. and T. R. P.....	7.70.....	8,040.00
July 3	Slocan.....	Kootenay.....	Crescent Valley.....	T. R. Patterson.....	10.80.....	14,360.00
Aug. 8	Slocan.....	Kootenay.....	Crescent Valley.....	T. R. Patterson.....	8.88.....	4,270.00
Sept. 8	Slocan.....	Kootenay.....	Crescent Valley.....	T. R. Patterson.....	4.82.....	2,310.00
Sept. 27	Slocan.....	Kootenay.....	Crescent Valley.....	J. A. E. and T. R. P.....	3.97.....	1,880.00
Nov. 20	Slocan.....	Kootenay.....	Crescent Valley.....	R. G. S. and J. A. E.....	3.10.....	860.00
Apr. 26	Spring.....	Columbia.....	Trail.....	H. O. Dempster.....	.....	0.98
Apr. 12	Vevey.....	Slocan.....	Silverton.....	G. K. Beeston.....	.....	44.00
Sept. 25	Vevey.....	Slocan.....	Silverton.....	J. A. E. and T. R. P.....	.....	3.10
Nov. 1	Vevey.....	Slocan.....	Silverton.....	C. E. W. and H. C. H.....	.....	8.75

## DEPARTMENT OF THE INTERIOR

8 GEORGE V. A. 1918

## REVELSTOKE DISTRICT.

Date.	Stream.	Tributary to	Locality.	Engineer.	Gauge Height.	Discharge.
1216						
June 6	Columbia		Golden.	H. C. Hughes	2.18	5,280.00
June 17	Columbia		Golden.	H. C. Hughes	7.10	7,280.00
June 26	Columbia		Golden.	H. C. Hughes	12.68	10,000.00
Aug. 17	Columbia		Golden.	H. C. Hughes	7.20	2,270.00
Aug. 29	Columbia		Golden.	H. C. Hughes	2.70	7,240.00
Nov. 2	Columbia		Golden.	H. C. Hughes	1.40	1,200.00
June 2	Incomappleux	Arrow Lake.	Beaton.	H. C. H. and C. E. W.	4.42	2,800.00
Aug. 14	Incomappleux	Arrow Lake.	Beaton.	H. C. Hughes	4.82	2,380.00
Sept. 2	Incomappleux	Arrow Lake.	Beaton.	H. C. Hughes	4.22	4,290.00
Nov. 4	Incomappleux	Arrow Lake.	Beaton.	H. C. H. and C. E. W.	2.22	222.00
Nov. 14	Incomappleux	Arrow Lake.	Cambourne.	H. C. Hughes	8.02	2,480.00
Mar. 22	No. 2 Creek	Arrow Lake.	Cambourne.	H. C. H. and C. E. W.	2.41	234.00
June 10	No. 2 Creek	Columbia.	Above Falls.	H. O. Dempster	1.10	72.00
July 7	No. 2 Creek	Columbia.	Above Falls.	H. C. Hughes	2.28	490.00
Aug. 26	No. 2 Creek	Columbia.	Above Falls.	H. C. Hughes	2.28	280.00
Nov. 12	No. 2 Creek	Columbia.	Above Falls.	H. C. Hughes	2.48	632.00
June 10	Toby	Columbia.	Above Falls.	H. C. H. and C. E. W.	0.62	48.00
July 2	Toby	Columbia.	Atholmer.	H. C. Hughes	1.98	1,010.00
June 12	Washout.	Columbia.	Atholmer.	H. C. Hughes	2.75	1,420.00
Aug. 24	Washout.	Columbia.	Galena.	H. C. Hughes		22.90
			Galena.	H. C. Hughes		21.00

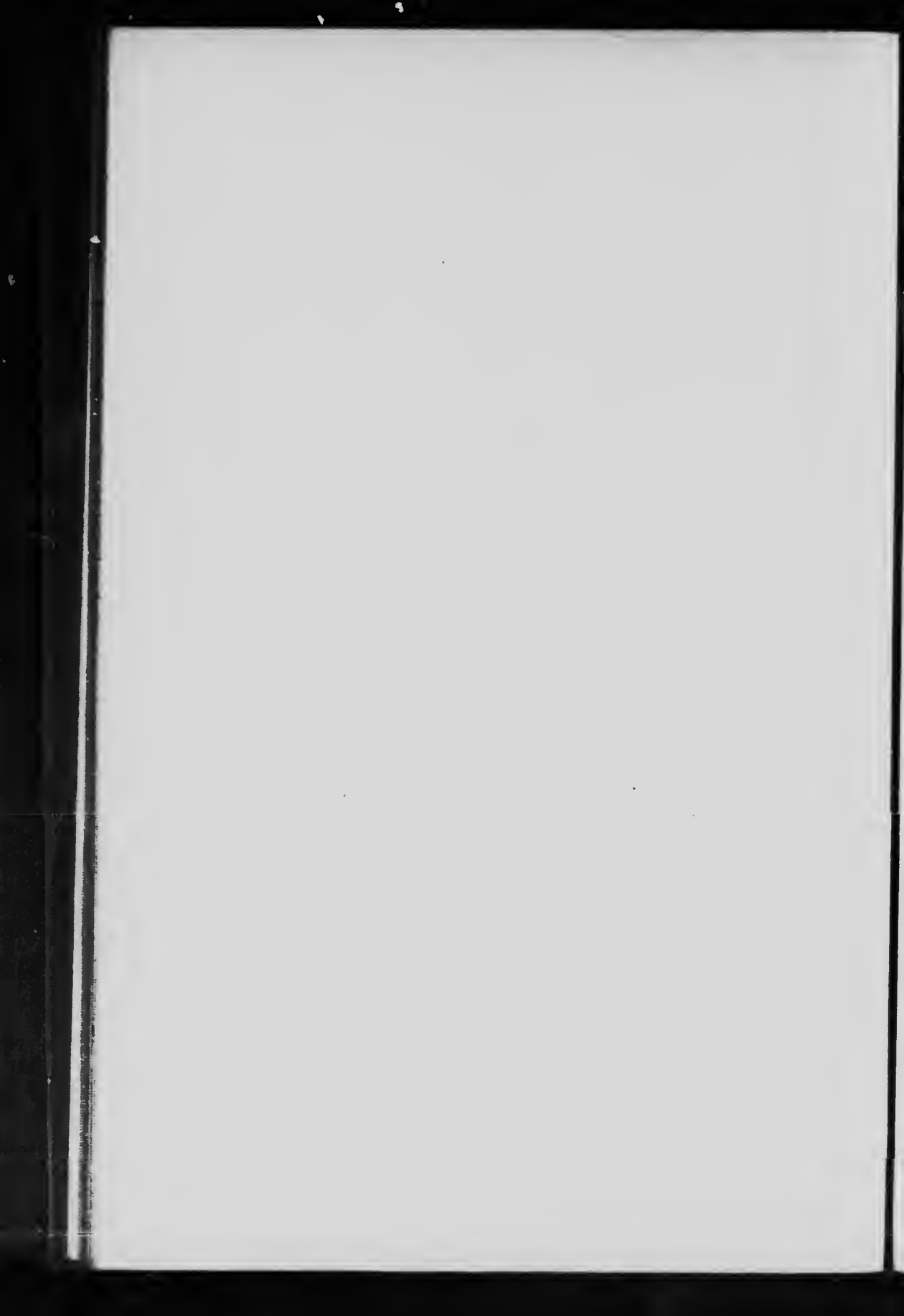
## CRANBROOK DISTRICT.

Mar. 2	Bull	Kootenay	Bull River	C. E. R. and H. O. D	Ice	202.00
Apr. 8	Bull	Kootenay	Bull River	H. O. Dempster	0.60	287.00
July 9	Bull	Kootenay	Eull River	J. A. E. and T. R. P	4.71	7,410.00
July 27	Bull	Kootenay	Bull River	T. R. Patterson	2.14	2,080.00
Aug. 17	Bull	Kootenay	Bull River	T. R. Patterson	1.28	1,160.00
Sept. 8	Bull	Kootenay	Bull River	T. R. Patterson	1.81	1,110.00
Oct. 2	Bull	Kootenay	Bull River	T. R. Patterson	1.42	642.00
July 10	Linklater	Kootenay	Newgate	J. A. E. and T. R. P.	1.42	78.80
July 28	Linklater	Kootenay	Newgate	J. A. E. and T. R. P.	1.42	78.80
Sept. 12	Linklater	Kootenay	Newgate	T. R. Patterson	0.88	42.20
Oct. 7	Linklater	Kootenay	Newgate	T. R. Patterson	0.70	28.70
July 28	Phillips	Kootenay	Roosville	J. A. Elliott	0.20	22.00
July 28	Phillips	Kootenay	Roosville	T. R. Patterson	0.24	58.70
Sept. 12	Phillips	Kootenay	Roosville	T. R. Patterson	0.22	45.00
Oct. 7	Phillips	Kootenay	Roosville	T. R. Patterson	1.60	87.00
			Roosville	J. A. Elliott	1.22	34.80

REPORT  
OF THE  
BRITISH COLUMBIA HYDROMETRIC  
SURVEY FOR 1916.

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CHAPTER V.  
FORT GEORGE DISTRICT.





## CHAPTER V. FORT GEORGE DISTRICT.

Classified list of streams giving object of maintenance of gauging stations and number of Water Resources Papers where description of stream and flow data may be found.

Stream.	Object of Maintenance.	Water Resources Paper.
Bulkley-Hazelton.....	Power.....	18
Bulkley-Hubert.....	Power.....	18
Dore.....	Power, Municipal Supply.....	18
Fraser-Fort George.....	Power and Navigation.....	18
Nechako-Fort Fraser.....	Power.....	18
Nechako-Vanderhoof.....	Power.....	18
Skeena.....	Power and Navigation.....	18

### METEOROLOGICAL DATA.

#### *Mean Monthly Temperature (Degrees Fahr.)—1916.*

Locality	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Fort George	-12	17	32	43	49	56	58	58	51	42	27	13	36.2
Fort St. James	14	13	28	38	47	54	55	56	49	41	23	9	33.3
New Hazelton	-5	22	32	43	49	58	56	59	50	41	30	16	37.6

#### *Difference from Average Temperature (Degrees Fahr.)—1916.*

*Difference of average for month from monthly average for previous ten years or more.*

Locality.	No. of Years Records.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Fort St. James	23	-21	1	6	4	3	3	0	3	4	4	-1	-8	-0.2

NOTE:—All quantities are plus unless otherwise designated

#### *Total Monthly Precipitation (inches)—1916.*

Locality.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Fort George		0.94	0.69	0.59	0.56	0.97	2.83	0.74	1.33	0.74	1.09	0.43	.....
Fort St. James	0.32	0.48	1.13	0.99	0.61	0.30	3.46	0.17	1.14	0.50	0.92	0.48	10.50
New Hazelton	0.55	0.56	1.15	1.06	0.43	1.24	3.94	2.22	1.76	1.65	1.65	1.58	17.77

#### *Difference from Average Precipitation (inches)—1916.*

*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.
Fort St. James	-1.26	0.71	0.31	0.10	0.28	-1.20	2.24	-1.22	-0.09	-0.69	-0.82	-1.01	-4.63

NOTE —All quantities are plus unless otherwise designated

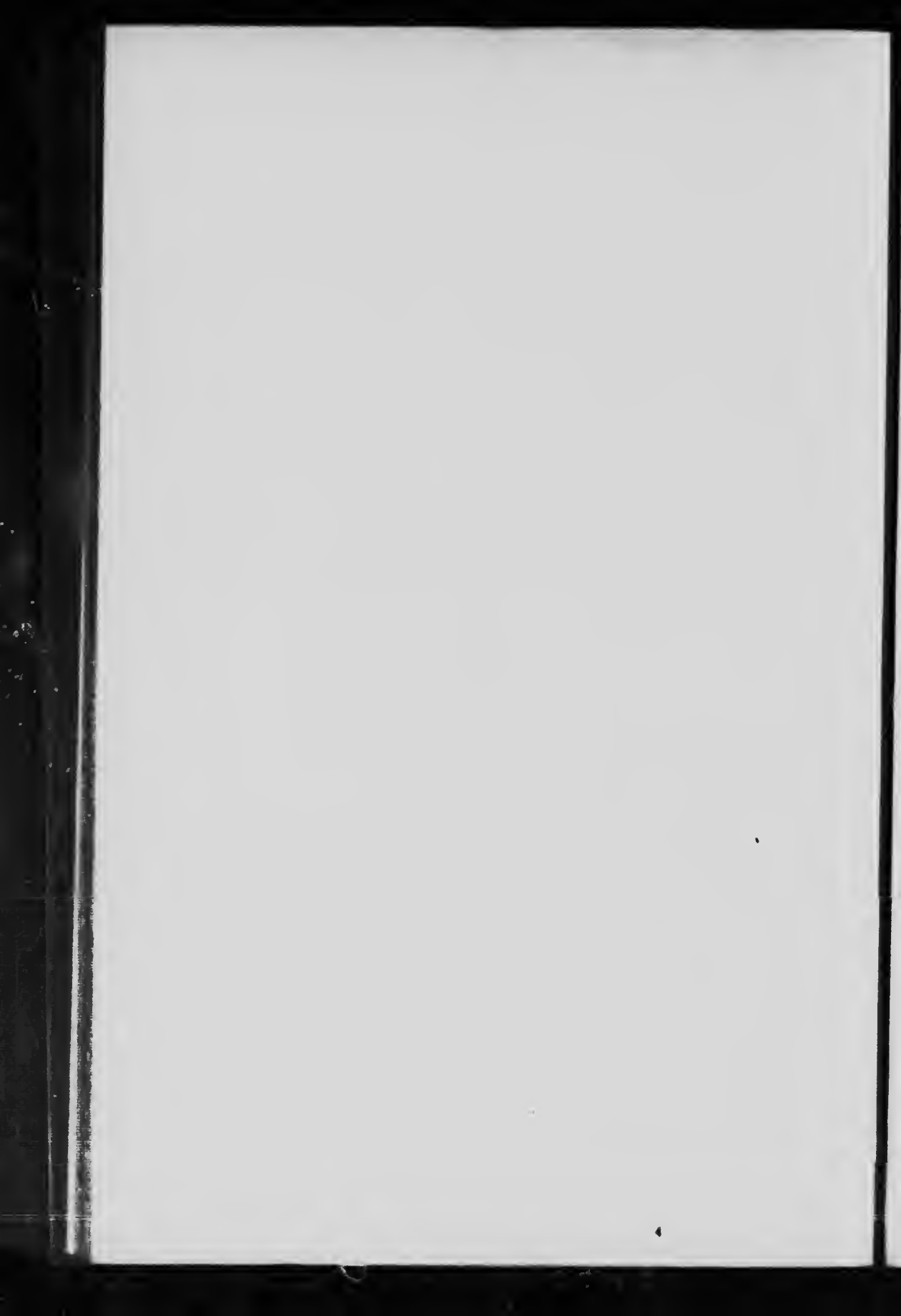
## HYDROMETRIC DATA.

## FORT GEORGE DISTRICT.

## MISCELLANEOUS METER MEASUREMENTS.

Date.	Stream.	Tributary to	Locality.	Engineer.	Gauge Height.	Discharge.
1916						
Aug. 6	Bulkley	Skeena	Hazelton	J. A. Elliott	16.00	10,080
Aug. 24	Bulkley	Skeena	Hazelton	J. A. Elliott	16.00	13,000
Apr. 24	Bulkley	Skeena	Hubert	A. Elliott	2.34	2,080
May 14	Bulkley	Skeena	Hubert	A. Elliott	4.80	5,710
Aug. 9	Bulkley	Skeena	Hubert	A. Elliott	5.10	6,160
Aug. 23	Bulkley	Skeena	Hubert	A. Elliott	4.60	5,810
Jan. 5	Dore	Fraser	McBride	J. A. Elliott	1.90	25
Mar. 25	Dore	Fraser	McBride	J. A. Elliott	ice	
May 2	Dore	Fraser	McBride	J. A. Elliott	1.70	29
Aug. 15	Dore	Fraser	McBride	J. A. Elliott	2.75	294
Apr. 29	Fraser		S. Ft. George	J. A. Elliott	4.20	1,260
Aug. 18	Fraser		S. Ft. George	J. A. Elliott	3.50	48,600
Jan. 12	Nechako	Fraser	Vanderhoof	J. A. Elliott	4.60	34,000
Mar. 15	Nechako	Fraser	Vanderhoof	J. A. Elliott	-0.70	2,905
					ice	
					0.20	2,130
Apr. 26	Nechako	Fraser	Vanderhoof	J. A. Elliott	ice	
May 10	Nechako	Fraser	Vanderhoof	J. A. Elliott	0.02	4,710
Aug. 10	Nechako	Fraser	Vanderhoof	J. A. Elliott	3.80	11,080
Aug. 20	Nechako	Fraser	Vanderhoof	J. A. Elliott	4.50	12,870
Apr. 27	Nechako	Fraser	Vanderhoof	J. A. Elliott	3.50	10,640
May 11	Nechako	Fraser	Ft. Fraser	J. A. Elliott	2.30	4,520
Aug. 11	Nechako	Fraser	Ft. Fraser	J. A. Elliott	6.20	8,510
Aug. 21	Nechako	Fraser	Ft. Fraser	J. A. Elliott	5.55	10,500
Mar. 13	Skeena		Hazelton	J. A. Elliott	5.50	9,150
					-0.70	2,190
Apr. 21	Skeena		Hazelton	J. A. Elliott	ice	
May 13	Skeena		Hazelton	J. A. Elliott	1.87	4,200
					2.05	15,500

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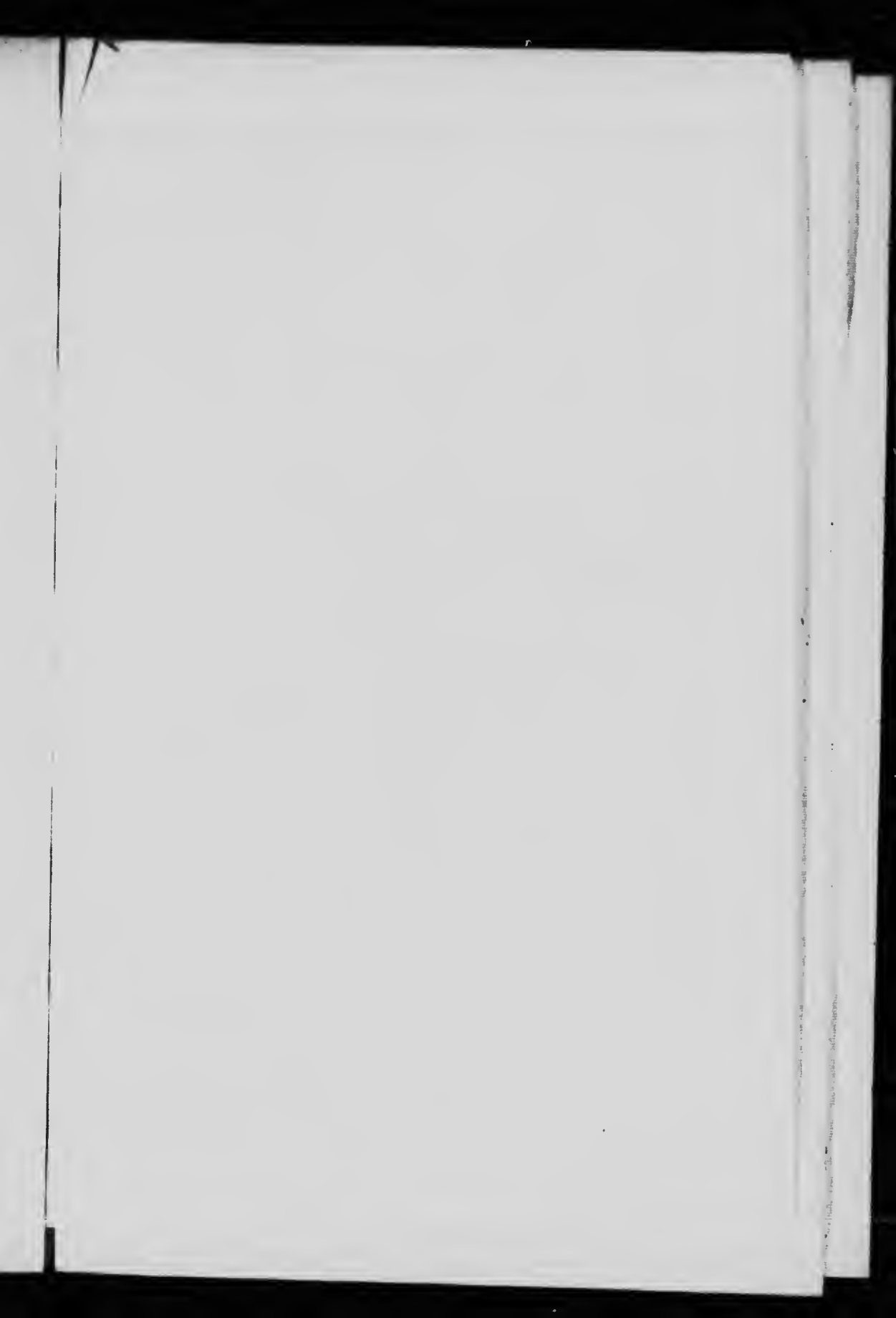
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## MAP OF SOUTHERN BRITISH COLUMBIA

### GAUGING STATIONS

To accompany report of  
The B.C. Hydrographic Survey for 1920  
E. G. Ross, B.A.Sc., Chief Engineer

Scale of Miles



Regular Gauging Stations ●  
Regular Gauging Stations for which  
only discharges are available ○

